

**report 22**

**women's  
health**  
*a u s t r a l i a*



**The Australian Longitudinal Study on  
Women's Health**

**10 December 2003**



**in association with**



## REPORT 22

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## EXECUTIVE SUMMARY

1. This report covers the three-month period from September until December 2003. The short reporting periods of this and the previous report (Report 21, September 2003) have resulted from extended negotiations over continued funding of the project. The previous contract with the Australian Department of Health and Ageing expired on 30<sup>th</sup> June 2003, and was extended three times, until 30<sup>th</sup> September, 3<sup>rd</sup> November, and 15<sup>th</sup> December, in order to provide sufficient time for negotiation and agreement between the Department and the Universities of Newcastle and Queensland. At the time of writing, this process was still continuing. A draft contract has been circulated, discussed and modified, and all parties are working cooperatively towards a satisfactory contract which can be signed before the end of the current extension.

2. Major activities during this three-month period have been the continuation of Survey 3 of the Younger cohort, piloting and finalization of Survey 4 of the Mid-age cohort, distribution of a newsletter to all participants in all age groups, conduct of substudies and analyses, and statistical and data management. The research team has continued to complete work on time despite the extensive disruption caused by protracted negotiations over funding.

3. Survey 3 of the Younger cohort, which was mailed in March, has continued throughout the reporting period. This period has seen the continuation of intensive tracking and phoning of Younger women who had not returned a survey, and saw the response rate rise from 60% in early September to 66% on 24 November. Survey 4 of the Mid-age cohort, to be carried out in 2004, has been piloted and assessed, and the revised version of the survey has been submitted to the University of Newcastle Human Research Ethics Committee for clearance. Meanwhile the data from Survey 3 of the Older cohort, collected in 2002, have been checked and cleaned, and will be archived with the Social Sciences Data Archive at the Australian National University in early 2004.

4. The reporting period has seen the completion of a substudy carried out in collaboration with FPA Health, on the contraception history of Mid-age women, and of a pilot for a survey of Younger women's coping with depression. Preparation for several substudies to be conducted in 2004 has also been completed. This includes the piloting of innovative data collection methods for a study of work-life balance; focus groups to prepare a survey to go to Older caregivers of family members with neurodegenerative disorders; and a trial of methods for interviewing Older women about potential elder abuse.

5. Work on methods and measurement continues. In the reporting period, work has been conducted on the statistical properties of several scales which have not previously been used in such populations, and on the issues arising in longitudinal analysis of complex datasets.

6. It is pleasing to see that three more PhD students have submitted their theses in this three-month period, bringing the total for this year to six. Postgraduate students are an investment in the future of health research and evaluation in Australia. Most are supported by scholarships and grants from other sources, meaning that they add to the project and its outcomes without significant cost to core funds.

7. Dissemination of findings to the scientific community has continued, with a total of 5 papers published and accepted for publication in the three-month period and 20 papers presented at conferences, seminars and special events.

8. The project has undergone some reorganization, with the appointment of another Research Officer at the University of Queensland. The research team is in the process of transferring some administrative and record-keeping activities and of setting up a more formal University of Queensland node of the project, to reflect the central and continuing involvement of University of Queensland staff as senior members of the research team.

## **1. COLLABORATIVE RESEARCH ACTIVITIES**

### **1.1. SCIENTIFIC MEETINGS AND TELECONFERENCES AMONG RESEARCH TEAM**

Meetings and teleconferences are conducted at least once a month among the Steering Committee, with agendas, notes and minutes circulated to all Investigators. In addition to this, a monthly update is provided to all Investigators, staff, students, associates and others with an interest in the progress of the project. Steering Committee membership is flexible and decided on an annual basis, so that a group of about six Investigators are involved at this level at any one time. Current Steering Committee members are: Annette Dobson (Chair); Wendy Brown; Lois Bryson; Julie Byles; Christina Lee; Penny Warner Smith; and Anne Young.

Appendix 1 includes minutes for Steering Committee teleconferences held on 2<sup>nd</sup> October 2003, 6<sup>th</sup> November 2003, and 4<sup>th</sup> December 2003.

### **1.2. SUMMARY OF COLLABORATIVE RESEARCH ACTIVITIES**

#### **1.2.1. Projects completed and in progress by ALSWH investigators and collaborators**

**Project:** History of contraceptive use among mid-age Australian women  
**ALSWH Investigator:** Professor Christina Lee  
**Collaborative Investigator:** Dr Edith Weisberg (FPA Health New South Wales)  
**Funding Source:** FPA Health

There is considerable evidence on the effectiveness of various forms of contraception in clinical trials, but there is little evidence on how effective these forms of contraception are when used in normal life. Research from the USA suggests that up to 50% of all pregnancies, and 28% of those resulting in live births, are “unintended,” in the sense that they were not specifically planned for that time. There is no Australian information on the extent to which pregnancies are unintended, and there is very little information about the outcomes of unintended pregnancies (termination, miscarriage, live birth) or about the long-term consequences of going through with an unintended pregnancy. This substudy involves a survey of 1,000 Mid-age participants. Women who have ever been pregnant will be asked to report on each of their pregnancies – whether it was intended, what form of contraception was being used at the time, and what the outcome was. These data will be combined with existing information on women’s well-being, gynaecological health and history, and socioeconomic status in order to develop a picture of the correlates and consequences of unintended pregnancies in a population who have reached the end of their reproductive years.

Specific research questions include:

1. What proportion of pregnancies are recalled as unintended, and what forms of contraception were being used at the times of these pregnancies?
2. What were the outcomes of unintended and intended pregnancies (termination, miscarriage, live birth)?
3. Is a history of unintended pregnancy associated with reduced socio-economic circumstances, increased risk of gynaecological problems (as indicated by hysterectomy, other procedures, subjective symptoms at menopause), and reduced physical and

- emotional well-being (as indicated by reduced SF-36 scores)?
4. Do the consequences of unintended pregnancy vary depending on outcome (eg do women who continued with the pregnancy fare better or worse than those who chose a termination)?
  5. How do Mid-age women interpret their unintended pregnancies, when they look back across their reproductive years?

A pilot survey was completed in June 2003 and the main survey was mailed to 1,000 Mid-age women in September. The current response rate is approximately 78%; data will be collated and analysed in 2004.

**Project:** Correlates of motherhood aspirations among Younger women  
**ALSWH Investigator:** Professor Christina Lee  
**Funding Source:** UQ start-up funds

Commentators have been bewailing young women's lack of interest in procreation for several decades now, and fertility rates below replacement level are now the norm in developed countries. This analysis examines motherhood aspirations among the Younger women, using Survey 1 and Survey 2 data. Overall, fewer than 8% of women do not want children by the age of 35; about 60% want one or two children and the remainder want more than two. Preliminary analyses suggest a reasonable degree of consistency across Survey 1 and Survey 2 in young women's motherhood plans, and show few differences between women according to the number of children they say that they want. In particular, there is no evidence to support a view that women who want no children are psychologically more distressed than others, or that they are more likely to have a history of negative reproduction-related events (such as terminations, sexually transmitted conditions etc). Women who report wanting no children are more likely to report that they are not exclusively heterosexual, are less likely to be partnered and appear less likely to be sexually active. They are also less likely to want to be married or in a relationship, and more likely to want to be in full-time work, than other women. Women who report wanting three or more children tend to be from rural areas, to aspire to marriage and part-time work, and to have high levels of life satisfaction. Overall, there is little evidence to support a view that there is an epidemic of selfish young women choosing childlessness. These data suggest that falling fertility rates may have more to do with social and economic conditions than with women's preferences, which for over 90% continue to be strongly pro-motherhood. Analysis and report writing are currently in progress.

**Project:** Work-life tensions: Time pressure, leisure and wellbeing among dual- earner parents in Australia  
**ALSWH Investigators:** Dr Penny Warner-Smith & Professor Lois Bryson  
**Collaborative Investigators:** Professor Peter Brown (Griffith University) & A/Professor Duncan Ironmonger (University of Melbourne)  
**Funding Source:** ARC Discovery grant

Many people today lead very busy lives. The aim of this project is to find out how dual-earner parents cope with their work and family responsibilities. While work-life tensions impact on individuals and families, stress-related complaints also have great potential costs for organisations, and implications for health service usage and the national budget. There is a body of literature on structural and institutional factors associated with work-life tensions, such as the implementation of family friendly workplaces, but less is known about the

strategies which families employ to manage the competing demands on their time.

Two PhD students have been awarded scholarships to work on the project. Leanne Fray began her enrolment in March 2003 and is being supervised by Dr Penny Warner-Smith at the University of Newcastle. Robyn Synott enrolled in May 2003 and is being supervised by Prof Peter Brown at Griffith University.

Nine focus groups have been conducted with working parents in urban and rural locations in NSW and Queensland. The audiotapes of the meetings have been transcribed and thematic analyses have begun.

In Melbourne, A/Prof Duncan Ironmonger and his team have sourced and organised equipment for the next phase of the project, the collection of time use information via the 'experience sampling method' (ESM). This is an innovative research method which has only previously been used once in Australia. A pilot is being run in Newcastle to test participant preferences in regard to equipment which prompts them at random times to record their activities; the objective is to see whether participants prefer the more conventional pager which will be combined with a hard copy time diary, or whether they are comfortable with a palm pilot for the electronic collection of the time use data. A survey is being developed for use with the instruments and a sample of respondents in the Young and Mid cohorts and their partners, will be drawn for the ESM phase of the project. Interviews will then be conducted with the same couples to 'flesh out' the information provided in the ESM phase.

In April, Prof Brown, Prof Bryson and Dr Warner-Smith were invited to meet with members of the secretariat of the Commonwealth government's work and family taskforce, who were conducting informal consultations with key stakeholders. The taskforce, which was established by the Prime Minister, is reviewing policies across the areas of family payments, paid maternity leave, workplace relations and services including childcare and employment services.

<b>Project:</b>	The physical, social and economic health and wellbeing of women with dependent children, following relationship breakdown
<b>ALSWH Investigators:</b>	Dr Deborah Loxton & Dr Penny Warner-Smith
<b>Funding Source:</b>	Office of the Status of Women, Department of the Prime Minister and Cabinet

This project aims to determine the economic, health, demographic and social characteristics of women who are raising their children alone, after separation from their children's other parent. Further aims include assessing the impact of economic status on health, geographic differences in economic and health outcomes, and the determination of other factors that might be impacting on the economic wellbeing and health of sole mothers.

The qualitative component of this project involves the collection of data by means of focus group discussions in various urban and regional/rural locations across New South Wales. Informants for the focus groups are not participants in the ALSWH study, and are being recruited with assistance from local community service agencies.

Data from the Young cohort Surveys 1 and 2, and the Mid-aged cohort Surveys 1, 2 and 3 will be used in cross sectional and longitudinal analyses. The quantitative analyses will be



used to compare the economic, health, demographic and social characteristics of women who are unpartnered with children with: unpartnered women without children; partnered women with children; and partnered women without children. Longitudinal analyses will assess the economic and health changes that occur when women with children experience separation from their partners.

Ethics approval for the qualitative study was granted in September 2003. Seven focus groups have been conducted in Newcastle, Armidale, Marrickville, Goulburn, North Sydney, Batemans Bay, and Campbelltown. Remaining focus groups are planned for the Blue Mountains, Broken Hill and Newcastle and will be concluded by December 2003. Preliminary statistical analyses have been performed, and the quantitative analyses are continuing. A progress report was submitted to the Office of the Status of Women in September. A symposium is being planned for January 2004 at the Office of the Status of Women, in order to present a summary of the results to date.

**Project:** Longitudinal study of aspirations and weight change  
**ALSWH Investigators:** Dr Kylie Ball & A/Professor Justin Kenardy  
**Collaborative Investigator:** A/Professor David Crawford (School of Health Sciences, Deakin University)  
**Funding Source:** None

This study aims to investigate associations over time between Body Mass Index (BMI) and young women's aspirations for family, education and career, controlling for socioeconomic status. Cross-sectional analyses of BMI, aspirations and young women's life satisfaction as well as longitudinal analyses of associations between these variables have been completed. A paper has been completed and approved by the PSA (Publications, Substudies and Analyses) committee and is being submitted for publication.

**Project:** Predictors of weight maintenance in young women  
**ALSWH Investigator:** Dr Kylie Ball  
**Collaborative Investigator:** A/Professor David Crawford (School of Health Sciences, Deakin University)  
**Funding Source:** NHMRC Fellowship; Internal Deakin University Funds

This substudy follows-up a selected sample of women who have gained weight between surveys 1 and 2 of the Younger cohort, and women who have maintained their weight during this period, in order to investigate potential psychological and environmental predictors of weight gain/maintenance in this cohort. Surveys were mailed to 1200 young women early 2002, and completed surveys were received from a total of 869 women. An additional 74 late surveys have been received since the initial data were entered, so these required additional coding, data entry and cleaning, which have now been conducted.

Preliminary analyses for a paper investigating predictors of BMI and weight maintenance/gain have been conducted on the full data set and a paper is being drafted based on these results.

<b>Project:</b>	How well do health and community services help older people with neurodegenerative disorders and their family caregivers?
<b>ALSWH Investigators:</b>	Professor Annette Dobson & Professor Christina Lee
<b>Collaborative Investigators:</b>	Professor Andrew Wilson (School of Population Health, University of Queensland), Dr Leigh Tooth (School of Population Health, University of Queensland) & A/Professor Gerard Byrne (Psychiatry Department, University of Queensland)
<b>Funding Source:</b>	NHMRC Healthy Ageing Research Program

Neurodegenerative disorders such as Alzheimer's disease, dementia, residual effects of stroke, Parkinson's disease and multiple sclerosis, cause considerable stress to family caregivers. The caregivers are usually the spouses or children of the sufferers and the majority of them are women, many of whom, themselves, are elderly. The support and services available to help people with these disorders, and their carers have the potential to reduce stress and improve their quality of life.

The aim of this project is to examine health services and carer burden based on experience of participants in the Australian Longitudinal Study on Women's Health (ALSWH).

The first stages of the research plan were to:

- (a) create searchable databases from qualitative comments written on ALSWH survey forms,
- (b) identify the study sample,
- (c) develop and test a special survey to be sent to this sample.

To date the comments written by participants on the ALSWH survey forms, which were not previously in searchable databases, have been converted to searchable text files using voice recognition software, so part (a) is completed. We have developed a protocol for identifying eligible participants and expect to use it to complete part (b) before the end of 2003. The draft special survey questionnaire and the protocol for its use have undergone substantial development, testing and revision with focus groups conducted in Brisbane and Newcastle among community groups and patient-carer groups. The instruments are now ready for pilot testing at the beginning of 2004 – thus part (c) is almost completed.

