

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.



Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

Attributions and Representations of Joint Pain Symptoms
in Seniors:
Implications for Self-Reported Health Care Behaviours

A Thesis Submitted to the College of
Graduate Studies and Research
in Partial Fulfilment of the Requirements
for the Degree of Doctor of Philosophy
in the Department of Psychology
University of Saskatchewan
Saskatoon

By
Lara K. Robinson
Spring 1999

© Copyright Lara Kathleen Robinson, 1998. All rights
reserved.



National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-37911-6

UNIVERSITY OF SASKATCHEWAN

College of Graduate Studies and Research

SUMMARY OF DISSERTATION

Submitted in partial fulfillment
Of the requirements for the

DEGREE OF DOCTOR OF PHILOSOPHY

By

LARA KATHLEEN ROBINSON

Department of Psychology
College of Arts and Science
University of Saskatchewan

Spring 1999

Examining Committee:

Dr. N. Muhajarine	XXX/XXXXXXX/XXX Dean's Designate, Chair, College of Graduate Studies and Research
Dr. J. Cheesman	For Chair of Advisory Committee Dept. of Psychology
Dr. C. von Baeyer	Supervisor, Dept. of Psychology
Dr. M. Crossley	Dept. of Psychology
Dr. N. Stewart	College of Nursing
Dr. G. Pancyr	Dept. of Psychology

External Examiner:

Gloria M. Gutman, Ph.D.
Professor of Gerontology and Director , Gerontology Research Centre
Simon Fraser University at Harbour Centre
2800 – 515 West Hastings Street
Vancouver, British Columbia V6B 5K3

Permission to Use

In presenting this thesis in partial fulfilment of the requirements for a Postgraduate degree from the University of Saskatchewan, I agree that the Libraries of this University may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by the professor or professors who supervised my thesis work or, in their absence, by the Head of the Department or the Dean of the College in which my thesis work was done. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of Saskatchewan in any scholarly use which may be made of any material in my thesis.

Requests for permission to copy or to make other use of material in this thesis in whole or part should be addressed to:

Head of the Department of Psychology
University of Saskatchewan
Saskatoon, Saskatchewan (S7N 5A5)

Abstract

Research suggests that 30-83% of seniors suffer from some form of pain, which often interferes with their daily functioning. This study assessed seniors' health care behaviours that are elicited by joint pain symptoms and three sets of predictor factors (demographic, need, & belief). These predictor factors were derived from a review of the empirical research and three theoretical models (the Health Services Utilisation Model, the Health Belief Model, and the Common Sense Model of Illness Representation). The predictor factors were made specific to either joint pain or ageing. Data were collected from 250 non-institutionalised seniors using a detailed personal and health information questionnaire. Two hierarchical set multiple regression analyses were done, one for Health Service Utilisation Behaviours (HSUB) and one for Self Care Behaviours (SCB). Overall, the regression analyses explained 50% of the variance of the HSUB and 23% of the variance of SCB. The need and belief sets were significantly associated with both HSUB and SCB variance. The

demographic set of variables was not significantly associated with HSUB and SCB variance. This study has several limitations, including the use of a convenience sample, modest questionnaire return rate (29%), and the reliance on self-report, retrospective data. Despite these limitations, the study contributed to this research area. Prior research has found need variables to significantly relate to HSUB. However, this study also found the belief set accounted for a significant portion of HSUB variance at both a statistical and practical level (25%). Future research could attempt to replicate the results with prospective data. Also, future research could focus on seniors with a lower economic status than those seniors who participated in this study. In addition, future research should attempt to determine what additional factors play a role in determining seniors' self care behaviours.

Acknowledgements

*From quiet homes and first beginning,
Out to the undiscovered ends,
There's nothing worth the wear of winning,
But laughter and the love of friends.*

Hilaire Belloc

Oxford Dictionary of Quotations

p.39

There is no way to begin to express my gratitude to my family and friends. Numerous people have helped me, supported me and been there for me during the moments of anxiety and frustration as I toiled on my dissertation. I can only begin to let them know how much their support meant to me by mentioning them here by name.

To start, I want to thank my source, Jim Hill. He has been there for me since I started my dissertation. He has provided me with perspective, helped me laugh when I have felt despairing, and given me caring support through out. Thank you.

I also want to thank my family. My parents, Bill and Penny Robinson, who have provided me

with support and love. They never faltered in their belief in my ability to do whatever I chose. They have provided both practical and emotional support through out. My sister, Renée Robinson, and her fiancé, José Gomez-Garcia, who have also been incredibly supportive. They have listened to my panic, helped me with my computer, helped with formatting, and made many trips to the library for me. My grandmothers, Gwen Henderson and Jean Robinson, who are important to my life and who have always been proud of my endeavours. Finally the rest of my family - aunts, uncles, cousins and all - too many to mention by name but whose support was appreciated none the less. Thank you.

My many friends, both new and old, who have provided me with support deserve mention. They include but are not limited to Wendy Witzel, Elenor and Tom Riley, Anita Hubley, Bruno Zumbo, Kim Forrest, Gwen Burgart, Lois Goodman, Gail Mukaida, Karin Christensen, Todd, Neil and Julie Harris, Sylvie LeClerc, and Shannon Baskerville. Thank you.