<b>Project:</b>	The impact of health problems on casual workers
<b>ALSWH Investigator:</b>	Professor Christina Lee & Dr Penny Warner-Smith
<b>Collaborative Investigators:</b>	Dr Kristy Sanderson (Centre for Health Research, University of Queensland) & Professor Brian Oldenburg (School of Public Health, University of Queensland)
<b>Funding Source:</b>	QUT Postdoctoral Research Fellowship

Most casual workers are not entitled to sickness benefits. Adult casual workers may be particularly susceptible to personal disadvantage by health problems that are associated with productivity losses, such as depression and anxiety. This disadvantage could arise from staying at work when a short-term absence would be of benefit, or not seeking treatment due to difficulties in arranging time off due to the resultant loss of income. Cross-sectional multivariate logistic regression analyses will investigate: 1) the association of depression and anxiety with health-related work disability in comparison to other health conditions associated with productivity losses (e.g. asthma, hay fever, migraines) and healthy controls;

2) whether casual workers are less likely to seek health care than non-casual workers, and whether this is influenced by nature of health condition (e.g. mental health versus other health condition). Analyses will be stratified by hours worked per week (subject numbers permitting) and control for sociodemographics and life events. Potential mediating factors include other time commitments and satisfaction with working arrangements (enjoyment of work, work-related stress, desire to work more or fewer hours).

**Project:** The Australian Burden of Disease 2002 study  
**ALSWH Investigator:** Professor Christina Lee  
**Collaborative Investigator:** A/Professor Theo Vos (Centre for Burden and Disease and Cost-Effectiveness, University of Queensland)  
**Funding Source:** The Australian Government Department of Health and Ageing

The School of Population Health has started working on updating the Australian Burden of Disease study figures in collaboration with the Australian Institute of Health and Welfare. In the first round of figures we made use of data from the Women's Health study on the prevalence and severity of incontinence. As one of the few longitudinal studies in Australia - and importantly a study collecting data on a representative sample - it is a valuable resource for the sort of descriptive epidemiology (incidence, prevalence, severity distribution) that underlies burden of disease estimations. There are many more conditions of interest for which the Women's Health study could contribute to burden of disease estimates (e.g. infertility, self-reported conditions such as asthma, anaemia or depression and symptoms such as back pain, insomnia or headaches).

**Project:** Prevalence of back pain in Australian women and its relationship to incontinence and respiratory disease  
**ALSWH Investigators:** Professor Annette Dobson, Professor Wendy Brown, Professor Christina Lee & Ms Anne Russell  
**Collaborative Investigators:** Ms Michelle Smith (School of Health and Rehabilitation Sciences, University of Queensland), Dr Pauline Chiarelli (School of Health Sciences, University of Newcastle) & A/Professor Paul Hodges (School of Health and Rehabilitation Sciences, University of Queensland)  
**Funding Source:** NHMRC Senior Research Fellowship (Paul Hodges); NHMRC grant PhD scholarship (Michelle Smith)

The collaborating team has undertaken extensive physiological studies to investigate the interrelationship between the trunk, pelvic floor and respiratory muscles for control of the spine. These data, and data from other epidemiological studies, suggest that there may be a relationship between incontinence, respiratory disease and low back pain (LBP). We hope to use existing ALSWH data to determine the relationship between these three variables, including consideration of other important covariates such as BMI and physical activity. We also hope to evaluate those women who report low back pain at Survey 2, but not at Survey 1, to determine whether the development of low back pain is related to incontinence and respiratory problems. The questions we hope to answer are as follows:

- Are people with LBP more likely to have incontinence and respiratory disease?
- Are people with incontinence, respiratory disease or both more likely to have LBP?
- Do incontinence and respiratory disease predict those who develop LBP over a 3-year period?

**Project:** Relationship between Body Mass Index, Diet Quality, Physical activity and Health Service Use

**ALSWH Investigators:** Dr Penny Warner-Smith & Dr Anne Young

**Collaborative Investigator:** Clare Collins (Nutrition and Dietetics, University of Newcastle)

**Funding Source:** None

Does it matter whether you eat your vegetables? An exploration of correlates of diet quality (represented by both macronutrient and core food intake). Initially cross-sectionally descriptive statistics will be reported across categories of BMI (healthy weight, overweight and obese), including demographics, macronutrients (% energy from fat, protein and carbohydrate), core foods (fruit, vegetables, dairy, meat and other protein, “extras”, alcohol), physical activity (mets), general health, mental health, and health utilization (GP visits). Following this descriptive stage, associations between variables will be examined, in particular diet-related predictors of health service use.

**Project:** Use of data from the ALSWH to validate Australian Bureau of Statistics questions on time pressure

**ALSWH Investigator:** Dr Penny Warner-Smith

**Collaborative Investigator:** Dr Wendy Gunthorpe (Time Use Research Fellow, Office of the Status of Women)

**Funding Source:** Office of the Status of Women, Department of the Prime Minister and Cabinet

**Proposed study:** To compare responses to the Australian Longitudinal Study of Women's Health 1996 Survey's question on time pressure question: “How often do you feel rushed/pressured/too busy?” with responses to the Australian Bureau of Statistic's 1997 Time Use Survey's question on time pressure “How often do you feel rushed or pressed for time?” Although the questions are similar, the response categories are quite different. The extent of agreement between questions will be assessed.

**Rationale:** There is currently no standardised measure of time pressure available to researchers, although it appears that several large studies derive their measure from the earliest Canadian General Social Surveys (e.g., The Americans' Use of Time Survey (Robinson, 1991), Australian Time Use Survey (ABS, 1997) and the Australian Longitudinal Study of Women's Health (1996)). Slight differences exist in the question and/or the response options. For example, the Canadian General Social Survey (CGSS) asks “How often do you feel rushed? Would you say it is...” is very similar to that used in the ALSWH's survey “How often do you feel rushed/pressured/too busy?” and the ABS Time Use Survey's “How often do you feel rushed or pressed for time?” Response options used in the CGSS are almost identical to those used in the ALSWH (“every day”, “a few times a week”, “about once a week”, “about once a month” and “never”) with the former using an additional response category of “less than once a month”. Differences in response options used in the ABS Time Use Survey are less similar: “always”, “often”, “sometimes”, “seldom” and “never”.

While differences in the format of questions about time pressure (and the response options) are small, there is no evidence of the extent of agreement in responses generated by these questions. Of particular interest is how the ALSWH and ABS Time Use Survey questions compare. If the two questions generate similar responses amongst a similar demographic sample, there will be greater scope to compare findings from research studies that use time pressure data from either surveys.

**Project:** Health-Selective Migration among Mid-age Women  
**ALSWH Investigator:** Dr Anne Young  
**Collaborative Investigators:** A/Professor Ann Larson (Combined Universities Centre for Rural Health, Western Australia) & Dr Martin Bell (School of Geography, Planning and Architecture, University of Queensland)  
**Funding Source:** None

Over the past four years we have investigated the health selectivity of mobility in the first and second wave of the middle aged cohort. A revised paper is about to be submitted to *Social Science and Medicine* that shows clear associations between mobility and long term, chronic and serious health conditions across a range of distances. A motivation for this research was always to explore the role of migration in explaining spatial distributions of health status.

Specifically, middle-aged women in rural and remote areas show relatively little differences in health status or health behaviours when compared to urban women. This is somewhat surprising given the relative socio-economic disadvantage of rural and remote residents. To rural Australians, the reason for this finding is clear. They know many families and older persons who have left their town for health reasons. As compelling as migration is as an explanation of the lack of cross-sectional differences in health status, there has been a paucity of data in Australia, and internationally, to explore this issue. ALSWH more than makes up that deficit by combining both health and migration information over time with sufficient numbers of rural and remote residents.

We now propose to undertake a relatively simple analysis investigating the effects of migration on the cross-sectional differences in health status between regions. To do this we will compare health indicators at Survey 1 by area of residence in Survey 1, with health indicators at Survey 3 by area of residence at Survey 1. Our hypothesis is that there will be differences health status by region when we eliminate the effects of mobility between Surveys 1 and 3. We expect that this is true because of our current work that shows that those with chronic illnesses are more likely to move, after controlling for socio-economic and marital status.

We hope to conduct this analysis using Statistical Local Area as an indicator of area of residence in Survey 1 and Survey 3. We also plan to use the ARIA classification to explore the effects of using that classification of place of residence.

The analysis will have significant implications for Australian policy and is also relevant to an active current debate on the spatial differences in health appearing in international health journals.

### 1.2.2. Completed postgraduate theses (since September 2003)

<b>Project:</b>	Psychological factors associated with the frequency of angina and the role of mediating variables
<b>Degree:</b>	PhD
<b>Candidate:</b>	Mr Esben Strodl (School of Psychology, University of Queensland)
<b>Supervisor:</b>	A/Professor Justin Kenardy (ALSWH, University of Queensland) & Dr Con Aroney (Cardiovascular Research, University of Queensland)
<b>Funding Source</b>	Australian Postgraduate Award Scholarship & grant from the Ipswich Hospital Foundation for study 3 on heart rate variability
<b>Date of Submission:</b>	September 2003

Coronary heart disease (CHD) is the most burdensome disease in Australia. Coronary heart disease can manifest itself in the form of angina, myocardial infarction (MI), and sudden coronary death. There is a large body of research showing that psychological factors are associated with various manifestations of CHD. In particular, there is evidence that psychological factors may be associated with the presence of angina, and that some psychological variables may trigger transient ischemia and angina. Few studies have directly examined the hypothesis, but there appears to be some evidence that there may be moderating variables influencing the relationships between psychological factors and CHD, and in particular between psychological factors and angina. An examination of moderators is important because such knowledge will help clinicians to identify patients at risk of angina triggered by emotions or psychological factors. Psychological interventions will have a greater effect, and be more cost-efficient, if patients are identified who are most at risk of having their angina triggered by psychological variables.

Three possible moderators were identified from a literature review: gender, a history of MI, and a history of coronary artery bypass graft (CABG). Three studies were designed to test the hypothesis that these three variables would moderate the relationship between psychological factors and angina frequency.

Study One examines 204 patients hospitalised with unstable angina. These participants were assessed with a battery of questionnaires while in hospital, at three to four month follow-up, and again at 12-month follow-up. The questionnaires asked a range of questions about demographics and covariates, as well as angina frequency and a range of psychological factors that have previously been shown to be associated with CHD outcomes (depressive, anxious, and angry symptoms). The results showed that gender moderated the relationship between reactive anger and angina frequency, such that this relationship only existed in women, but not men, during the acute phase of the angina. There were weak and inconsistent results relating history of MI, and state anger, to angina frequency. The strongest moderator appeared to be having a recent history of a CABG. Anger held in (at Time 1 and Time 2) was associated with angina frequency at Time 2 among those who had experienced a recent CABG, but not those who had not. Similarly, anxiety experienced at Times 1 and 2 was associated with angina frequency at Time 3 among those who had experienced a CABG during the year, but not among those who had not.

Because the finding that CABG was a moderator of the relationship between psychological factors and angina frequency was so novel, it was deemed important to explore corroborating evidence that surgical interventions of the heart moderate psychological factors and coronary chest pain. This was achieved by analyzing data from the Older cohort of ALSWH. From

these data, 543 women reported having been diagnosed with heart disease by a doctor but reported no history of heart surgery, while 481 women reported CHD and heart surgery (e.g. bypass or angioplasty). The analysis showed that having a heart intervention did moderate the relationship between psychological factors and the presence of chest pain in older women with CHD. Time pressure in 1996 predicted the presence of chest pain three years later in those with CHD but without a history of heart intervention. In contrast, a diagnosis of depression during the three-year period predicted the presence of chest pain in those who reported having undergone a heart intervention. This moderating effect could not be attributed to any differences in non-psychosocial risk factors such as diabetes, hypertension, smoking and alcohol status, physical activity level, body mass index, hormone therapy use, or risk of malnutrition.

The third study explored three possible psychophysiological mediators to explain the relationship between psychological factors and angina frequency, as well as investigating whether the three moderators identified in Study One also moderated the relationship between the psychophysiological measures and angina frequency. The psychophysiological measures were heart rate reactivity, blood pressure reactivity and heart rate variability (HRV). A sample of 30 stable angina patients was used for the study. Although it was acknowledged that slightly different physiological processes may be involved in the experience of angina for stable and unstable angina patients, stable angina patients were selected as a near fit model to explore the possible psychophysiological mechanisms that may have been involved in the findings from Study One. Stable angina patients were selected rather than unstable angina patients, who were felt to have a higher risk of having an angina episode induced by the mental stress.

The study found that neither heart rate reactivity nor blood pressure reactivity appeared to be related to angina frequency in the small sample of participants. However, HRV was strongly correlated with angina frequency. Moreover, there was evidence of moderating effects of history of MI and CABG, but no evidence of gender moderating the relationships. In particular, low frequency (LF) HRV was associated with angina frequency in those who had not experienced an MI, but not in those who had. In addition, LF was associated with angina frequency in those who had not experienced a CABG, while high frequency (HF) HRV was negatively associated with angina frequency in those who had experienced a CABG. These findings imply the possibility of HRV mediating the relationships identified in Study One.

A literature review had demonstrated that unstable angina is primarily a function of a reduction in myocardial oxygen supply (due to vasoconstriction and thrombosis), while stable angina is primarily a function of an increase in myocardial oxygen demand (due to increase in heart rate/ tachycardia, ventricular wall stress, myocardial metabolism, inotropic state). On this basis a model was developed to hypothesise the association between psychological factors, HRV and angina frequency. This model predicts an association between psychological factors and HRV, between HRV and pain perception, between HRV and a reduction in myocardial oxygen supply (via vasoconstriction and thrombosis), as well as between HRV and an increase in myocardial oxygen demand (via increase in heart rate, inotropic state). The changes in oxygen supply and demand affect the frequency of ischemia. The frequency of ischemia interacts with pain perception in order to influence the frequency of angina experienced. The variables associated with this model are explained in terms of the three moderating variables examined in order to support the possible psychophysiological explanation of the findings from this thesis.

On the basis of the findings from this thesis, combined with the findings of the literature, it is concluded that there is an association between psychological factors and angina frequency, but that these relationships are complex, being affected by moderators such as gender, history of MI and history of CABG. Future research is needed to further clarify the associations hypothesised in the model, and to test the effect of moderators on the relationships identified in the model. Such elucidation of the moderators and mediators involved in linking psychological factors and angina will be of great importance in helping to target suitable interventions for treating angina episodes that are induced by psychological factors.

**Project:** Factors affecting weight change in mid-aged women  
**Degree:** PhD  
**Candidate:** Ms Lauren Williams (University of Newcastle)  
**Supervisors:** Professor Wendy Brown (ALSWH, University of Queensland) & Dr Anne Young (ALSWH, University of Newcastle)  
**Funding Source** University staff (part-time enrolment)  
**Date of Submission:** 10 October 2003

This thesis describes research exploring factors that affect weight change in a population-based sample of mid-aged Australian women. The evidence from longitudinal studies suggests that weight gain contributes to increased health risks over periods of one to four years, as well as contributing to adverse disease outcomes in the long term. This evidence was used to establish a threshold of 2.25 kilograms to define “weight gain” in this thesis.

Most of the existing cross-sectional and longitudinal studies of body fat distribution have demonstrated an increase in abdominal adiposity post-menopause, but have not found any change in the rate of weight gain during the transition from pre-menopause to post-menopause. This review provided the justification for the further examination of weight change in mid-aged Australian women, and led to the following research aims:

1. What is the prevalence of weight gain in the population of mid-aged Australian women and how does it affect their health?
2. Is weight change in mid-life associated with the menopause transition?
3. How do menopausal women explain their weight gain or ability to avoid weight gain?
4. Is weight gain at menopause associated with weight at earlier stages of the life cycle?
5. What factors in the environment of women who are experiencing menopause are associated with weight gain?
6. What behaviours are associated with weight gain in women who are experiencing menopause?

Two separate studies were conducted. Study One involved analysis of data from successive surveys of the Australian Longitudinal Study on Women’s Health (ALSWH). Study Two was the Weight Change at Menopause Study, which followed a group of mid-aged (45-50) WHA women through the menopause transition, and compared those who gained weight, with those who managed to avoid weight gain over a three-year period.

In Study One, data from the Mid-aged ALSWH cohort were used to prospectively explore patterns of weight change over a two-year period in a cohort of 14,100 women. One third of the cohort gained a clinically significant amount of weight over this period. The relationship between weight change and functional health status was assessed using linear regression, which showed that physical well-being declined with increasing weight gain. There was no



clear relationship between mental well-being and weight change. Cross-sectional analysis using a linear regression model showed that body mass index tended to be higher in the late peri-menopause compared with other categories of menopause status. (Women with surgical menopause were not included in analyses). Prospective investigation of weight change and menopause transition showed that women who were peri-menopausal for two years gained slightly more weight (1.3 kg) than those who remained pre-menopausal (0.8 kg) over a two year period. .

The first stage of the Weight Change at Menopause Study involved a series of focus group discussions with menopausal women, aimed at identifying factors that the women believed influenced their body weight. Literature review and focus group discussions were used to assist development of the nested cohort survey, which was used in the second stage of the Weight Change at Menopause Study. The 16-page survey was mailed to 1161 Mid-aged ALSWH women who had experienced a change in menopausal status.

The response rate for the nested cohort survey was 77%, providing data from 875 women. The 326 women who gained weight were compared with the 483 who avoided weight gain, on measures of dietary intake, physical activity, and other behavioural and environmental factors with the potential to affect weight. The results of this survey indicate that, while there was no significant difference between the two groups on dietary intake, there were several key differences in lifestyle and behavioural factors. One difference between the two groups was explained by menopause, in that the weight-gainers reported a higher frequency of hot flushes and night sweats than the non-gainers. The weight-gainers were more likely to attribute their weight gain to factors beyond their control, while non-gainers reported taking steps to control their weight.

In brief, the key findings were:

1. Prevalence: This study was the first to prospectively monitor weight change and change in functional health status in a large population based group of mid-aged Australian women. Only half the cohort maintained weight within 2.25 kg over a two-year period, while one third gained more than this amount.
2. Association with menopause: The relationship between menopause transition and weight gain was marginally statistically significant.
3. Women's perceptions: Mid-aged women identified several factors that they believed caused weight gain, some of which were environmental, some behavioural and some specifically related to menopause.
4. Life Cycle: For the women who gained more than 2.25 kg in the first three years of the menopause transition, this gain was not related to recalled weight at age 18, age 25, or at the commencement of menopause. Weight-gainers gained 6.7 kg in three years, which is equivalent to a cumulative energy excess of only 180 kJ/day (43 kcal/day).
5. Environmental factors: The weight-gainers were more likely than the non-gainers to be in full-time employment, to view their career as their main role in life, and to report that being under time pressure meant that they had increased energy intake in comparison with three years previously.
6. Behavioural factors: The weight-gainers were more likely to have quit smoking, and reported more dieting behaviour than the non-gainers. They reported less vigorous physical activity.

In investigating both the prevalence and factors associated with weight gain in mid-aged women, these research findings have the potential to inform development of population-based strategies to prevent weight gain at this life stage.

**Project:** Treatments for Menstrual Symptoms: An Epidemiological Investigation  
**PhD Candidate:** Ms Melissa Graham (School of Health & Human Sciences, LaTrobe University)  
**Supervisor:** Dr Erica James (La Trobe University), A/Professor Helen Keleher (Deakin University) & Professor Julie Byles (ALSWH & University of Newcastle)  
**Funding Source:** La Trobe University Bendigo Research Committee  
**Date of Submission:** 11 November 2003

Australian statistics indicate that hysterectomy is a common procedure amongst middle-aged Australian women. The appropriateness of hysterectomy to treat non-malignant conditions has been debated in recent years. A variety of procedures, less dramatic than hysterectomy, is available to treat menstrual problems. Factors such as socio-economic status, social support, geographical location, the number of menstrual problems experienced, the availability of information about menstrual problems and treatment options, and satisfaction with the outcomes of treatments may influence a woman's decision to elect to have a hysterectomy.

To investigate these issues, an epidemiological investigation of women with menstrual problems was undertaken. The aim was to describe the characteristics of middle-aged Australian women with menstrual problems and to identify factors that predict hysterectomy as a treatment for the relief of menstrual symptoms. This study was conducted as a sub-study of the Australian Longitudinal Study on Women's Health and two separate studies were conducted, a cross-sectional study and a prospective study.

The cross-sectional study was developed to describe the characteristics of Australian women who choose hysterectomy as a treatment for menstrual symptoms and to identify relationships and pathways from menstrual problems to hysterectomy ( $n = 201$ ). The study showed that there is not enough information available to women about treatment options for the relief of menstrual problems, excluding hysterectomy. Satisfaction with hysterectomy as a treatment for menstrual problems was reported by the majority of women, in spite of these women also reporting the onset of new problems. Few women had tried a range of treatment options for the relief of their menstrual problems prior to their hysterectomy.

The prospective study was developed to identify factors which predict the number and type of treatments tried for the relief of menstrual problems ( $n = 486$ ). Three main factors were identified as predictors of the number of treatments tried: better access to health care professionals, experiencing more limitations in daily activities, and negative emotions to a greater degree as a result of menstrual problems. The prospective study also allowed for the examination of changes in women's experiences over time. This study demonstrated that the number of menstrual problems experienced by middle-aged women decreases over time.

A comparative analysis was also undertaken of those women who had a hysterectomy (cross-sectional study) and those who did not (prospective study baseline data). The sample consisted of 687 women who participated in either the cross-sectional or prospective study. Regression analysis was used to determine the factors that predict women's choice of treatments for the relief of menstrual symptoms. The findings indicate that more menstrual symptoms or conditions experienced, more information that is perceived to be available about menstrual problems, and greater influence on the treatment decision-making process, all increase the likelihood of hysterectomy. Dissatisfaction with treatments tried for the relief of

menstrual problems also increases the likelihood of hysterectomy and progression to hysterectomy puts many women at risk of also having oophorectomy and thus, surgical menopause.

### 1.2.3. Student projects in progress

<b>Project:</b>	Psychosocial risk factors for single pregnancy, childbirth, and pregnancy risk-taking in young women: Evidence from Women's Health Australia
<b>PhD Candidate:</b>	Ms Lauren Miller-Lewis (School of Psychology, Flinders University)
<b>Supervisors:</b>	Dr Tracey Wade (School of Psychology, Flinders University) & Professor Christina Lee (ALSWH & University of Queensland)
<b>Funding Source:</b>	Australian Postgraduate Award, Flinders University of South Australia, & Flinders University Research Budget
<b>Expected Completion:</b>	July 2004

**Aims, Methods and Outcomes:** This research aims to identify psychosocial risk factors for single pregnancy, childbirth and pregnancy risk taking in late-adolescent young women. Two stages to this project will be combined in order to achieve this aim.

**Study 1:** This study investigated late-adolescent psychosocial predictors of early pregnancy and childbirth in single young Australian women. Existing ALSWH data from Surveys 1 and 2 of the Younger cohort (conducted in 1996 and 2000) were analysed. The relationship between reproductive behaviour and socio-demographic, education/competence, psychosocial well-being, and aspiration factors was assessed in a sample of 2635 single young women aged 18-20 in 1996, selected from the Younger cohort. Longitudinally, lower investment in education, low-status paid work, experiencing unemployment, poorer psychosocial well-being, risky behaviour and stress, and high family aspirations combined with low vocational aspirations, were risk factors for early single pregnancy and childbirth. Several mediational relationships also existed between these predictor variables. A second analysis of this data was conducted using a sample of 1647 young women from the Younger cohort who exhibited characteristics of late adolescence. This analysis yielded similar results to that of the larger sample of young women. It was concluded that psychosocial factors play an important role in understanding early pregnancy and childbirth in single young Australian women, and that the findings provide some support for investigating early pregnancy and childbirth from an Eriksonian developmental perspective.

**Study 2:** This study aimed to identify psychosocial risk factors of late-adolescent pregnancy risk-taking by conducting a substudy of ALSWH. A questionnaire measuring pregnancy risk-taking (defined as inconsistent and non-optimal use of contraception) was designed and pilot tested with the ALSWH Younger Pilot cohort. Following this, 120 of the youngest women from the ALSWH Younger cohort were randomly selected, and were sent the questionnaire. A total of 90 (75%) were returned. Pre-existing Survey 1 and Survey 2 information on their psychosocial status was used to identify possible risk and protective factors for pregnancy risk-taking in these young women. The results indicated that young women with poorer psychosocial well-being at Survey 2 were significantly more likely to exhibit pregnancy risk-taking in the previous six months. As psychosocial well-being was the only significant predictor of pregnancy risk-taking found in this study, it was concluded that psychosocial

well-being plays an important role in understanding the risk of early pregnancy in young Australian women.

The findings from these studies will be used to inform future Australian research and to provide recommendations for adolescent pregnancy prevention efforts.

**Project:** Depressed mood: Psychometric and Health-Related Issues  
**PhD Candidate:** Ms Nadine Smith (School of Population Health, University of Queensland)  
**Supervisors:** Professor Annette Dobson (ALSWH & University of Queensland) & Dr Nancy Pachana (ALSWH & University of Queensland)  
**Funding Source:** NHMRC Public Health Postgraduate Research Scholarship and a top-up from the School of Population Health, The University of Queensland  
**Expected Completion:** January 2005

**Aim:** The main aim of this research is to explore the complex relationships between depressed mood (and anxiety), demographics, self-reported health, health behaviours, positive psychological characteristics, life events and social support. A further aim is to explore psychometric issues related to the measurement and analysis of depressed mood, life events, positive psychological characteristics and social support.

***Key areas to be addressed in this thesis:***

1. Assess psychometric properties of measures of depressed mood and anxiety in the Australian Longitudinal Study on Women's Health and determine their cross-sectional associations with demographics, health behaviours and self-reported health.

There is moderate correlation between the different indicators of poor mental health, depression and anxiety for all cohorts. Cross sectional associations in Survey 2 data between poor mental health, depression and anxiety for all cohorts indicate women with poor mental health, depression or anxiety tend to report more difficulty managing on their income, more frequent GP visits, less physical activity, and more physical symptoms.

2. Examine regression to the mean and floor and ceiling effects using change in mental health and change in subscales of the Duke Social Support Index as illustrative examples (Older cohort only).

Using continuous or categorical baseline variables to adjust for regression to the mean did not change results substantially. Change scores for the "Interaction" subscale were approximately normal and were analysed using standard multiple regression procedures. There were substantial distributional problems when assessing change in the "Satisfaction" subscale which had to be categorised and thus transition categories rather than change scores were analysed.

3. Predict change in mental health associated with stability or change in socio-demographics, health behaviours and self-rated health (Mid-age cohort only so far).

Women who were partnered at Survey 1 and not partnered at Survey 2 had a greater decline in their mental health than women who remained partnered or remained not partnered at both Surveys, or went from not being partnered to being partnered. Women who were inactive at both Surveys had greater decline in mental health than women who were active at both Surveys, or who went from active to inactive or from inactive to active. Women who at

Survey 2 had more physical symptoms, more frequent GP visits, greater difficulty managing on their income, or were current smokers, had the greatest decline in mental health.

4. Some problems with life event lists and health outcomes: the impact of telescoping and depressed mood on reporting of life events.

The phenomenon of telescoping occurs when the time of past events is remembered incorrectly. Participants tend to estimate the time of remote events too recently. Work on determining the effects of telescoping and depression on responses to life event items found that the reported incidence of all life events in the 12 months before Survey 1 was higher than the reported incidence in the 12 months before Survey 2 for the Mid-age cohort. While some of the differences in incidence may relate to life stage (e.g., going through menopause), for most events differences in 12-month incidence would not have been expected. Women who were depressed (i.e., had low mental health scores) reported a higher incidence of almost all life events, indicating that mood may have had an impact on reported life events.

5. Assess the underlying dimensionality and structure of the Revised Life Orientation Test (dispositional optimism; LOT-R): comparisons between Younger, Mid-age and older women.

Factor analysis of the LOT-R indicated a two-factor structure in the Older cohort and a one factor structure for the Mid-age and Younger cohorts. Possible reasons for differences between cohorts were investigated. There was no substantial difference in the response distributions between cohorts. Differences between cohorts could not be attributed to depression and may be partly attributed to qualifications. Work is still progressing but the final conclusion will probably be that the LOT-R has one underlying factor for the Older cohort, based on the predictive qualities of the “optimism” and “pessimism” factors tending to be exact opposites, suggesting that they are in reality closely (but negatively) related.

<b>Project:</b>	An exploration of the strategies used by young Australian women coping with depression
<b>PhD Candidate:</b>	Ms Cate France (Research Centre for Gender and Health, University of Newcastle)
<b>Supervisors:</b>	Professor Christina Lee (ALSWH & University of Queensland) & Dr Sue Outram (ALSWH & University of Newcastle)
<b>Funding Source:</b>	APA scholarship
<b>Expected Completion:</b>	September 2005

This thesis focuses on

- (1) correlates and predictors of depression among the Younger cohort, addressed through analysis of main survey data
- (2) coping strategies and characteristics of by Younger women who have successfully moved from “depressed” to “not depressed” between Surveys 2 and 3

The aim of the project is to identify strategies that women use in order to pass successfully through periods of low mental health, in order to make recommendations for treatment or self-help. The first part of the project has been completed, with regression analyses used to examine correlated of “depression,” defined in this instance as a score of 10 or greater on the 10-item CES-D. The second part is being addressed through a substudy.

The substudy survey has been developed, then revised on the basis of a focus group of five younger Australian women from rural and urban areas. The purpose of the focus group was to determine the ease of administration of the survey, including the ways in which questions were interpreted. Staff at ALSWH were also asked for their opinions about the presentation and content of this survey.

The revised survey was then piloted with 27 members of the Younger Pilot cohort. All had met the criterion for “depression” (CES-D >10) at Younger Pilot Survey 2 (1999); 13 were no longer “depressed” at Younger Pilot Survey 3 (2002) and 14 were again “depressed” at Younger Pilot Survey 2. The response rate of 85% (n=23), without telephone reminders, is encouraging. On the basis of the pilot responses and further qualitative comments, the survey has been revised once more, and has been approved by the University of Newcastle Human Research Ethics committee for administration to 700 women from the Younger Main cohort. Because we expect a lower response rate from women who may be depressed, we will select 400 who were “depressed” at both Survey 2 and Survey 3, and 300 who were “depressed” at Survey 2 but not at Survey 3. The survey will be administered in 2004, as soon as Young Survey 3 main cohort data are available for selection.