In addition, my colleagues at work, the staff of Prince George's Adult Mental Health Services and the Psychiatric Unit of PGRH,

deserve mention. Some of these individuals have become good friends while some I am just beginning to know well but all of them have been wonderfully supportive over the past 2 years. Thank you.

My gratitude also goes out to my dissertation supervisor, Dr. Carl von Baeyer, and my dissertation committee, Dr. Norma Stewart, Dr. Glenn Pancyr, Dr. Margaret Crossley, and Dr. Gloria Gutman. I would also like to thank Dr. Linda McMullan who was supportive during my graduate training and acted in many ways as a mentor. Thank you.

*Think where man's glory most begins and ends,
And say my glory was I had such friends.*

Y.B. Yeats

Oxford Dictionary of Quotations

p.586

Dedication

I dedicate this dissertation with love to my grandmothers, Gwen Henderson and Jean Robinson. They are the matrons of both my extended families. They played a large role in promoting the love of learning and knowledge in their own children and through their children helped instill that same love of learning in their grandchildren, myself included.

Table of Contents

Permission to Use	ii
Abstract	iii
Acknowledgements	v
Dedication.....	viii
Table of Contents	ix
List of Figures	xiv
List of Tables	xv
List of Appendices	xvii
List of Abbreviations	xviii
1. Literature Review	1
1.1 Pain and Seniors	3
1.2 Joint Pain and Seniors	8
1.3 Seniors' Health Care Behaviours	9
1.3.1 Defining Illness Representation and Health Care Behaviours	9
1.3.2 Illness Representation Research	13
1.3.3 Self-care Behaviours	16
1.3.4 Health Service Utilisation Behaviours....	22
1.3.5 Age and Health Care Behaviours	26
1.3.5.1 Three Groups of Health Service Utilisers.....	27
1.4 Theoretical Models	32
1.4.1 Brief Review of Alternative Models	33
1.4.1.1 The Theory of Reasoned Action	33
1.4.1.2 The Theory of Planned Behaviour ..	34

Table of Contents - Continued

1.4.1.3 The Health Decision Model	34
1.4.1.4 The Social Learning Theory	35
1.4.1.5 The Protection Theory	36
1.4.2 Review of Models Used	37
1.4.2.1 Health Services Utilisation Model (HSUM)	37
1.4.2.2 Health Belief Model (HBM)	43
1.4.2.3 Common Sense Model (CSM)	49
1.4.3 A Summary of Theoretical Models	53
1.5 Factors Predicting Health Care Behaviours	55
1.5.1 Demographic Set Variables	56
1.5.2 Need Set Variables	57
1.5.2.1 Symptom Severity	57
1.5.2.2 Symptom Duration	59
1.5.3 Beliefs Set Variables	60
1.5.3.1 Perceived Treatment Efficacy	61
1.5.3.2 Illness or Injury Attribution	62
1.5.3.3 Comparative Health Status	63
1.5.3.4 Age Attribution	65
1.5.3.5 Age Perception	70
1.5.3.6 Perceived Negative Feedback From Pysician	72
1.5.3.7 Belief that Pain is a Normal Part of Ageing	72
1.6 Validity	73
1.6.1 Content-related Validity	74

Table of Contents - Continued

1.6.2 Criterion-related Validity.....	75
1.6.3 Construct-related Validity.....	76
1.6.4 the Unity of Validity.....	78
1.7 Summary	79
2. Questionnaire Construction and Piloting	86
2.1 Stage One: Construction of Questionnaire and Initial Piloting	86
2.1.1 Method	86
2.1.1.1 Participants	86
2.1.1.2 Procedure and Results	86
2.2 Stage Two: Assessment of Study Questionnaire ...	89
2.2.1 Method	89
2.2.1.1 Instrument	89
2.2.1.2 Participants	89
2.2.1.3 Procedure	91
2.2.1.4 Analysis	93
2.2.2 Results	95
3. Main Study	105
3.1 Stage Three	105
3.1.1 Method	105
3.1.1.1 Instrument	105
3.1.1.2 Participants	107
3.1.1.2.1 Study Demographics Compared to Canadian Statistics	110
3.1.1.3 Procedure	113

Table of Contents - Continued

3.1.1.4 Analysis	114
3.1.1.4.1 Descriptive	114
3.1.1.4.2 Reliability and Validity..	114
3.1.1.4.3 Screening of Data	115
3.1.1.4.4 Choosing the Type of Multiple Regression Analysis	115
3.1.1.4.5 Testing Hypotheses	116
3.1.2 Results	123
3.1.2.1 Descriptive Statistics	123
3.1.2.1.1 Description of Seniors' Pain Experience	123
3.1.2.1.2 Description of Seniors' Visits to Their Family Physician	123
3.1.2.1.3 Description of Seniors' Use of Alternative Treatments.....	126
3.1.2.2 Reliability and Validity	128
3.1.2.3 Screening	129
3.1.2.4 A Priori Regression Analysis	134
3.1.2.4.1 Health Service Utilisation Behaviours (HSUB)	134
3.1.2.4.2 Self-care Behaviours (SCB)	140
3.1.2.5 Post-hoc Regression Analyses.....	145
3.1.2.5.1 Health Service Utilisation Behaviours (HSUB)	145
3.1.2.5.2 Self-care Behaviours (SCB)	149
3.1.2.6 Summary of Regression Analyses...	154