**Project:** Young women, multiple roles and mental health: Epidemiological and lay perspectives.  
**PhD Candidate:** Ms Beverly Lloyd (School of Public Health, University of Sydney)  
**Supervisors:** A/Professor Susan Quine (School of Public Health, University of Sydney) & Professor Christina Lee (ALSWH & University of Queensland)  
**Funding Source:** NHMRC Public Health Scholarship  
**Expected Completion:** December 2005

Using epidemiological and qualitative methods, the study is investigating the impact of multiple social roles on the mental health of young Australian women, with particular emphasis on motherhood and employment.

***It aims to:***

1. Describe the association between social roles and mental health longitudinally;
2. Identify the model/s of role occupancy that best explain the association between social roles and mental health among young Australian women;
3. Identify the psychological, social and structural factors that young women with maternal and employment roles consider significant to undertaking their social roles.

A literature review of epidemiological studies was completed in 2002. The epidemiological analysis will proceed in 2004. In 2002, interviews with young working women with children were undertaken. In 2003 the interviews have been used to explore the narratives available to young Australian women as they undertake work and motherhood, and to identify the structural issues that help and hinder them to undertake their roles. It is anticipated that this qualitative part of the study will be completed in early 2004. The candidate is drafting the relevant chapters of her thesis and is also writing a research article for peer review.

**Project:** Are cardiac conditions in older women managed appropriately?  
**PhD Candidate:** Ms Lindy Humphreyes -Reid  
**Supervisors:** Professor Annette Dobson (ALSWH & University of Queensland) & Professor Andrew Wilson (School of Population Health, University of Queensland)  
**Funding Source:** NHMRC  
**Expected Completion:** 2006

**Purpose of the study:** The purpose of this substudy is to investigate the appropriateness of treatment of older women with Acute Coronary Syndrome (ACS) and chronic heart failure (CHF). The project is based primarily on data collected from the Older cohort i.e. women aged 76-81. Using a self-report instrument, this study aims to determine the extent to which management of women with cardiac conditions departs from the best practice guidelines as set out by Heart Foundation Australia and the NHMRC. Hence the project will identify opportunities for improvement of health services in terms of responsiveness and appropriateness of treatment.

**Background and significance of the study:** Review of the relevant research indicates that there is a significant disparity between males and females with cardiovascular disease in diagnosis, management and clinical outcomes. While this discrepancy is due, in part, to the way in which women perceive and present with cardiac anomalies, there is also evidence that women are not consistently managed according to best practice guidelines.

2003 – Stage 1

- **Development and testing of survey**

As the first step in developing and testing a survey to be sent out in 2004, a self-report questionnaire has been drafted and sent to approximately 60 women who have been inpatients at The Prince Charles Hospital (PCH) with a clinically established diagnosis of either ACS or CHF. As well as gathering data about clinical presentations and management (including investigations), the survey contains questions about prescribed medications, use of health services, satisfaction with health services, risk factors and quality of life. Participants were also asked to comment on the survey and prompts were provided. Each participant was also given the option of being involved in a focus group or phone interview.

- **Focus Groups at PCH**

The first focus group was conducted in November with 10 cardiac patients. A second focus group is scheduled for the end of 2003. The initial focus group was very useful in terms of clarifying a number of issues in relation to approaching lay people in this age group. Information gathered at this first focus group will inform the approach to be taken at the second focus group.

- **Phone interviews / home visits**

A large number of participants have exercised the option of either a phone interview or home visit. These are scheduled for early to mid December 2003, or early 2004. The purpose of these visits and interviews is to inform the development of the instrument to be used in 2004 with the ALSWH cohort.

***Plans for 2004 and beyond:***

1. The process described above will be repeated with patients recruited through the Inala General Practice Clinic
2. A small pilot study of 30-50 women with self-reported heart disease, randomly selected from the ALSWH Older cohort, will be conducted using the instrument developed in the earlier stages of the study. The information collected will be used to refine further the instrument and survey procedures.
3. A main survey of 2,400 women from the ALSWH Older cohort will be conducted. This survey will collect detailed information about cardiovascular conditions and experiences of the health care system, including access, specific treatments, investigations, quality of life, risk factors, socio-economic status and impact of disease. Standard follow-up procedures will be implemented including reminder cards and phone calls.
4. Data from all three main surveys of the ALSWH Older cohort (1996, 1999 & 2002) will be linked and cross-referenced with the National Death Index to determine each woman's cardiovascular condition/s and health service use. This information will be further linked to records from Medicare, DVA, and PBS, where consent has been given. For non-consenters, aggregate data from Medicare, DVA, PBS and RPBS will be obtained.



## 2. CONDUCT OF SURVEYS

### 2.1. YOUNGER SURVEY 3 (FINAL STAGES)

Survey 3 of the Younger cohort was mailed initially in March 2003. Copies of survey materials were included in Report 20 (June 2003), and a progress report appeared in Report 21 (September 2003). Table 2.1 summarizes the timetable for Survey 3 of the Younger Cohort, and Table 2.2 the response rates at 24 November 2003.

**Table 1.1. Timetable for Younger Survey 3 (at 24 November 2003)**

Date	Mailout	Items	Number
11 March 2003	Mailout 1	Package mailed including survey, reply-paid envelope, letter of invitation and change of details card	12,796 mailed
7 April 2003	Mailout 2	Thank you/reminder leaflet mailed to all in Mailout 1, except recent withdrawals	12, 285 mailed
12 May 2002	Mailout 3	Reminder leaflet to all non-responders	6,008 mailed
June and July 2003	Extra mailouts	Packages mailed (as Mailout 1) to: <ul style="list-style-type: none"> <li>• those previously not sent surveys because of no current contact details, who have since given new contact details;</li> <li>• those who elected to have telephone interviews;</li> <li>• those who rang to say they received a reminder but did not receive the first survey;</li> <li>• those who have been tracked following return-to-sender</li> <li>• those who had a phone reminder and had lost the survey</li> </ul>	3,629 extra surveys mailed
June – October 2003	Phone reminder	Reminder phone calls to all non-respondents	13,078 phone calls made to 4,496 participants
October – November 2003	Phone reminder 2 <sup>nd</sup> round	Reminder phone calls to all who were sent extra surveys but had not returned them	1,109 phone calls made to 790 participants

**Table 2.2. Response Rates for Younger Survey 3 (at 24 November 2003)**

	N	%
Completed Surveys	8,680	66.4%
Deceased	3	0.0%
Withdrawn	257	2.0%
Overseas – will not do	290	2.2%
Not this time	412	3.1%
Other, have not returned survey	3,439	26.3%
<b>TOTAL</b>	<b>13,081</b>	<b>100.0%</b>

## 2.2. MID-AGE SURVEY 4 (PILOT)

The development of the pilot version of Survey 4 of the Mid-age Cohort is described in detail in Report 21 (September 2003). The pilot survey, a copy of which appears in Appendix 2, was mailed to the Mid-age Pilot cohort in September 2003. Of a total of 368 surveys mailed, 275 (75%) had been received by 10<sup>th</sup> November, although surveys have continued to be received after that date. Data from these 275 were collated formally in order to assess the pilot survey, although later-arriving surveys were also scanned to see whether further important points were raised. Data were collated and frequency distributions were checked for high rates of missing data, lack of variance, or the potential need to re-define categories. Open-ended comments were transcribed and assessed. Examination of data indicated that response quality was generally good and participants had few and minor difficulties in completing the surveys. On the basis of this process, a number of minor changes were made to the pilot survey. Table 2.3 summarises these changes. The revised survey has been submitted to the Human Research Ethics Committee of the University of Newcastle as a variation on the existing ethical clearance. A call for tenders for the process of printing, mailing and scanning the main Survey 4 of the Mid-age Cohort was put out in December 2003, and we expect to select a sub-contractor and begin work on layout and production in January 2004.

**Table 2.3. Modifications to Mid-Age Survey 4 on the basis of 2003 Pilot**

Mid 4 Pilot item	Change made for Main Survey	Reasons for Change
19 health insurance	Split in to two separate questions, one for hospital insurance and one for ancillary Use wording identical to Mid 2 Q18-19	High levels of missing data Increased clarity
28 children's birthdays	Change "not applicable" to "never given birth"	Clarify response options for women who have not had children
32 major diagnoses	Change "v: Other major illness (please specify on page 13)" to "v: Other major illness or disability (please specify on line)" and add a line for write-in response	Reduce repetition (replaces question 44 on page 13)

Mid 4 Pilot item	Change made for Main Survey	Reasons for Change
35 surgical procedures	Delete option “o: Other surgery (please write on line)”	Pilot responses indicate there is no major surgical procedure that was specified by more than 4 pilot participants. Simplify data entry and coding.
44 major conditions	Delete	Pilot data indicate considerable repetition between this and Item 32 - simplification
58 weight change	Change wording to In the LAST THREE YEARS, have you: a Lost 5 kg or more on purpose? b Lost 5 kg or more for any other reason? c Gained 5 kg or more?  Response options Yes/No for each sub-item	May reduce high rates of missing data. Several women commented that existing options do not cover all alternatives.
65 sitting	Change to be identical to Mid 3 item 70	Longitudinal consistency Simplicity Matches current international standard items
79 retirement status	Change order of items to read: <ul style="list-style-type: none"> <li>• I am not retired at all (currently working or planning to return to work)</li> <li>• I am partially retired (have cut down on hours of work or changed type of job as a way of retiring gradually)</li> <li>• I am completely retired from paid work (within the last 20 years)</li> <li>• I gave up paid work over 20 years ago (and do not intend to return to work)</li> <li>• I have never been in paid work</li> </ul> Rearrange survey so that the following items ( with skips) are all on the same page	More common items appear first; items appear in logical order
83 factors influencing retirement	Add “don’t know” option	Many women reported finding items difficult, had never thought about them. Would rather give them this option than have them guess or not reply at all

### **3. METHODOLOGICAL ISSUES: SOURCES AND DEVELOPMENT OF INSTRUMENTS, RELIABILITY AND VALIDITY OF MEASURES**

#### **3.1. LIFE ORIENTATION TEST – REVISED: A MEASURE OF OPTIMISM**

People differ greatly in their approach to the world; some have a favourable outlook towards all aspects of their lives, while others do not. The extent to which people maintain an optimistic outlook to life has been found to impact physical and mental health. Scheier and Carver (1985) argued that optimism was a stable personality characteristic, and that an individual's level of optimism will influence his or her attitudes and behaviour, and therefore have consequences for both physical and emotional health. It is hypothesised that an optimistic person will adopt attitudes and behaviours associated with good health, even in objectively difficult circumstances.

Some researchers have argued that optimism and pessimism are opposite ends of a continuum, while others have argued that they are related but distinct constructs.

##### **3.1.1. The Revised Life Orientation Test (LOT-R)**

Scheier and Carver developed the Life Orientation Test (LOT), comprising four positive items, four negative items and four filler items, in 1985. The original LOT is still used extensively in research. However, the LOT was re-evaluated because the authors were concerned with the conceptual properties of the scale. Two positive items ('I'm a believer in the idea that "every cloud has a silver lining"' and 'I always look on the bright side of things'), originally included in the LOT, did not explicitly refer to the expectation of positive outcomes and were excluded from the Revised Life Orientation Test (LOT-R; Scheier, Carver & Bridges, 1994). The authors wanted to have equal numbers of positive and negative items in the LOT-R. Thus, a new positive item 'Overall, I expect more good things to happen to me than bad', designed to refer explicitly to the expectation of positive outcomes, was added, and the negative item 'Things never work out the way I want them to' was excluded. Thus, the LOT-R comprised 3 positive, 3 negative and 4 filler items. It is common for researchers not to include the 4 filler items when using the LOT-R, and the length of the ALSWH survey made this an appropriate strategy. Thus, the ALSWH surveys used only the six 'active' LOT-R items, with scoring on a 5-point Likert scale from 0 to 4 (see Table 3.1).

**Table 3.1. LOT-R items used in ALSWH surveys<sup>1</sup>, item order is indicated with alphabetic notation**

Thinking about your current approach to life, please indicate how much you think each statement describes you (Mark one on each line)

*Positive items*

- A In uncertain times, I usually expect the best
- C I'm always optimistic about my future
- F Overall, I expect more good things to happen to me than bad

*Negative items*

- B If something can go wrong for me, it will
- D I hardly ever expect things to go my way
- E I rarely count on good things happening to me

<sup>1</sup> First included in the second survey of the Younger and Older cohorts and the third survey of the Mid-age cohort

<i>Response</i>	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<i>Score for positive items</i>	0	1	2	3	4
<b>Score for negative items (reverse coded)</b>	4	3	2	1	0

### 3.1.2. Derived Variables

#### *Item Responses*

The distributions of responses to the 6 items from the LOT-R are shown in Table 3.2. Responses were distributed across the full scale, with a slight skew left for positive items and slight skew right for negative items.

Mean item scores were similar for the three age cohorts (Younger: 2.3 to 2.8; Mid-age and Older: 2.4 to 2.9). The percentage of missing item response was low for the Younger and Mid-age cohorts (1% or less and 2.1% or less respectively) but higher among the Older cohort (3.0 to 7.6%).

**Table 3.2. Distribution (%), mean (SD) and percent missing of responses to the 6 LOT-R items, among women completing the full survey**

Indicate how much statement describes you	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)	Percent Missing
<b>Younger Cohort <sup>1</sup></b>							
<i>Positive items</i>							
a. In uncertain times, I usually expect the best	2.8	17.6	37.2	35.8	6.7	2.3 (0.9)	0.8
c. I'm always optimistic about my future	1.0	12.2	26.7	48.5	11.6	2.6 (0.9)	0.9
f. Overall, I expect more good things to happen to me than bad	1.5	8.0	20.8	51.0	18.7	2.8 (0.9)	0.7
<i>Negative items <sup>2</sup></i>							
b. If something can go wrong for me, it will	9.2	37.6	28.4	21.2	3.6	2.3 (1.0)	0.7
d. I hardly ever expect things to go my way	11.8	44.8	25.8	15.7	1.9	2.5 (1.0)	0.9
e. I rarely count on good things happening to me	14.2	41.8	23.9	17.6	2.6	2.5 (1.0)	1.0
<b>Mid-age Cohort <sup>1</sup></b>							
<i>Positive items</i>							
a. In uncertain times, I usually expect the best	1.5	15.8	30.5	45.6	6.6	2.4 (0.9)	2.1
c. I'm always optimistic about my future	1.0	9.2	22.3	57.0	10.5	2.7 (0.8)	1.8
f. Overall, I expect more good things to happen to me than bad	0.9	5.2	14.1	62.9	16.9	2.9 (0.8)	1.2
<i>Negative items <sup>2</sup></i>							
b. If something can go wrong for me, it will	11.4	49.2	20.9	16.6	1.9	2.5 (1.0)	1.8
d. I hardly ever expect things to go my way	11.0	53.0	21.4	13.3	1.3	2.6 (0.9)	1.6
e. I rarely count on good things happening to me	13.1	50.3	19.4	15.6	1.7	2.6 (1.0)	1.6
<b>Older Cohort <sup>1</sup></b>							
<i>Positive items</i>							
a. In uncertain times, I usually expect the best	2.4	12.4	29.2	49.4	6.6	2.5 (0.9)	7.6
c. I'm always optimistic about my future	1.1	6.4	21.4	59.8	11.2	2.7 (0.8)	5.9

Indicate how much statement describes you	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (SD)	Percent Missing
f. Overall, I expect more good things to happen to me than bad	1.2	3.2	14.2	66.8	14.6	2.9 (0.7)	3.0
<i>Negative items</i> <sup>2</sup>							
b. If something can go wrong for me, it will	13.6	43.8	24.1	16.5	2.1	2.5 (1.0)	7.4
d. I hardly ever expect things to go my way	14.3	45.8	25.0	13.2	1.8	2.6 (0.9)	7.3
e. I rarely count on good things happening to me	13.5	39.5	27.0	17.7	2.3	2.4 (1.0)	6.5

<sup>1</sup> Younger Cohort: n=9 500; Mid-age Cohort: n= 11 196; Older Cohort: n=9 501

<sup>2</sup> Mean and SD and calculated after reverse scoring negative items

### 3.1.3. Factor Analysis

Factor analysis using principal components estimation was performed on responses from women completing all 6 items (Younger: 9 338; Mid-age: 10 751; Older: 8 357). The number of factors supported by the data was tested by the eigenvalues-greater-than-one rule, parallel analysis, and Velicer's MAP test (O'Connor 2000). Parallel analysis is based on simulations and recommends retaining the number of factors with observed eigenvalues greater than the corresponding 95<sup>th</sup> percentile of simulated values. The MAP test recommends the number of factors associated with the minimum average squared correlation.

Results of factor analyses were similar for the Younger and Mid-age cohorts; only one factor had an eigenvalue greater than one and that factor explained approximately 56% of the variance (see Table 3.3). The parallel analysis and MAP tests also suggested one factor.

For the Older cohort, both the observed and simulated eigenvalues suggested two factors; these factors explained approximately 44% and 20% of the variance respectively (Table 3.3). However, the MAP test suggested one factor and only one item loading from the second factor exceeded 0.5. Thus, it was decided that a one-factor solution was also appropriate for the Older cohort.

Furthermore, for the Older cohort the correlation between the sum of the negative items and the sum of the positive items was 0.34, suggesting they are not totally distinct constructs. For the Older cohort, the correlation between mental health (and social support) and optimism, and mental health (and social support) and pessimism were of approximately the same magnitude but opposite directions. This further suggests that optimism and pessimism are polar opposites, not different constructs.

Loadings (un-rotated) on the first factor from the principal components solution for the Younger and Mid-age cohorts were moderate for all items (Younger:>0.5; Mid-age:>0.6; Table 3.4). For the Older cohort loadings on the first factor were moderate for all items (>0.5) and were greater than the loadings on the second factor (except for item "a" which had a slightly higher loading on second factor) (see Table 3.4).

Communalities for the one factor solution were adequate (greater than 0.5), except for items “a” (0.3) and “c” (0.45) in the Younger cohort and item “a” (0.4) in the Mid-age cohort. Only two of the six items (‘d’ and ‘e’) were adequate for the Older cohort.

**Table 3.3. Results of factor analysis of 6 LOT-R items**

Factor	Eigenvalue	Difference	Proportion	Simulated Eigenvalue <sup>1</sup>		Average <sup>1</sup> Squared Correlation
				Mean	95 <sup>th</sup> Percentile	
<b>Younger cohort <sup>3</sup></b>						
1	<b>3.332</b>	2.422	0.555	1.035	<b>1.047</b>	<b>0.062</b>
2	0.910	0.331	0.152	1.018	1.029	0.115
3	0.578	0.085	0.096	1.006	1.014	0.241
4	0.493	0.075	0.082	0.993	1.000	0.549
5	0.418	0.149	0.070	0.981	0.990	1.000
6	0.269		0.045	0.966	0.977	
<b>Mid-age Cohort <sup>3</sup></b>						
1	<b>3.384</b>	2.472	0.564	1.030	<b>1.042</b>	<b>0.073</b>
2	0.912	0.368	0.152	1.016	1.024	0.105
3	0.544	0.081	0.091	1.004	1.010	0.248
4	0.463	0.052	0.077	0.996	1.002	0.557
5	0.411	0.126	0.069	0.984	0.991	1.000
6	0.285		0.048	0.969	0.980	
<b>Older Cohort <sup>3</sup></b>						
1	<b>2.629</b>	1.416	0.438	1.037	<b>1.050</b>	<b>0.079</b>
2	<b>1.213</b>	0.549	0.202	1.019	<b>1.030</b>	0.102
3	0.664	0.089	0.111	1.006	1.016	0.238
4	0.575	0.022	0.096	0.994	1.000	0.559
5	0.553	0.186	0.092	0.980	0.989	1.000
6	0.367		0.061	0.963	0.974	

<sup>1</sup> Parallel Analysis

<sup>2</sup> Velicer's MAP test

<sup>3</sup> Younger Cohort: n=9 368; Mid-age Cohort: n= 10 751; Older Cohort: n=8 357



**Table 3.4. Factor loadings and communality estimates from un-rotated factor analyses of 6 LOT-R items.**

Item	Younger <sup>3</sup>	Mid-age <sup>3</sup>	Older <sup>3</sup>	
	Factor 1	Factor 1	Factor 1	Factor 2
<i>Factor loadings</i>				
A	0.544	0.646	0.527	0.544
B	0.780	0.766	0.670	-0.433
C	0.673	0.708	0.613	0.489
D	0.843	0.827	0.780	-0.378
E	0.824	0.803	0.740	-0.376
F	0.765	0.742	0.608	0.454
<b>Communality Estimates</b>				
	<b>Factor 1</b>	<b>Factor 1</b>	<b>Factor 1</b>	
A	0.296	0.418	0.278	
B	0.608	0.587	0.448	
C	0.452	0.502	0.376	
D	0.711	0.683	0.609	
E	0.678	0.644	0.547	
F	0.586	0.550	0.370	

<sup>1</sup> Younger Cohort: n=9 368; Mid-age Cohort: n= 10 751; Older Cohort: n=8 357

#### *Internal reliability*

Cronbach's alpha for the six items exceeded the generally accepted minimum level of 0.6 for all 3 age cohorts (Younger: 0.835; Mid-age: 0.843 Older 0.739) (see Table 3.5). Internal reliability did not increase when individual items were deleted from the factor, except for a very slight increase in Cronbach's alpha when removing item "a" in the Younger cohort. Item-to-total correlations were moderate, exceeding 0.5, for all items in the Mid-age cohort and all but item "a" in the Younger cohort. Item-to-total correlations for the Older cohort were low to moderate (0.4 to 0.6).

#### *Number of Factors*

Most of the project criteria were met for the six items to be regarded as one factor in the Younger and Older cohort data from Survey 2, and the Mid-age cohort data from Survey 3. The criteria were:

- High factor loadings: (criterion: >0.5) all exceed 0.5 for all 3 age cohorts
- High item-to-total correlations- Younger: all except "a" exceeds 0.5; Mid-age: all exceed 0.5; Older: 2 of 6 items exceeded 0.5, the other 4 ranged from 0.35 to 0.48 (criterion: >0.5).
- Cronbach's alpha: (criterion: >0.6). fairly high (0.84) for the Younger and Mid-age cohorts, and moderate (0.74) for the Older cohort
- Communalities: (criterion: >0.5) Younger: exceeds 0.5 for 4 of 6 items, and was 0.3 and 0.45 for other 2 items respectively; Mid-age: exceeds 0.5 for 5 of 6 items and was 0.4 for the other item; Older: exceeds 0.5 for 2 of 6 items and ranged from 0.28 to 0.45 for the other 4 items.

**Table 3.5. Item-total correlations and Cronbach's alpha for standardised variables with deletion of individual items**

Deleted Item	Younger		Mid-age		Older	
	Correlation with total	Cronbach's Alpha	Correlation with total	Cronbach's Alpha	Correlation with total	Cronbach's Alpha
None		<b>0.835</b>		<b>0.843</b>		<b>0.739</b>
a	0.415	0.846	0.510	0.839	0.351	0.736
b	0.644	0.802	0.638	0.815	0.478	0.702
c	0.544	0.822	0.580	0.825	0.435	0.713
d	0.730	0.784	0.719	0.798	0.614	0.659
e	0.699	0.790	0.682	0.805	0.556	0.677
f	0.639	0.804	0.615	0.820	0.433	0.715

<sup>1</sup> Younger Cohort: n=9 368; Mid-age Cohort: n= 10 751; Older Cohort: n=8 357

### 3.1.4. Scores

Summed scores were calculated as the sum of unweighted item scores for all 6 items (“LOT-R score”). Mean substitution for up to two missing values was allowed. The distribution of number of missing LOT-R items is shown in Table 3.6. Allowing mean-substitution for up to 2 missing items decreases the percentage of women missing a sum score by 2% for the Younger cohort, 2.5% for the Mid-age cohort and 5% for the Older cohort.

The mean-substitution for up to 2 missing items was probably not necessary in this case, since the percentage missing one or more items was very low for the Younger and Mid-age cohorts. However, for the Older cohort it was necessary to minimise missing scores and thus mean-substitution for up to 2 missing items was done across the board for consistency. It is recommended that mean-substitution for up to 2 missing items is used.

**Table 3.6. Number and percent of LOT-R items missing**

Number of items missing	Younger		Mid-age		Older	
	Number	Percent	Number	Percent	Number	Percent
0	9368	97.6	10751	96.0	8357	88.0
1	164	1.7	248	2.2	406	4.3
2	17	0.2	37	0.3	111	1.2
3	5	0.1	19	0.2	89	0.9
4	2	0.0	12	0.1	128	1.4
5	8	0.1	40	0.4	286	3.0
6	36	0.4	89	0.8	124	1.3

<sup>1</sup> Younger Cohort: n=9 500; Mid-age Cohort: n= 11 196; Older Cohort: n=9 501

A factor score was calculated as the total of the 6 item scores, weighted by the standardised scoring coefficients from the factor analysis for women with complete data for all 6 items. Distributional properties of the sum and factor scores are shown in Table 3.7. All scores were approximately normally distributed.

**Table 3.7. Distributional properties of sum and factor scores for LOT-R**

Score	Mean (SD)	Median	Skewness	Range
<b>Younger cohort</b>				
Sum score	14.84 (4.22)	15	-0.35	0 - 24
Factor score	3.30 (0.95)	3.39	-0.36	0 - 5.32
<b>Mid-age cohort</b>				
Sum score	15.64 (3.96)	16	-0.45	0 - 24
Factor score	3.47 (0.88)	3.47	-0.45	0 - 5.31
<b>Older cohort</b>				
Sum score	15.61 (3.52)	16.61	-0.17	0 - 24
Factor score	3.91 (0.90)	3.91	-0.14	0 - 5.99

### 3.1.5 Scoring Recommendation

Correlations between sum scores and factor scores were very high (Younger: 0.998, n=9 368; Mid-age: 0.999, n=10 751; Older: 0.997, n=8 357). The use of sum scores is recommended because of the ease of calculation and the ability to impute where one or two items are missing. Thus, the 6 item scores referred to as "LOT-R scores". The approximate normality of these scores suggests treating scores as continuous for the purpose of analysis is appropriate. Higher scores indicate higher optimism.

This report was prepared by Nadine Smith.

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## **3.2. HEALTH-RELATED HARDINESS: A MEASURE OF PERCEIVED CONTROL OVER HEALTH**

Health-related hardiness is conceptualised as a multifaceted construct, composed of three subordinate concepts: a sense of control over one's health (control dimension), a commitment to the maintenance of one's health (commitment dimension), and a tendency to prefer to take direct action in the face of challenges (challenge dimension). The "control" dimension of the health-related hardiness construct has been defined as a sense of mastery or self-confidence regarding the skills needed to appropriately appraise and interpret health (Pollock 1986). The "control" dimension of the health-related hardiness construct has been widely studied and is closely related to the concept of "health locus of control".

### **3.2.1. The Health-Related Hardiness Scale (HRHS)**

Pollock and Duffy (1990) developed the Health-Related Hardiness Scale (HRHS) to measure the effects of hardiness in people with diagnosed health problems (diabetes, hypertension, multiple sclerosis and rheumatoid arthritis). The factors of commitment/challenge and control were identified from positive and negative self-report items.

The development of the HRHS, in contrast to many other measures of hardiness, was undertaken with rigorous attention to psychometric testing, including assessment of item-to-concept content validity. Pollock and Duffy conceptualised hardiness as a multidimensional characteristic with aspects of control, commitment and challenge. This conceptualisation has received some empirical support through criterion-related validity studies and factor analytic studies (eg Sinclair & Tetrick 2000). Some researchers have found different criterion relationships for the three components and small positive correlations between components, suggesting these components are not highly related aspects of a single concept of hardiness, but rather three dimensions of the multidimensional concept of hardiness (Funk & Houston 1987).

The ALSWH surveys used only the control sub-scale of the HRHS (see Table 3.8), with scoring as shown. The item order used in ALSWH surveys is indicated with alphabetic notation.

**Table 3.8. Items forming the HRHS Control Sub-scale**

<b>Please indicate how much you agree with each statement</b> <i>(Mark one on each line)</i>	
<b><i>Positive items</i></b>	
A	I can avoid illness if I take care of myself
C	I am in control of my health
f	The main thing which affects my health is what I do myself
g	Setting goals for health is realistic
i	If I get sick, it is my own behaviour that determines how soon I will get well
l	If I take the right actions, I can stay healthy
m	I can be as healthy as I want to be
<b><i>Negative items</i></b>	
b	Luck plays a big part in determining how soon I will recover from an illness
d	My good health is largely a matter of good fortune
e	No matter what I do, if I am going to get sick, I will get sick
h	Most things that affect my health happen to me by accident
j	I will stay healthy if it's meant to be
k	No matter what I do, I am likely to get sick
n	I have little influence over my health

<i>Response</i>	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
<i>Score for positive items</i>	1	2	3	4	5	6
<i>Score for negative items (reverse coded)</i>	6	5	4	3	2	1

### 3.2.2. Derived Variables

#### *Item Responses*

The distribution of responses to the 14 items from the HRHS control sub-scale included in Survey 2 of the Older Cohort is shown in Table 3.9. Responses were distributed across the entire scale, with a slight skewed left for most positive items and slight skew right for most negative items. Mean scores ranged from 3.7 to 4.5 for positive items and 2.2 to 4.1 for negative items. The percentage of missing data was moderate (2.5% to 8.5%) and 84% of women completed all 14 items.