Table of Contents - Continued

4. Discussion	155
4.1 Health Service Utilisation Behaviour (HSUB) ...	155
4.2 Self Care Behaviour (SCB)	165
4.3 Implications for Theoretical Models.....	168
4.3 Limitations	169
4.4 Future Research	173
4.5 Conclusions	175
References	178
Appendices	189

List of Figures

Figure 1.1: Breakdown of Health Care Behaviours	14
Figure 1.2: The Health Services Utilisation Model (HSUM)	38
Figure 1.3: The Health Belief Model (HBM)	45
Figure 1.4: The Common Sense Model (CSM)	50

List of Tables

Table 2.1	Occupations-Self Identified	90
Table 2.2	Reliability Statistics For Each Variable	96
Table 2.3	Reliability and Validity Findings	100
Table 2.4	Comparison of Original and Revised Questionnaires	103
Table 3.1	Participant's Current or Pre-Retirement Occupation	111
Table 3.2	Comparing the Study Participants With Data From Statistics Canada	112
Table 3.3	Pain Site Frequencies	124
Table 3.4	Pain Severity	125
Table 3.5	General and Joint Pain Specific Visits to the Family Physician	125
Table 3.6	Self-reported and MD Reported Visits to the Family MD	127
Table 3.7	Variable Composites in Stage 3	130
Table 3.8	Reliability Statistics	132
Table 3.9	HSUB Hierarchical Set Regression Analysis (N = 250)	135
Table 3.10	HSUB Variable Specific Regression Results (N = 250)	137
Table 3.11	SCB Hierarchical Set Regression Results (N = 250)	141
Table 3.12	SCB Variable Specific Regression Results (N = 250)	143
Table 3.13	HSUB Hierarchical Set Regression Results - Complete Questionnaires Only (N = 127)	146
Table 3.14	HSUB Variable Specific Regression Results - Complete Questionnaires Only (N = 127)	148

List of Tables - Continued

Table 3.15	SCB Hierarchical Set Regression Results - Complete Questionnaires Only (N = 127)	151
Table 3.16	SCB Variable Specific Regression Results - Complete Questionnaires Only (N = 127)	153

List of Appendices

Appendix A: Definitions	190
Appendix B: Validity	193
Appendix C: Stage 2 Questionnaire	203
Appendix D: Stage 3 Questionnaire	221
Appendix E: Stage 3 Composite Calculations	240

List of Abbreviations

CSM	Common Sense Model
HBM	Health Belief Model
HCB	Health Care Behaviours
HSUB	Health Service Utilisation Behaviours
HSUM	Health Service Utilisation Model
OA	Osteoarthritis
SCB	Self Care Behaviours

1. LITERATURE REVIEW

This research project is designed to investigate seniors' health care behaviours in relation to joint pain and ageing. In an attempt to increase the amount of variance accounted for beyond that of previous research, this research project increased the specificity of the analyses by focusing on age-related and joint pain-related factors rather than general health factors. In particular, the purpose of this study was to assess if age-related and pain-related factors were associated with seniors' health care behaviours elicited by joint pain. Three models were used to provide a theoretical and research basis for these variables; whereas, the joint pain and ageing focus provided the specificity needed to increase the predictability of seniors' health care behaviours. This more specific approach is appropriate since it is important not to oversimplify seniors' experience of illness, including their experience of pain. Any research hoping to contribute to our understanding of seniors' pain experiences needs to allow for individual differences that occur within this population. All too often seniors are incorrectly viewed as a homogeneous group (Rodin, 1986). To oversimplify seniors' experience of pain only maintains a

restricted and stereotypical view of the older adults of our society.

In the first two sections of the literature review, the literature on seniors' pain experiences is discussed. The third section reviews seniors' health care behaviours (HCB) research and discusses how HCB were defined for this study. Clarification is necessary given the variety of definitions and terms used in the literature. The fourth section reviews three theoretical models of health care behaviours. These models provide the reader with a theoretical framework in which to conceptualise this research project. The fifth section discusses the factors that mediate individuals' health care behaviours, particularly their use of formal health care services (those services provided by health care professionals). These predictor factors were derived from the three models reviewed, as well as from the research conducted in this area. The sixth section outlines issues concerning validity which relate to the development of the questionnaire constructed for this research project. In the last section the connections between the literature review and this research project are summarised, culminating in a discussion of the research hypotheses. Although this research project is about seniors' pain-related health care behaviours, most of the research discussed focuses on illness symptoms in general. This is due to a dearth of

information on how seniors perceive and react to pain symptoms.

1.1 Pain and Seniors

Within the senior population, pain is common (experienced by 30-86% of research participants) and often interferes with various daily activities (Brattberg, Parker & Thorslund, 1996; Brody & Kleban, 1983; Gagliese & Melzack, 1997a; Cook & Thomas, 1994; Gibson, Katz, Corran, Farrell, & Helme, 1994; Hickey, Akiyama & Rakowski, 1991; Hopman-Rock, Kraaimaat & Bijisma, 1997; Hughes, Dunlop, Edelman, Chang, & Singer, 1994; Hughes, Edelman, Singer & Chang, 1993; Mobily, Herr, Clark, & Wallace, 1994; Ross & Crook, 1995; Roy & Thomas, 1986; Roy & Thomas, 1987; Thomas, 1995; Thomas & Roy, 1988). In a large epidemiological study ($N = 3,097$), Mobily and colleagues (1994) found that 86% of the seniors they surveyed had experienced pain in the past year and 56% had multiple pain complaints. They also found that joint pain was the most prevalent pain site. In addition, they found that as self-reported pain severity increased, so did the self-reported impact on daily activities. This later finding is similar to the findings from research done by Hughes and colleagues (Hughes et al., 1994; Hughes et al., 1993). They found that self-reported pain severity was a good predictor of level of disability. In fact, for both cross-sectional and

longitudinal data, the predictive value of self-reported pain severity was found to be similar to the predictive value of joint impairment assessed by a rheumatologist. Hopman-Rock and colleagues (1997) investigated the quality of life of individuals with hip or knee pain. They found that those individuals with chronic pain also reported a significantly lower quality of life.

Further documentation of pain and seniors was given by Brattberg, Parker and Thorslund (1996) who found that 72% of the 537 seniors they surveyed (all 77 years or older) reported some type of pain. In addition, 47% of the seniors reported pain in at least two locations and 33% reported having severe pain. Roy and Thomas (1986) found that, of the 132 seniors participating in their study (97 institutionalised seniors, 35 living in the community), 83% suffered from pain. Of those seniors reporting pain, 74% reported that pain interfered with their daily living. Brody and Kleban (1983) found that compared to other mental and physical symptoms, pain and fatigue/weakness were found to disturb the largest number of participants (63% for seniors with normal mental functioning). Furthermore, seniors reported pain to be the most frequently experienced and bothersome symptom. Of those experiencing pain, 62% reported having pain "very often". Sixty-six percent of the cognitively intact seniors reporting pain were bothered by their pain either "a lot" or "a medium amount" (Brody &

Kleban, 1983). Roy and Thomas (1987) found that about 70% of the 148 seniors they interviewed had pain complaints. Hickey, Akiyama and Rakowski (1991), in a study using daily health logs, found that the three most frequently reported illness symptoms involved pain (pain in joints/bones; pain in back/neck; pain, weakness, or numbness in face/arm/leg). Thomas and Roy (1988) found that 73% of the seniors in their study reported having chronic pain.

However, not all studies found pain to exist at such high frequencies or to be disabling. The Saskatchewan Health Status Survey of the Elderly, Report II: The Elderly in the Community (Stolee, Rockwood, & Robertson, 1982) found that approximately 30% of the 1239 individuals (65+ years) surveyed responded positively to the question "Are you sometimes in physical pain?" Of those individuals responding positively, approximately 23% "occasionally" experienced pain and approximately 7% experienced pain "often". Also, Roy and Thomas (1987) found that individuals with pain reported very little disability due to this pain.

The frequency of seniors' pain problems reported in the literature varied, depending on whether the researchers focused on overall pain or specific types of pain. When researchers studied pain in a general sense, seniors appear to have more pain experiences than younger age groups. For example, Crook, Rideout and Browne (1984) found that for

persistent pain, the morbidity rates (age specific pain rates per 1000 population) increased with age. However, the age-related patterns are different when specific types of pain are studied. Seniors do not necessarily experience a greater frequency of most types of pain problems compared to other age groups. Sternbach (1986) found that the younger individuals surveyed were more likely to experience all types of pain with the exception of joint pain which was more prevalent in the older individuals. When investigating the prevalence of neck pain, Cote, Cassidy, and Carroll (1998) found that "Grade I" neck pain ("low pain intensity/low disability", p.1691) decreased with age; whereas, with all other levels of neck pain there were no statistically significant age differences. Roy, Thomas, and Makarenko (1989, 1990) compared the frequency of different types of pain symptoms in seniors ($n = 124$) and students ($n = 99$). Seniors were four times more likely to report not having pain experiences. By asking about specific types of pain symptoms, they found overall students had more pain than seniors did. Seniors, however, tended to report more daily joint pain. Although occasional pain was common for both populations, regular pain was uncommon. Mobily et al. (1994) found that participants 85 years and older reported fewer back and joint pain complaints than those individuals between the ages of 65 to 74 and 75 to 84 years of age.

The findings from the studies reviewed above may

reflect a variety of factors, including age differences, cohort effect, participant sampling, pain perception or tolerance and/or symptom reporting (Gibson, Thomas, & Cook, 1998). However, one important trend is that the findings differ depending on whether the researchers focused on general pain or specific types of pain. These findings help demonstrate the importance of specifying pain type and duration when studying pain in older persons.