**Table 3.9. Distribution (%) and mean (SD) of responses and percent missing for 14 HRHS control sub-scale, among 9501 women from the Older cohort completing the full Survey 2.**

	How much agree with each statement						Mean (SD)	Percent missing
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree		
<i>Positive items</i>								
a I can avoid illness if I take care of myself	2.4	8.3	5.7	19.2	50.8	13.7	4.5 (1.2)	2.5
c I am in control of my health	2.2	8.4	7.3	23.5	48.2	10.4	4.4 (1.2)	3.3
f The main thing which affects my health is what I do myself	5.6	18.5	6.7	17.8	43.5	8.0	4.0 (1.4)	6.0
g Setting goals for health is realistic	2.1	9.3	5.1	17.1	57.9	8.5	4.4 (1.2)	8.4
i If I get sick, it is my own behaviour that determines how soon I will get well	4.6	13.2	5.8	21.6	46.2	8.5	4.2 (1.3)	5.9
l If I take the right actions, I can stay healthy	1.5	6.9	6.6	25.8	50.2	9.0	4.4 (1.1)	5.3
m I can be as healthy as I want to be	4.9	20.5	15.5	24.4	28.8	5.9	3.7 (1.4)	7.5
<i>Negative items</i>								
b Luck plays a big part in determining how soon I will recover from an illness	19.3	43.3	7.3	12.7	14.0	3.4	2.7 (1.5)	5.6
d My good health is largely a matter of good fortune	11.5	29.2	8.5	17.0	29.1	4.7	3.4 (1.5)	6.2
e No matter what I do, if I am going to get sick, I will get sick	34.0	42.6	6.1	6.7	8.2	2.5	2.2 (1.3)	5.3
h Most things that affect my health happen to me by accident	11.9	39.9	9.4	12.5	22.3	4.0	3.1 (1.5)	7.4
j I will stay healthy if it's meant to be	5.3	15.7	5.7	14.3	49.8	9.1	4.1 (1.4)	6.2
k No matter what I do, I am likely to get sick	14.3	27.9	9.3	13.8	30.4	4.4	3.3 (1.6)	6.9
n I have little influence over my health	9.4	32.4	14.7	16.4	23.3	3.8	3.2 (1.4)	6.2

### 3.2.3. Factor Analysis

Factor analysis using principal components estimation was performed on responses from 7679 Older women completing all 14 items. The number of factors supported by the data was tested by the eigenvalues-greater-than-one rule, parallel analysis and Velicer's MAP test. Parallel analysis is based on simulations and recommends retaining the number of factors with observed eigenvalues greater than the corresponding 95<sup>th</sup> percentile of simulated values. The MAP test recommends the number of factors associated with the minimum average squared correlation.

There were 3 factors with eigenvalues greater than 1.0 (see Table 3.10), explaining approximately 27%, 17% and 7% of the variance respectively. Two factors were suggested by parallel analysis and the MAP test.

**Table 3.10. Results of factor analysis (n=7979)**

Factor	Eigenvalue	Difference	Proportion	Simulated Eigenvalue <sup>a</sup>		Average <sup>b</sup> Squared Correlation
				Mean	95 <sup>th</sup> Percentile	
1	<b>3.786</b>	1.372	0.270	1.072	<b>1.086</b>	0.025
2	<b>2.414</b>	1.392	0.172	1.056	<b>1.069</b>	<b>0.017</b>
3	<b>1.021</b>	0.126	0.073	1.043	1.051	0.025
4	0.896	0.111	0.064	1.033	1.041	0.035
5	0.784	0.050	0.056	1.023	1.029	0.049
6	0.735	0.045	0.053	1.013	1.021	0.066
7	0.689	0.053	0.049	1.004	1.011	0.102
8	0.637	0.025	0.046	0.995	1.002	0.132
9	0.612	0.044	0.044	0.986	0.992	0.186
10	0.568	0.048	0.041	0.977	0.984	0.265
11	0.520	0.004	0.037	0.967	0.975	0.397
12	0.516	0.073	0.037	0.957	0.966	0.523
13	0.443	0.064	0.032	0.945	0.954	1.000
14	0.379		0.027	0.931	0.942	

<sup>a</sup> Parallel Analysis

<sup>b</sup> Velicer's MAP test

Also, for the principal components solution (unrotated), loadings on the third factor were weak for all items (<0.5; Table 3.11). Factor loadings for the two-factor solution with varimax (orthogonal) and promax (oblique) rotations strongly suggest 2 factors. The correlation between factors for the promax rotation was very low (-.05).

All 7 positively phrased items loaded moderately (>0.5) onto factor 1 (referred to as "hardiness 1") and weakly onto the other factor. All 7 negatively phrased items loaded moderately (>0.5 for all items except item "h", 0.45 loading) onto factor 2 (referred to as "hardiness 2") and weakly onto the other factor.

**Table 3.11. Factor loadings from rotated and un-rotated analyses (n=7979)**

Item	Un-Rotated			Varimax		Promax		Communa- lity Estimates
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 1	Factor 2	
Hardiness 1								
a	<b>0.73</b>	0.15	-0.17	<b>0.75</b>	0.04	<b>0.75</b>	0.06	0.56
c	<b>0.72</b>	0.14	-0.23	<b>0.73</b>	0.04	<b>0.73</b>	0.06	0.54
f	<b>0.64</b>	0.04	0.32	<b>0.63</b>	-0.06	<b>0.63</b>	-0.04	0.41
g	<b>0.57</b>	0.08	0.33	<b>0.58</b>	0.00	<b>0.58</b>	0.01	0.33
i	<b>0.64</b>	-0.05	0.26	<b>0.62</b>	-0.15	<b>0.62</b>	-0.13	0.41
l	<b>0.78</b>	0.11	-0.10	<b>0.79</b>	0.00	<b>0.79</b>	0.02	0.62
m	<b>0.76</b>	0.02	-0.12	<b>0.76</b>	-0.09	<b>0.76</b>	-0.07	0.58
Hardiness 2								
b	-0.23	<b>0.64</b>	0.15	-0.13	<b>0.66</b>	-0.11	<b>0.66</b>	0.46
d	-0.29	<b>0.60</b>	0.25	-0.20	<b>0.63</b>	-0.18	<b>0.63</b>	0.44
e	0.19	<b>0.53</b>	-0.48	0.27	<b>0.50</b>	0.28	<b>0.51</b>	0.32
h	-0.30	0.41	-0.46	-0.23	0.45	-0.22	0.44	0.26
j	-0.31	<b>0.58</b>	0.28	-0.22	<b>0.61</b>	-0.21	<b>0.61</b>	0.43
k	0.05	<b>0.67</b>	-0.02	0.15	<b>0.66</b>	0.17	<b>0.66</b>	0.46
n	0.22	<b>0.58</b>	0.17	0.30	<b>0.55</b>	0.32	<b>0.56</b>	0.39

### Internal reliability

Cronbach's alpha for the items loading most strongly on the "hardiness 1" factor is fairly high at 0.825 (Table 3.12). Cronbach's alpha for the items loading most strongly on the "hardiness 2" factor is moderate but acceptable at 0.677. High internal reliability was maintained when individual items were deleted from both factors. Item-total correlations were moderate. Almost all exceeded 0.5 for items loading highly on the "hardiness 1" factor, whilst they were lower for items loading highly on the "hardiness 2" factor, ranging from 0.28 to 0.47.



**Table 3.12. Item-total Correlations and Cronbach's alpha for standardised variables with deletion of individual items**

Deleted item	Correlation with total	Cronbach's Alpha
<i>Hardiness 1 (n=8949)</i>		
None		<b>0.825</b>
a	0.618	0.794
c	0.599	0.797
f	0.527	0.811
g	0.459	0.818
i	0.509	0.812
l	0.677	0.787
m	0.630	0.791
<i>Hardiness 2 (n=8908)</i>		
None		<b>0.677</b>
b	0.468	0.619
d	0.436	0.627
e	0.301	0.664
h	0.283	0.671
j	0.421	0.632
k	0.450	0.623
n	0.338	0.655

### **Recommendation – Number of Factors**

Based on most project criteria being met, the 14 HRHS control sub-scale items in the Older cohort data from Survey 2 comprise two factors. The criteria are:

- High factor loadings- all except item “h” of “hardiness 2” exceed 0.5 (criteria: >0.5).
- High item-to-total correlations- all except “g” of “hardiness 1” item exceed 0.5, all range between 0.3 to 0.5 for “hardiness 2” (criteria: >0.5).
- Cronbach’s alpha- fairly high for “hardiness 1” at 0.83 and moderate for “hardiness 2” at 0.68 (criteria: >0.6).
- Communalities- exceeds 0.5 for 4 of 14 items and ranged from 0.3-0.4 for other 10 items (criteria: >0.5).

### 3.2.4. Scores

Summed scores were calculated as the sum of item scores for positive items (“hardiness 1”) and for negative items (“hardiness 2”). Mean substitution for up to two missing values was allowed. The distribution of missing items for “hardiness 1” and “hardiness 2” are shown in Table 3.13. Allowing mean-substitution for up to 2 missing items decreases the percentage of women missing a sum score by 7.6% for “hardiness 1” and by 8.7% for “hardiness 2”.

The properties of factor scores were investigated for women with complete data for all 14 items. Two factor scores were calculated for each rotation method as the total of item scores, weighted by the standardised scoring coefficients from the factor analysis.

**Table 3.13. Number and percent of “hardiness 1” and “hardiness 2” items missing (n=9501)**

Number of items missing	Hardiness 1 (positive items)		Hardiness 2 (negative items)	
	Number	Percent	Number	Percent
0	8229	86.6	8081	85.1
1	555	5.8	652	6.9
2	165	1.7	175	1.8
3	103	1.1	107	1.1
4	93	1.0	96	1.0
5	144	1.5	83	0.9
6	77	0.8	122	1.3
7	135	1.4	185	2.0

Distributional properties of the sum and factor scores are shown in Table 3.14. All scores were approximately normally distributed.

**Table 3.14. Distributional properties of sum and factor scores (n=9501)**

Score	Mean	SD	Median	Skewness	Range
<i>Sum score</i>					
Hardiness 1	29.57	6.13	30.00	-0.64	7 to 42
Hardiness 2	27.08	6.02	27.00	-0.11	7 to 42
<i>Factor score - varimax</i>					
Hardiness 1	5.84	1.24	6.00	-0.60	0.79 to 8.98
Hardiness 2	6.54	1.46	6.55	-0.08	1.73 to 10.40
<i>Factor score - promax</i>					
Hardiness 1	5.66	1.25	5.82	-0.60	0.60 to 8.98
Hardiness 2	6.39	1.45	6.39	-0.09	1.56 to 10.29

The correlation between sum scores and factor scores from the varimax and promax rotation for women with complete data on all 14 items were very high ( $>0.98$  ; see Table 3.15). It was assumed that the high correlation between scores for complete cases would also apply for incomplete cases.

**Table 3.15. Correlation of sum and factor scores (n=7679)**

<b>Sum score</b>	<b>Correlation with varimax factor score</b>	<b>Correlation with promax factor score</b>
Hardiness 1	0.983	0.984
Hardiness 2	0.996	0.996

### 3.2.5. Scoring Recommendation

Since the correlation between sum scores and factor scores from the variamax and promax rotation for completed cases were very high ( $>0.98$ ), since the summed scores are more generalisable and not population specific, and since rates of missing are much lower for sum scores (6% compared to 16%), the use of sum scores with mean-substitution for up to two missing items is recommended.

Thus, the 7 positive items and 7 negative items can be measured separately and form scores referred to as "hardiness 1" and "hardiness 2" respectively. The approximate normality of these two scores suggests treating scores as continuous for the purpose of analysis is appropriate.

Higher scores for "hardiness 1" indicate that the woman has a stronger belief in self-control of health or internal locus of control. A higher score on "hardiness 2" indicate that the woman has a lower belief in the role of chance or luck in health. "Hardiness 1" has better psychometric properties than "hardiness 2" and may be more useful when used in analysis.

This report was prepared by Nadine Smith

### References

1. Pollock, S. (1986). Human responses to chronic illness: physiologic and psychosocial adaptation. *Nursing Research*, 35(2), 90-95.
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3. Sinclair, R., & Tetrick, L. (2000). Implications of item wording for hardiness structure, relation with neuroticism, and stress buffering. *Journal of Research in Personality*, 34, 1-25.
4. Funk, S., & Houston, B. (1987). A critical analysis of the Hardiness Scale's validity and utility. *Journal of the Personality and Social Psychology*, 53(3), 572-578.

## 4. MAINTENANCE OF COHORTS

Cohort maintenance and tracking of “return-to-sender” mail continues according to the strategies outlined in previous reports. The office team continues to track all women who responded to Survey 1 in 1996, even those who have not responded to Survey 2 or Survey 3. Participants for whom we have no current contact details remain in the tracking system unless they are positively identified as deceased, withdrawn, permanently emigrated, or otherwise ineligible or unwilling to participate. Secondary contacts, electoral rolls, and electronic white pages continue to be the main sources of information. Increasingly we are finding email addresses to be useful, especially among the younger women. While in previous years, email addresses seemed to be fairly short-lived and unstable, it now appears that individuals are likely to keep the same email address for some years.

## 5. DISSEMINATION OF STUDY FINDINGS

### 5.1. WEB SITE

The Study web site, maintained at the University of Newcastle, has been substantially revised and updated by Mr Tim Neve, and can be viewed at <http://www.newcastle.edu.au/centre/wha>. We plan to install a password-protected section for work in progress, internal reports, minutes, agendas, and other internal information. This work is currently under way.

### 5.2. COMMUNICATION WITH STUDY PARTICIPANTS

The 2003 newsletter, prepared by Penny Warner-Smith, Christina Lee, Lyn Adamson, Eliza Fraser and Tim Neve, was mailed to all participants in October 2003. This newsletter generated several dozens calls with address updates, and a total of 542 return-to-senders provided the impetus to begin tracking procedures for those women. A copy of the newsletter appears in Appendix 3.

### 5.3. PUBLICATIONS

#### 5.3.1. Papers Published

**Miller YD, Brown WJ, Chiarelli P & Russell A. Urinary incontinence across the lifespan. *Neurourology and Urodynamics*; 2003, 22: 550-557.**

**Aims:** The objectives of the current study were (1) to measure type and severity of urinary leakage and (2) to investigate the association between these factors and age-related life events and conditions in three groups of Australian women with a history of urinary leakage.

**Methods:** Five hundred participants were randomly selected from women in the young (aged 18-22 in 1996), mid-age (aged 45-50) and older (70-75) cohorts of the Australian Longitudinal Study of Women’s Health (ALSWH) who had reported leaking urine in the 1996 baseline survey. Details about leaking urine (frequency, severity, situations) and associated factors (pregnancy, childbirth, Body Mass Index [BMI]) were sought through self-report mailed follow-up surveys in 1999.

**Results & Conclusions:** Response rates were 50, 83, and 80% in the Younger, mid-age and older women, respectively. Most women confirmed that they had leaked urine in the past month, and the majority of these were cases of 'mixed' incontinence. Incontinence severity tended to increase with BMI for women of all ages, and increased severity scores were associated with having urine that burns or stings. Additional independent risk factors for increasing incontinence severity were heavy smoking in young women, past or present use of hormone replacement therapy in older women, and BMI and history of hysterectomy in mid-age women.

**Turner C, Russell A & Brown W. Prevalence of illicit drug use in young Australian women, patterns of use and associated risk factors. *Addiction*, 2003; 98: 1419-1426.**

**Objectives:** To estimate the prevalence of illicit drug use in young Australian women, determine their patterns of drug use and identify associated risk factors.