Even using the conservative estimate that 30% of seniors experience pain, the prevalence of pain in this population is a concern. Furthermore, considering the increasing proportion of seniors in the population (Denton, Feaver, & Spencer, 1987; Ferrell, 1996), the experience of pain within this age group needs to be understood for both humanitarian and economic reasons (Chapman, 1984). Improved understanding of pain is of humanitarian significance because, by understanding the various "non-medical" factors that may influence seniors' pain, clinicians could improve the health care provided to address older individuals' pain problems. Greater comprehension of pain is of economic importance because, by understanding seniors' pain experiences, the health care system may be able to provide more efficient health care.

1.2 Joint Pain and Seniors

This research project focused on the experience of joint pain, since, as noted above, this is one of the more frequent pain problems seniors experience (Hughes et al., 1994; Hughes et al., 1993; Mobily et al., 1994; Ross & Crook, 1995; Roy et al., 1990; Sternbach, 1986). Joint pain is also associated with disability and stress in seniors (Hughes et al., 1994; Hughes et al., 1993; Melanson & Downe-Wamboldt, 1995; Weiner, Pieper, McConnell, Martinez, & Keefe, 1996). Another reason for focusing on joint pain is that there are many disease processes associated with such pain. These disease processes include, but are not limited to, osteoarthritis, rheumatoid arthritis, inflammatory arthritis, systemic lupus erythematosus, and progressive systemic sclerosis (Bienenstock & Fernando, 1976; Davis, 1988). Osteoarthritis (OA) is one of the more prevalent forms of chronic joint conditions and this condition's prevalence increases with age (Davis, 1988). OA, itself, is not a single disease but a heterogeneous cluster of disorders, involving similar joint damage. OA can be divided into generalised and joint-specific OA and these two broad groupings can, in turn, be further differentiated. In addition, joint pain is often viewed as a normal component of the ageing process (Bienenstock & Fernando, 1976). Thus, given the different potential causes of joint pain, seniors suffering from such

pain may have difficulty deciding whether they should make use of the formal health care system.

In summary, it is important to note that joint pain can be caused by a diverse group of disease processes. Although many of these health problems are associated with ageing, they are not limited to older individuals. Also, the anatomical site where a senior may develop joint pain varies. Some possible sites for joint pain include: hands, knees, hips, shoulders, feet, wrists, elbows and ankles (Bienenstock & Fernando, 1976; Davis, 1988; Morley, 1977; Newton, 1984). Thus, the high prevalence and complexity of joint pain in the senior population makes seniors' experience of and reaction to joint pain an ideal focus for study.

1.3 Seniors' Health Care Behaviours

1.3.1 Defining Illness Representation and Health Care Behaviours

This section describes the definitions of the terms "illness representations", "health care behaviours", "self-care behaviours", and "health service utilisation behaviours" as used in other research articles. In addition, it provides the specific definitions for these terms as they are used in this study (also see Appendix A). Although based on the literature, these definitions are idiosyncratic to this study, with the exception of the

definition for illness representations. Furthermore, the definitions used in this study are not specific to any one theoretical model, except for the term "illness representations". The reason for modifying these definitions was to clarify and restrict the meaning covered by these terms and to describe how they relate to each other.

This project used Leventhal and colleagues' definition of illness representation. This definition was chosen because of its clarity. Specifically, *illness representation* was defined as how an individual conceptualises an illness and includes how an individual perceives the symptom's identity, cause, consequence and duration, and the emotional reaction to this perception (Leventhal, Meyer, & Nerenz, 1980; Leventhal, Nerenz, & Steele, 1984).

The definition for health care behaviours is not as clear. Much confusion surrounds both the labels and the definitions used in discussing health care behaviours. Part of this confusion is due to the wide area covered by health care behaviours research. Rakowski et al. (1988) listed the areas that health care behaviour research covers, including: service utilisation, patient/doctor interaction, self-care, symptom experience/perception, oral health, treatment compliance, and preventive health practices. Two common terms used in the literature are:

health care behaviours and self-care behaviours. Depending on the author, these terms are either differentiated or used interchangeably.

In particular, "self-care behaviours" (SCB) tends to be one of the more confusing terms, since definitions differ both across and within literature reviews and research reports (Dean, 1989; DeFriese, Konrad, Woomert, Kincade Norburn, & Bernard, 1994; Haug, Wykle, & Namazi, 1989; Holtzman, Akiyama, & Maxwell, 1986; Segall, 1987). Most of these definitions are broad in scope and explicitly include any behaviour that is elicited in response to a perceived acute or chronic physical symptom. In addition, SCB covers behaviours aimed at promoting health (DeFriese et al., 1994). A few of the definitions specify SCB as including only those actions that do not include a health care professional or conversely only those actions that do involve a health care professional. However, implicitly most researchers using the term SCB tend to define it as only those behaviours that fall outside the formal health care system. This conflict between explicit and implicit definitions of SCB can make research findings in this area difficult to integrate. There appears to be a need to better define the term "self-care behaviours" (SCB), as well as the term "health care behaviours" (HCB). In particular the definitions need to differentiate those behaviours involving the formal health care system from

those not involving it.

As mentioned earlier, the author chose to modify the definitions of the terms "health care behaviours", "self-care behaviours" and "health service utilisation behaviours", in order to clarify and restrict the meaning covered by these terms. *Health care behaviours* (HCB) were defined by the author for this study as any behaviour that individuals report making in response to perceived joint pain. This definition of HCB included such behaviours as: not taking action, using informal health care systems, using formal health care systems, using folk treatments, and lay consultations. In addition, it is important to note that HCB are not necessarily adaptive but include any behaviours made in response to perceived joint pain regardless of the actual benefit of the behaviour. This conceptualisation of HCB is narrower than the definitions used in some of the literature, in that it does not include health maintenance or illness prevention behaviours carried out when individuals are symptom-free. This narrower definition reflects the specific focus of this study. The author subdivided HCB into two types of mutually exclusive categories: self-care behaviour and health service utilisation behaviour (see Figure 1.1).

Self-care behaviours (SCB) were defined by the author for this study as behaviour that individuals make in response to perceived joint pain that does not include the

formal health care system. The author limited the definition of SCB to those behaviours made outside the formal health care system because this approach seemed to represent the way the researchers used the term, despite their tendency to define SCB in broader terms. The term, "*health service utilisation behaviours*" (HSUB) was used in this study to describe those health care behaviours done in response to joint pain involving the formal health care system. Thus, although both self-care behaviour and health services utilisation behaviour can be made in response to the same joint pain, for this study, the behaviours are defined so they do not overlap. In this research project, seniors were asked to report those SCB and HSUB they did in response to their perceived joint pain. Although based on the literature, the definitions listed above were written to reflect this specific focus.

1.3.2 Illness Representation Research

An individual's illness representation mediates to some degree the HCB an individual makes in response to a physical symptom. This representation includes or is affected by a variety of factors, such as health beliefs, symptom severity, symptom duration, physician variables, demographic variables, and symptom severity. All three models that are discussed later in this document include, to some degree, the influence of individuals' illness

Health Care Behaviours (HCB)	
Self-care Behaviours (SCB)	Health Service Utilisation Behaviours (HSUB)

Figure 1.1: Breakdown of Health Care Behaviours

representation on an individual's health care behaviours. The Common Sense Model (CSM) explicitly discusses how individuals' concept of their symptoms is reflected in their health care behaviours. Also, King (1984) stated "...that the health beliefs in the Health Belief Model (HBM) may themselves be preceded by another set of cognitive processes that operate directly on health beliefs and thereby indirectly on health behaviours. These processes are suggested to involve causal explanations of illness - otherwise known as 'illness attributions'" (King, 1984, p. 289). Thus, understanding individuals' illness representations is an important part of understanding their health care behaviours.

The limited research on seniors' illness representations has resulted in mixed findings. Although Leventhal (1984) found that the older participants indicate less emotional reaction than younger participants to illnesses and are also more likely to attribute symptoms of fatigue and aching to age (Leventhal & Prohaska, 1986), for the most part age differences in illness representations are small (Leventhal & Prohaska, 1986). Furthermore, Keller et al. (1989) found no significant age differences in how younger and older individuals perceived the cause and consequences of 20 common illnesses. On the other hand, research has also found that some seniors tend to attribute some illness symptoms to ageing (Branch & Nemeth, 1985;

Cox, 1986; Haug, Wykle, & Namazi, 1989).

1.3.3 Self-care Behaviours

For this study, the two subclasses of health care behaviours are important, self-care behaviours and health service utilisation behaviours (see Figure 1.1). *Self-care behaviours* (SCB) were defined earlier for this study as those behaviours that individuals make in response to perceived joint pain that do not include the formal health care system. SCB include such behaviours as: do nothing¹, take over-the-counter medications, life-style changes, rest, talk to someone about the problem and use home remedies (Dean, 1989; Haug, Wykle, & Namazi, 1989; Hickey, Akiyama, & Rakowski, 1991; Holtzman, Akiyama, & Maxwell, 1986; Rakowski, et al., 1988; Roos, 1989; Segall, 1987; Stoller, 1982). Like other populations, seniors tend to respond with SCB to many illness symptoms (Cook & Roy, 1995; Davis et al., 1990; Dean, 1989; Haug, Wykle & Namazi, 1989; Hickey, 1988b; Hickey, Akiyama & Rakowski, 1991; Holtzman, Akiyama & Maxwell, 1986; Rakowski et al., 1988; Stoller, Forster, & Portugal, 1993; Strain, 1990).

In one of the few studies to focus specifically on SCB and seniors' pain, Davis et al. (1990) assessed the pain management methods used by individuals over 65 years of age. They found that seniors most frequently used the

¹ "Doing nothing" in response to a physical symptom is a SCB as it involves making a health care decision.

following seven methods: prescription medication, distraction, use of heat, exercise, heated pool/tub/shower, resting, talking to someone sympathetic to their concerns. Of these seven techniques, six were SCB. Furthermore, they found significant differences between adults over 65 and younger participants in how they managed their pain. They found differences in the types of methods used and noted that the older adults used fewer methods.