**Methods:** Data were collected in 2000 as part of the second survey of the youngest cohort in the Australian Longitudinal Study on Women's Health (n=9512).

**Results:** Among women aged 22-27 years, 58% reported having used an illicit drug at some time with most (57%) having used cannabis. Amphetamines (16%), ecstasy/designer drugs (15%) and LSD (14%) were the next three most commonly used drugs. Four different patterns of drug use were identified: past users of cannabis only (39%); current users of cannabis only (17%); past multiple drug users (13%) and current multiple drug users (31%). Living in a de-facto relationship or never being married, living with non-family members, a history of physical abuse, sexual intercourse, smoking and binge drinking were significantly associated with exclusive use of cannabis and with use of multiple drugs compared to never using illicit drugs. Living with a partner, experience of sexual or emotional abuse, pregnancy, diagnosis of depression and taking sleeping medication were significantly associated with being a multiple drug user but not for exclusive cannabis use. Multiple drug users had, on average, used cannabis 2-3 years before using any other drug.

**Conclusions:** Given the strong association found between smoking, heavy drinking and drug use of varied patterns, public health initiatives targeted at preventing young women from smoking and drinking should additionally target illicit drug use.

**Strodl E, Kenardy J & Aroney C. Perceived stress as a predictor of the self-reported new diagnosis of symptomatic CHD in older women. *International Journal of Behavioral Medicine*, 2003; 10(3):205-220.**

This article describes one aspect of a prospective cohort study of 10,432 women aged between 70 to 75 years. After a 3-year period, 503 women self-reported a new diagnosis by a doctor of angina or myocardial infarction (symptomatic coronary heart disease [CHD]). Time one psychosocial variables (Duke Social Support Index, time pressure, Perceived Stress Scale, Mental Health Index, having a partner, educational attainment, and location of residence) were analyzed using univariate binary logistic regression for their ability to predict subsequent symptomatic CHD. Of these variables, the Duke Social Support Index, Perceived Stress Scale and the Mental Health Index were found to be significant predictors of symptomatic CHD diagnosis. Only the Perceived Stress Scale, however, proved to be a significant independent predictor. After controlling for time one nonpsychosocial variables, as well as the frequency of family doctor visits, perceived stress remained a significant

predictor of the new diagnosis of symptomatic CHD in this cohort of older women over a 3-year period.

**Brown WJ & Trost SG. Life transitions and changing physical activity patterns in young women. *American Journal of Preventive Medicine*, 2003; 25(2): 140-143.**

**Background:** Physical activity (PA) patterns are likely to change in young adulthood in line with the changes to lifestyle that occur in the transition from adolescence to adulthood. The aim of this study was to ascertain whether key life events experienced by young women in their early twenties are associated with increasing levels of inactivity.

**Methods:** This was a 4-year follow-up of 7281 participants (aged 18-23 years at baseline) in the Australian Longitudinal Study of Women's Health, with self-reported measures of PA, life events, body mass index (BMI), and socio-demographic variables.

**Results:** The cross-sectional data indicated no change in PA between baseline (57% 'active') and follow-up (56% 'active'). However, for almost 40% of the sample, PA category changed between baseline and follow-up, with approximately 20% of the women changing from being 'active' to 'inactive', and another 20% changing from being 'inactive' to 'active'. After adjustment for age, other socio-demographic variables, BMI and PA at baseline, women who reported getting married, having a first or subsequent child, or beginning paid work were more likely to be inactive at follow-up than those who did not report these events.

**Conclusions:** The results suggest that life events such as getting married, having children, and starting work are associated with decreased levels of PA in young adult women. Strategies are needed to promote maintenance of activity at the time when most women experience these key life-stage transitions.

### 5.3.2. Papers Accepted

**Ball K, Mishra GD, Thane CW & Hodge A. How well do Australia women comply with dietary guidelines? *Public Health Nutrition*, in press.**

**Objective:** To investigate the proportion of middle-aged Australian women meeting national dietary recommendations and its variation according to selected sociodemographic and behavioural characteristics.

**Design:** This cross-sectional population-based study used a food-frequency questionnaire to investigate **dietary** patterns and compliance with 13 commonly promoted dietary guidelines among a cohort of middle-aged women participating in the Australian Longitudinal Study on Women's Health.

**Setting:** Nation-wide community-based survey.

**Subjects:** A total of 10561 women aged 50–55 years at the time of the survey in 2001.

**Results:** Only about one-third of women complied with more than half of the guidelines, and only two women in the entire sample met all 13 guidelines examined. While guidelines for meat/fish/poultry/eggs/nuts/legumes and 'extra' foods (e.g. ice cream, chocolate, cakes, potatoes, pizza, hamburgers and wine) were met well, large percentages of women (68-88%)

did not meet guidelines relating to consumption of breads, cereal-based foods and dairy products, and intakes of total and saturated fat and iron. Women working in lower socio-economic status occupations, and women living alone or with people other than a partner and/or children, were at significantly increased risk of not meeting guidelines.

**Conclusions:** The present results indicate that a large proportion of middle-aged Australian women are not meeting dietary guidelines. Without substantial changes in their diets, and help in making these changes, current national guidelines appear unachievable for many women.

#### **5.4. CONFERENCE SYMPOSIA, KEYNOTES AND SPECIAL EVENTS**

**Expect Respect: Breaking the chains of domestic violence, Ballina Domestic Violence Liaison Committee. Ballina Beach Resort, Ballina, New South Wales, Australia, 22-24 October 2003.**

**Taft A. Keynote speaker.**

In my talk this morning, I will take you on a brief historical tour of how women's mental health and its relationship to violence, particularly intimate partner violence, has been constructed for centuries and how we understand it now. I'm going to talk about what we now know are about the impact of partner violence on women's health partnership with you some new information about young women, violence from partners in normal partners and the impact on young women's physical and mental health from a recent study which my colleagues and I have done with a national sample of young Australian women.

**Research in Practice: Breaking the Barriers: 3<sup>rd</sup> Annual Primary Health Care Research Conference, Corlette, New South Wales, Australia, 14-15 November 2003.**

**Warner-Smith P, Young A & Powers J. Questionnaire Design.**

#### ***Workshop Summary***

This workshop will begin with a brief introduction to the process involved in conducting a survey and some 'dos and don'ts' of questionnaire design. The major part of the workshop will then be devoted to a 'hands on' activity. Working in small groups, participants will be given a research question related to primary care, for which they will construct a brief questionnaire. In the final plenary section of the workshop, the questionnaires will be presented and discussed by all participants and the facilitators.

#### ***Workshop Objectives***

*At the end of this session you will be able to:*

- Use a range of question formats and know when they are appropriate
- Identify common problems with the wording of questions
- Write questions that are relevant to your research question
- Recognise the value of layout and formatting in good questionnaire design
- Understand the importance of pre-testing questionnaires

## 5.5. CONFERENCE PRESENTATIONS

**Young AF, Powers JR\* & Bell SL. Attrition in the Australian Longitudinal Study on Women's Health: a comparison of three age cohorts. *Australasian Epidemiological Association Annual Meeting 2003*, University of Western Australia, Perth, Western Australia, Australia, 22-23 September 2003.**

One problem associated with longitudinal research is attrition or non-response by study participants. Types of attrition include death, frailty, withdrawal, failure to complete a survey and inability to contact the participant. We report on the size and types of attrition at Survey 2 in three cohorts of randomly selected women (younger 18-23 years, mid-age 45-50 years and older 70-75 years in 1996) in the Australian Longitudinal Study on Women's Health. Factors associated with types of attrition were also examined. Attrition was 32% in the younger, 10% in the mid-age and 16% in the older cohort. The major non-response in younger women was due to inability to contact participants (21%), whereas only 6% of the mid-age and 3% of the older women could not be contacted. Main types of attrition among older women were withdrawal (5%), failure to complete Survey 2 (4%) and death (4%). Multinomial logistic regression showed that non-respondents differed from respondents in terms of sociodemographic factors (more overseas born, less educated, lower socio-economic status) in all cohorts. Across the three age groups, non-respondents were also more likely to be current smokers than respondents. The healthy respondent effect was evident in the older cohort, with all categories of non-respondents rating their health more poorly at Survey 1 than respondents. Longitudinal studies that cover a wide age range need to account for the differing correlates of attrition across age groups when interpreting their findings.

**Watson LF\*, Taft A, Lee C & Powers J. Analysing a survey data set where there are many associations of interest – how to economise in a modelling bonanza. *Australasian Epidemiological Association Annual Meeting 2003*, University of Western Australia, Perth, Western Australia, Australia, 22-23 September 2003.**

The 'Violence against young women and reproductive health' project used data from the Younger Women's cohort of the Australian Longitudinal Study of Women's Health. The brief was to study the association between women's reported experience of violence and reproductive health outcomes. This enabled us to use data from 14,000 women who had been surveyed in 1996, 10,000 of whom had also returned survey questionnaires in 2000.

In both the 1996 and 2000 surveys there were a number of questions about the types of violence experienced and about reproductive history and health. This led to a plethora of possible comparisons all giving tables, chi-squares, odds ratios etc – in fact a modelling bonanza.

Responses to a number of questions (about similar events) produced overlap in responses. We managed this situation by developing composite variables (both for exposures and outcomes) which resulted in considerable economy of analysis. For explanatory variables, the composite variables were constructed to allow explicit fitting of interaction terms as well as main effects in the one model (instead of the alternative stepwise modelling). Likewise, by using multinomial logistic regression models the effect of multiple levels of outcome variables were determined in one model.



Issues of concern such as multiple comparisons, interpreting the coefficients of effects will be discussed using examples from the Australian Longitudinal Study of Women's Health.

**Dobson A. Australian Longitudinal Study on Women's Health: Tracking ageing in Australia. *The Dynamic Processes in Ageing: Dynamic relationships among cognitive, social, biological, health and economic factors in ageing*, The Australian National University, Canberra, Australian Capital Territory, Australia, 22-23 of September 2003.**

No abstract available.

**Dobson A & the Australian Longitudinal Study on Women's Health research team. Women in an ageing Australian population. *The Dynamic Processes in Ageing: Dynamic relationships among cognitive, social, biological, health and economic factors in ageing*, The Australian National University, Canberra, Australian Capital Territory, Australia, 22-23 of September 2003.**

The Australian Longitudinal Study of Women's Health, funded by the Australian Department of Health and Ageing and conducted by a multidisciplinary group of researchers at the Universities of Newcastle and Queensland, is the largest longitudinal health study ever conducted in Australia. The project tracks 40,000 women, representing three representative age cohorts of Australian women, for 20 years. The Younger group were 18-23 when first surveyed in 1996, the Mid-age group 45-50, and the Older group 70-75. Surveys assess health status, symptoms, diagnoses, health service use and satisfaction, demographics, time use, and other variables relevant to understanding women's health in a broad social context. Linkage with Medicare unit records makes this study unique internationally.

**Brown W & the Australian Longitudinal Study on Women's Health research team. Healthy Activity, Healthy Weight, Healthy Women. *The Dynamic Processes in Ageing: Dynamic relationships among cognitive, social, biological, health and economic factors in ageing*, The Australian National University, Canberra, Australian Capital Territory, Australia, 22-23 of September 2003.**

The Australian Longitudinal Study on Women's Health enables an analysis of changes in physical activity over time, and their relationship with indicators of well-being, in large representative samples of Australian women. Among the Older cohort, decreases in physical activity have been shown to predict decreases in emotional well-being, even when physical health and other factors are taken into account. Research on the predictors of physical activity change shows different predictors at different points in the life course. The design of Australian Longitudinal Study on Women's Health, involving the tracking of three age cohorts simultaneously, permits cross-generational comparisons and well as the analysis of change within cohorts over time.

**Pachana N, Smith N & the Australian Longitudinal Study on Women's Health research team. Changes in social support and mental health: data from the Australian Longitudinal Study on Women's Health. *The Dynamic Processes in Ageing: Dynamic relationships among cognitive, social, biological, health and economic factors in ageing*, The Australian National University, Canberra, Australian Capital Territory, Australia, 22-23 of September 2003.**

Changes in the Duke Social Support Index is reported in a cohort of older women across 3 sampling periods over 10 years. Changes in social support, in conjunction with psychological variables such as optimism and health-related hardiness, predict changes in mental health. Measurement characteristics of the Duke are discussed with respect to predictive findings.

**Dobson A. Tobacco and Health Differentials: where should prevention be targeted? 35th Annual Public Health Association of Australia Conference: Essentials, Differentials and Potentials in Health, Brisbane, Queensland, Australia, 28 September - 1 October 2003.**

No abstract available.

**McDermott L. The role of life-stage transitions in smoking behaviour among young women. 35th Annual Public Health Association of Australia Conference: Essentials, Differentials and Potentials in Health, Brisbane, Queensland, Australia, 28 September - 1 October 2003.**

No abstract available.

**France C. Depression among young and mid-aged Australian women: who is most at risk and how do they cope? Working with the Growing Edge, University of New South Wales, Sydney, New South Wales, Australia, 29 September 2003.**

The disability burden in Australia cites depression as the leading cause of total years lost due to disability whether the results are for men (6.2%), women (9.8%) or totalled (8.0%).

This presentation will examine two studies undertaken with the Australian Longitudinal Study on Women's Health which is an epidemiological, nationwide study of a representative sample of Australian women.

One of the studies presents a descriptive, cross-sectional analysis of the prevalence and characteristics of young Australian women who are experiencing depressive symptoms. It explores the associations between demographic and health-related variables with depressive symptomatology in a representative sample of 9325 young Australian women.

The other study examines the coping strategies employed by mid-aged women who have depressive symptoms.

**Warner-Smith P, Young A & Powers J. The Big Picture: The Australian Longitudinal Study on Women's Health. International Network: Towards Unity for Health Conference, Newcastle, New South Wales, Australia, 11-15 October 2003.**

**Context:** Given the social and economic changes occurring in many areas of rural Australia and claims of an increasing 'gap' in equity between urban and rural areas, and given also that women bear the brunt when services in rural communities are reduced, there is a need to consider the health of country women compared to women in the cities.

**Setting:** In 1995, a group of researchers from the University of Newcastle in collaboration with the University of Queensland, was commissioned by the Commonwealth Department of

Health & Ageing to carry out the Australian Longitudinal Study on Women's Health (ALSWH).

**Objectives:** The ALSWH provides an evidence base to the Commonwealth Department of Health and Ageing, for the development and evaluation of policy and practice in many areas of service delivery that affect women, including geographical issues.

**Design:** The study is designed to follow young, mid-age and older women for up to 20 years and will explore factors that influence health among women who are broadly representative of the entire Australian population.

The study also links social, environmental and personal factors in women's lives to health care use data, and by record linkage with the national health insurance commission (Medicare) database.

**Subjects:** Three age cohorts of women (N=40,000) were recruited from the national health insurance commission database with deliberate oversampling of women from rural and remote areas.

**Findings:** Issues examined include women's preferences for and access to female general practitioners, and also geographical differences in the availability, accessibility and out of pocket costs of general practitioner services for women in Australia.

**Conclusion:** The ALSWH data have showed a striking gradient in financial and non-financial barriers to health care associated with women's area of residence.