Assessing general SCB (not pain specific) using a self-kept daily diary format, Rakowski et al. (1988) found that SCB correlated with gender, personal health concerns, risk avoidance, daily symptoms, preventive information seeking, and morale. Furthermore, they found SCB occurred more frequently than the use of formal health care services, over a two-week period. Spitzer, Bar-Tal, and Ziv (1996) investigated the relationship between age, symptom severity, SCB, and others' care (non-medical) on the participants' perceptions of the outcome of SCB and others' care. Outcome was operationalized using three factors: (a) the perceived degree to which the health problem was solved, (b) the reported satisfaction with the solution, and (c) the perceived level of health status control. Symptom severity was negatively correlated with all three factors and positively correlated with age. Overall, they found there were significant differences between the younger participants (64 years older or younger) and the

older participants (65+ years old) on all three outcome factors. SCB had a greater impact on the older participants' perception of the degree to which their health problem was solved compared to the younger participants. Others' care had a greater impact on the younger participants' satisfaction than with the older individuals. For both age groups, SCB were significantly associated with participants' sense of control. However, the correlation of others' care on sense of control was higher for the younger individuals than for the older individuals.

Haug, Wykle, and Namazi (1989) found SCB were more likely to be used with symptoms perceived as mild. They did not find age cohort to be related to the use of SCB. Other predictors of SCB depended on the perceived severity.

With symptoms perceived as minor, good health was an important predictor of SCB. With symptoms perceived as more severe, the individual's faith in physicians also affected the use of SCB: low faith was associated with higher use of SCB. Another important factor associated with the various illness symptoms was the strength of attribution of symptoms to ageing, which was the only attitude variable related to SCB for both mild and severe symptoms. However, age attribution related more strongly to the use of SCB with mild symptoms.

In another study on seniors' HCB, Holtzman, Akiyama

and Maxwell's (1986) research goal was "... establishing the course of action that older persons believe to be the most appropriate response to 53 symptoms ranging from minor to potentially serious illnesses" (p.186). Seniors, ranging in age from 65 to 91 ($M = 72.9$), were interviewed. For each symptom, seniors rated the degree of seriousness and the response to the symptom that they felt was appropriate for someone of their age. For this last task, the researchers provided five options: (a) see health care professional, (b) take medication (over-the-counter), (c) rest, (d) do nothing, (e) other. There was a moderate to strong relationship between the perceived seriousness of a symptom and the endorsement of seeking professional health care. SCB were common across several symptoms; there was a tendency for symptom seriousness and self-care to be negatively correlated.

Holtzman et al. (1986) also found that the actions seniors stated they would take did not match their actual responses to their own symptoms over the previous 12 months. Instead, when dealing with their own symptoms, seniors had a greater tendency to ignore the symptoms or use self-care. The seniors did not seek professional care as often as they had indicated was appropriate. Holtzman et al. concluded that, for the most part, seniors responded appropriately to their symptoms. However, a small subgroup may be misusing self-care in a way that is dangerous and

thus, inappropriately avoiding the formal health care system.

Stoller and colleagues (1993) assessed the degree to which seniors used SCB to manage their physical symptoms and what factors seemed to influence this behaviour. They found that for the majority of symptoms reported, individuals coped without making use of the formal health care services. How they coped with the symptom varied depending on the specific symptom. Of those individuals reporting muscle or joint pain, 10.8% took no action, 51.8% self-medicated, 15.2% used non-medical self-treatment, and 22.2% consulted their physician². The non-medical self-treatment category was subdivided into the following types of interventions: pray, dietary home remedies, other home remedies, stay in bed, limit activity, read about symptom, change behaviour, and leisure activity. For joint pain, the top three interventions were to limit activity (42.4%), to use other home remedies (20.4%), and to pray (11.9%). Other home remedies for muscle or joint pain included use of heat pads, hot water bottles, liniments, hot baths, ice packs, massage, and elevation of extremities. Stoller et al. also analysed the tendency to take no action. They found that individuals reporting muscle or joint pain were less likely to ignore this symptom if they were uncertain about the

² Participants could endorse more than one action; therefore, percentages do not add up to 100%.

seriousness of the pain or if they had frequent prior experience with the symptom.

Kart and Engler (1994) studied the impact of predisposing factors on SCB. They found that actual self-report SCB were associated with "[b]eing female, not African American, perceiving an inability to maintain control over health status, having vision and/or hearing problems, and having one or more serious chronic illnesses..." (p. S304-S305). However, for the attitudinal index of self-care, they found higher scores associated with being female, being older, perceiving oneself as maintaining control over health status, and reporting fewer chronic illnesses. As with Holtzman and colleagues (1986), Kart and Engler's study (1994) suggests that factors influencing individuals' beliefs about SCB may differ from the factors influencing their actual behaviours. In addition to their analyses on predisposing factors (Kart & Engler, 1994), Kart and Engler (1995) also investigated the impact of predisposing, enabling, and need factors on the SCB of the same participants. They found that these three factors were associated with moderate amounts of variance (R^2 ranging from .05 to .33, depending on the SCB measure), with predisposing variables associated with the greatest proportion of variance (R^2 ranging from .03 to .18).