**Dobson A, Smith N & Pachana NA\*. Some problems with life event scores and health outcomes. 36<sup>th</sup> Annual Australasian Association of Gerontology Conference, Hobart, Tasmania, Australia, 12 November 2003.**

Life events scales continue to be widely used in health outcomes research. As part of a large epidemiological study of women's health in Australia, age- and gender-specific life events questionnaires were constructed and administered to three cohorts over time. Two methodological problems arising from the interpretation of these data, namely telescoping and the impact of mood on rating life events, are examined. Recommendations for researchers contemplating the use of such tailored life events scales are offered.

**McNair RP. Substance use and mental health issues of young lesbian and bisexual women compared with heterosexual women in a population-based Australian Study. American Public Health Association Conference, San Francisco, 15-19 November 2003.**

No abstract available.

**Byles J. The Australian Longitudinal Study on Women's Health. 7<sup>th</sup> Asia/Oceania Regional Congress of Gerontology, Tokyo, Japan, 24-28 November 2003. (Invited).**

The Australian Longitudinal Study on Women's Health (ALSWH) is a longitudinal population-based study which provides an evidence base to the Australian Commonwealth Department of Health and Ageing for the development and evaluation of policy and practice in many areas of service delivery that affect women. The study examines the health of over

40,000 Australian women in three age groups (aged 18-23 years, 45-50 years and 70-75 years in 1996). The women were selected on a random basis with deliberate over-sampling of women in rural and remote areas. The study is designed to run for 20 years, with each age cohort surveyed once every three years.

The study was designed to explore factors that influence health among women including:

- Physical and emotional health (including well-being, major diagnoses, symptoms)
- Use of health services (GP, specialist and other visits, access, satisfaction)
- Health behaviours and risk factors (diet, exercise, smoking, alcohol, other drugs)
- Time use (including paid and unpaid work, family roles, and leisure), Sociodemographic factors (location, education, employment, family composition)
- Life stages and key events (such as childbirth, divorce, widowhood).

The age groups were selected in order to follow women through life stages which are likely to be critical to their health and well-being. The Older women were in their early 70s when selected, in order to recruit older women who are generally still active, involved members of the community. These women are being tracked to obtain information on predictors of continuing well-being and independence in older adult life.

**France C. How do women cope with depression? *Australian Psychological Society: Women and Psychology Interest Group, Wollongong, 29 November 2003.***

No abstract available.

## **5.6. OTHER PRESENTATIONS**

Young A. Statistical challenges in the Australian Longitudinal Study on Women's Health. *Statistics Seminars*, University of Newcastle, New South Wales, Newcastle, New South Wales, Australia, 17 September 2003.

France C. Depressive symptomatology among the Young cohort. *Research Centre for Gender and Health's monthly seminar series: 'RCGH does lunch'*, the University of Newcastle, Newcastle, New South Wales, Australia, 14 October 2003.

Parker G. Stories from the Heart: Abused women in Australia. *Research Centre for Gender and Health's monthly seminar series: 'RCGH does lunch'*, the University of Newcastle, Newcastle, New South Wales, Australia, 11 November 2003.

Smith N\*, Lee C & Dobson A. Predictors of Change in Mental Health in Mid-age women: the Australian Longitudinal Study on Women's Health. *School of Population Health 2003 Research Higher Degree Students Conference*, Ballymore Rugby Club, Brisbane, Queensland, Australia, 13 November 2003.

## 6. ARCHIVING AND DATA

The project team has a policy of archiving with the Social Sciences Data Archive on an annual basis. Each year we archive the most recently completed data set and may re-archive earlier data sets if there have been changes.

Before archiving is carried out, data are cleaned, extensive checks are made on data quality, and some test analyses are conducted. As well, a number of variables are derived from the raw data and included in the file for archiving. Archiving is current to Survey 3 of the Mid-age cohort. These data were collected in 2001; scanned, cleaned, checked and tested in 2002; and archived in early 2003. Data from Survey 3 of the Older Cohort (collected in 2002) are currently undergoing checks and we expect to archive those datasets in early 2004.

The project team also prepares a data book for each main cohort. Preparation of these data books is integrated with the archiving process, and occurs once the process of cleaning, checking, and testing is carried out. Data books contain frequency distributions for every variable in each survey, broken down by area of residence, as well as overall frequency distributions, weighted according to area of residence. This weighting is necessary because of the intentional oversampling of women in rural and remote areas. Where responses vary according to rurality of location, unweighted distributions may be misleading. Clearly this process takes a considerable length of time, but as these data books are made available to potential collaborators and to other users of the data, it is important that the team has conducted adequate checks and carried out standard data cleaning procedures, and that the data books are consistent with the files archived with the Social Sciences Data Archive. Data books have already been made available for all cohorts for Surveys 1 and 2.

The data book for Survey 3 of the Mid-age cohort appears as Appendix 4, and is also available as a separate document from the research team.

Work on a data book for Survey 3 of the Older Cohort is currently being carried out, in parallel with the checks and cleaning that are necessary for archiving. We expect to have that data book available by June 2004. By that time the data for the current survey (Survey 3 of the Younger cohort) will be available for checking and cleaning, and we will begin preparatory work on the Younger Survey 3 data sets in the second half of 2004.

## **7. PROJECT STAFF OCTOBER - DECEMBER 2003**

### **7.1. PROJECT STAFF: RESEARCH CENTRE FOR GENDER AND HEALTH, UNIVERSITY OF NEWCASTLE**

Research Centre Director:	Professor Lois Bryson
Project Manager:	Dr Penny Warner-Smith
Data Manager:	Mrs Jean Ball
Statistician:	Dr Anne Young
Statistician:	Ms Jenny Powers
Research Assistants:	Mrs Lyn Adamson
	Ms Rosie Brotherston
	Ms Jennifer Helman
	Mrs Joy Goldsworthy (maternity leave)
Data Assistant:	Ms Eliza Fraser
Secretary (shared position):	Ms Penny Knight, Ms Sue James

Part-time Project Assistants:	Mr Sam Adamson
	Ms Kath Bell
	Mrs Catherine Chojenta
	Ms Ashlea Dwyer
	Ms Katie Lawrence
	Mr Timothy Neve
	Ms Ingrid O'Neill
	Ms Paula Setz
	Ms Suzanne Stevens
	Ms Zoe Turner
	Ms Jacqui Warner-Smith
	Ms Claire Wilkinson

### **7.2. PROJECT STAFF: UNIVERSITY OF QUEENSLAND**

Project Coordinator:	Professor Christina Lee
Senior Project Officer:	Ms Anne Russell
Research Officer:	Ms Alicia Svensson (commenced December)
Part-time Research Assistants:	Ms Jess Ford
	Ms Natalie Grove
	Ms Nadine Smith
	Ms Helen Gramotnev



## **APPENDICES**





**APPENDIX 1. MINUTES OF STEERING COMMITTEE MEETINGS**



**Steering Committee Teleconference  
Thursday 2<sup>nd</sup> October 2003**

**Present:** Annette Dobson, Penny Warner-Smith, Christina Lee, Anne Young, Lois Bryson, Wendy Brown

**Apologies:** Julie Byles

**Minutes:** Penny Knight

Item No	Item	Action	By whom Due date
1	<b>Welcome and apologies:</b> Annette welcomed everyone.		
2	<b>Minutes and matters arising</b> All on agenda – no problems with previous minutes.		
3	<p><b>Strategic issues</b></p> <p><u>Report on Re-funding progress</u> Six week extension to the old contract, has been signed. The Schedule for the new contract has been received from Joy Eshpeter, listing conditions and deliverables previously agreed upon. The meeting unanimously agreed that Annette should advise Joy that the conditions are acceptable and that we look forward to receiving a draft of the new contract. A decision needs to be made as to what the split between UQ and UN should be. Joy needs to be advised of this decision. Budget should set out what amount to go to UQ and to UN, and what is then negotiable. Must be determined what the overhead costs are going to be, and what amount will be available after this deduction. One-third/two-thirds split would probably be accepted to both Universities. Chris to circulate revised budget. Adele Green advised that there will be a new round of Health Services Research Grants advertised within a fortnight. These should be thoroughly investigated, particularly with regard to a grant for HIC Linkage. No news as yet on the expression of interest for the NHMRC Enabling Grant. Annette to endeavour to obtain confirmation of the amount of the new contract and to advise. Penny to send Julia Gillard a package relating to the Study, and to keep her up to date on the progress of the refunding. Remain on the lookout for any funding opportunities, and also apply for a Programme Grant. Chris to contact Cathy Swart and obtain documentation for the Programme Grant application.</p>	<p>Christina to circulate budget</p> <p>Penny to send info to Julia Gillard</p> <p>Christina to contact Cathy S</p>	<p>Christina</p> <p>Penny</p> <p>Christina</p>

Item No	Item	Action	By whom Due date
	<p><u>Report from UN</u> <i>Young Survey 3</i> No exact percentages available for this teleconference – around 64%.</p> <p><i>Newsletter</i> Jean will send revised address list to printers next week and newsletter will go out by Thursday.</p> <p><i>Mid 4</i> Pilot surveys being returned. Positive response from participants.</p> <p><u>Substudies</u> Contraception substudy proceeding. Cate France's substudy: good percentage of pilots returned. 2 UQ substudies: Ethics obtained for both. Carer's – Anne Russell revising survey. Focus groups being organised. CVD – Lindy making contacts at Prince Charles – progressing well.</p> <p><u>Substudies 2004</u> Penny et al – Discovery grant on track. Will conduct a trial of palm pilots and beepers on the young women before Christmas.</p> <p><u>Project Coordinator's report</u> Annette asked Wendy for a report on the Ageing meeting. Patricia Reeve – name to be noted for future contact – very supportive.</p> <p><u>AOB</u> Next month's meeting on daylight saving time – 10 am for NSW and Victoria, and 9 am for Queensland.</p>		

Next meeting: Thursday 6<sup>th</sup> November 2003 at 9 am/10 am

**Steering Committee Teleconference  
Thursday 6<sup>th</sup> November 2003**

**Present:** Annette Dobson, Penny Warner-Smith, Christina Lee, Anne Young, Lois Bryson, Wendy Brown, Julie Byles

**Apologies:** None

**Minutes:** Penny Knight

Item No	Item	Action	By whom Due date
1	<b>Welcome and apologies:</b> Annette welcomed everyone.		
2	<b>Minutes and matters arising</b> All on agenda – no problems with previous minutes.		
3	<p><b>Strategic issues</b></p> <p><u>Report on Re-funding progress</u> The six week extension of the contract has been signed by both Universities. Draft of the new contract has not been received to date. Annette to see what she can do about expediting this. Appear not to have been short-listed for the Enabling Grant. Will submit an Expression of Interest again next year.</p> <p>NIH. No reply from anyone via email. Annette to attempt to speak to them on the phone.</p> <p>Program Grant – Julie will be visiting Queensland on 17 December for an all day discussion session. Chris working on the application document for discussion on the 17 December.</p> <p>All to look at rules for a Project Grant to see whether we can use the same information for a Project Grant application.</p> <p>Possible high level meeting (Tony Abbott?) in Canberra early next year to garner support and put pressure on the relevant departments.</p> <p>All to research ways of getting more funding.</p> <p><u>Report from UN</u> <i>Young Survey 3</i> Response rate still around 63%.</p> <p><i>Mid 4</i> Jean hoping to have data ready to circulate in mid November. Should be circulated by middle of next week at the latest.</p>		

Item No	Item	Action	By whom Due date
	<p><u>Substudies</u> See Chris's report. Caregiving survey to be finalised later today. Focus groups for the CVD Project are on schedule.</p> <p><u>Substudies 2004</u> Reminder from Chris about keeping schedules up to date with regard to the Older women for next year.</p> <p><u>Project Coordinator's report and UQ report</u> See notes. Alicia Svensson has been appointed as an RA to assist Researchers in Queensland. Outcome of two WHA related Postdoc applications still not known.</p> <p><u>AOB</u> None</p>		

Next meeting: Thursday 4<sup>th</sup> December 2003 at 9 am/10 am

**Steering Committee Teleconference  
Thursday 4<sup>th</sup> December 2003**

**Present:** Annette Dobson, Penny Warner-Smith, Anne Young, Wendy Brown, Julie Byles

**Apologies:** Christina Lee, Lois Bryson

**Minutes:** Penny Knight

Item No	Item	Action	By whom Due date
1	<b>Welcome and apologies:</b> Annette welcomed everyone.		
2	<b>Minutes and matters arising:</b> All on agenda – no problems with previous minutes.		
3	<p><b>Strategic issues</b></p> <p><u>Report on Re-funding progress</u> Re-funding contract: re-signing is progressing slowly. We will be applying for a Program Grant next year. Meeting on the 17<sup>th</sup> December with Julie, Wendy, Chris and Annette to draft the application. Annette and Chris have been pursuing NIH grant, without much success.</p> <p><u>Report from UN</u> Circulated by Penny yesterday.</p> <p><i>Mid 4</i> Ethics variation should be in by the end of this week. Penny to confirm with Sue O'Connor that the variation of Mid 4, and the two substudies (Carers and CVD) only have to be sent to the Chairperson and not to the full committee.</p> <p><u>Substudies</u> See Chris's report. Anne Russell to speak to Lyn Adamson about newsletter for the Carers substudy.</p>		



Item No	Item	Action	By whom Due date
	<p><u>Substudies 2004</u> Yvette Miller will be doing a Post Doc next year, looking at gestational diabetes and physical activity in the Mid women. Anne to report back to Wendy on relevant data from Diabetes substudy.</p> <p>Julie will look at bringing the 'Falls' substudy forward to fit in better with the timetable.</p> <p><u>Project Coordinator's report and UQ report</u> See notes. Alicia Svensson to start next week. Natalie Koloski (put forward by Nancy Pachana) has been awarded an NHMRC Post Doc. She will be working on cognition in the elderly. Annette is proposing to put in expression of interest about widows and their health before and after the death of their spouse. Julie requested that she be the collaborator.</p> <p><u>AOB</u> Anne's request to the Stats department for stats assistance has escalated to strong submissions for ongoing collaboration with us. She asked for opinions on this. Annette feels it is important to deal here with Peter Howlett, but that we should be the ones to drive the questions. 20<sup>th</sup> January 2004 for the face to face meeting in Newcastle. Alicia to visit for a few days at the same time. Agreed dates for the Steering Committee meetings next year. Anne advised that the Attrition paper had been rejected.</p>		

Next meeting: Thursday 8<sup>th</sup> January 2004 at 9 am/10 am

**APPENDIX 2. MID-AGE PILOT SURVEY 4 MATERIALS**

For copies of ALSWH main surveys please visit:  
<http://www.newcastle.edu.au/centre/wah/surveys.html>

**APPENDIX 3. PARTICIPANT NEWSLETTER**

For a copy of the 2003 ALSWH participant newsletter please visit:

<http://www.newcastle.edu.au/centre/wha/Reports/newsletters.html>

**APPENDIX 4. DATA BOOK FOR MID-AGE SURVEY 3 (2001)**

For a copy of the Mid-age Survey 3 data book please visit:

<http://www.newcastle.edu.au/centre/wha/surveys.html>

women's  
health  
*australia*



December 2003