1.3.4 Health Service Utilisation Behaviours

For this study, *health service utilisation behaviours* (HSUB) include those health care behaviours that involve the formal health care system. Researchers have operationalized HSUB in several ways, including: time since last general check-up, number of physician visits in 12 months, number of days spent in the hospital, number of hospital stays, number of uses of ambulatory health care services (e.g., visits to physician, emergency room, outpatient clinics), and number of uses of home care services (Branch et al., 1981; Cox, 1986; Kelman & Thomas, 1988; Rakowski et al., 1988; Roos, 1989; Roos & Shapiro, 1981; Segall, 1987; Shapiro & Roos, 1985; Stoller, 1982; Thomas & Kelman, 1990; Wan & Odell, 1981; Wolinsky, Mosely & Coe, 1986). Investigators suggest that the individuals' age cohort (Haug, Wykle & Namazi, 1989) and their beliefs about age and illness (Herr & Mobily, 1991; Hickey, 1988a) affects symptom reporting.

Several studies have focused on the factors influencing seniors' symptom reporting. In general, the findings are mixed, with the variables "need" and "organization of care" (p.694) being the only factors consistently found to influence seniors' health service use (Berkanovic, Telesky & Reeder, 1981). These studies used repeated interviews and found greater symptom reporting was significantly related to need factors (especially reported

disability due to symptom), age, sex, income, continuity of care, social network contact, and health beliefs (perceived seriousness of illness, perceived efficacy of care, perceived susceptibility to illness, and concern about health). Of particular importance is the finding that specific health beliefs were significantly related to health service use but general health beliefs were not.

Compared to SCB, seniors respond with HSUB less frequently (Hickey, Akiyama & Rakowski, 1991; Rakowski et al., 1988). Hickey et al. (1991) found those symptoms which elicited professional care tended to be associated with "...the presence of pain, multiple symptoms, and/or symptoms of longer duration, and by persons in 'poor self-perceived health'" (p.179). Rakowski et al. (1988) used a daily health diary for a two-week period to assess what types of behaviours seniors use in response to experiencing various symptoms. They chose not to use a theoretical model to predict what they would find but stated that they expected to find that each health care behaviour interacted differently with each symptom.

Rakowski and colleagues (1988) focused on four areas: (a) taking action (general index), (b) "on my own" actions, (c) medication use, and (d) use of health professional services. In the first area, a high score on the general index of taking action was associated with being female, being married, being older, having a greater number of

symptoms, spending greater time with others, having a greater tendency to seek information and having a greater number of symptom days with moderate to great discomfort. These variables explained a modest proportion of the variance of the taking action index (20.5%). In the second area, the "on my own" actions were positively associated with being female, having greater concern with health, having lower morale, being less risk avoidant, seeking information and having fewer daily symptoms. In the third area, medication use was positively associated with life interference due to illness, lower concern about health, greater daily symptoms, greater days with painful symptoms, and fewer days when the cause of the symptoms were known. In the fourth area, use of professional care was positively associated with a greater number of illnesses, greater income satisfaction, lower internal locus of control, lower quality of life rating. Rakowski and colleagues concluded that the most important finding was "...the absence of several, or even one, dominant predictor, either in frequency or strength of association across the four dependent measures of behavioural response to symptoms" (Rakowski et al., 1988, p.291).

Stoller and Forster (1994) assessed the impact of several factors on physician utilisation by seniors. They found that most individuals coped with their symptoms on their own. HSUB occurred most frequently in response to

shortness of breath, chest pain, heart palpitations, swelling, vision problems and difficulty with urination. However, 22% of their participants contacted a physician about joint pain during the three-week assessment period. The HSUB made in response to joint pain was significantly associated with the participants' occupational prestige, education level, external locus of control, degree of pain/discomfort or interference in activity levels, uncertainty about the severity of the symptom, use of medical attribution of symptom, use of medical & non-medical attribution of symptom, and symptom duration. They conclude, that when the data across symptoms is considered, "it is people's interpretations of the symptoms they experience that trigger physician consultation" (Stoller & Forster, 1994, p.529). In particular, they found that across symptoms, the factors consistently associated with HSUB were: (a) the belief that the symptom was serious or uncertainty about its seriousness, (b) high levels of pain/discomfort or interference with activity level, and (c) the belief that the symptom was attributed to a medical problem (either alone or in combination with other issues).

Recent research has suggested that seniors are less likely to delay in seeking medical help once a symptom develops than younger adults (Leventhal, Easterling, Leventhal, & Cameron, 1995; Leventhal, Leventhal, Schaefer, & Easterling, 1993). Leventhal et al. (1993) found that

this age difference was the greatest when the severity of the symptom was uncertain but considered possibly serious. Shapiro and Roos (1985) reviewed the literature on seniors' health care services utilisation and found that approximately 80% of seniors visit a physician at least once a year and the greatest predictor of use is the individuals' health status. In addition, they expressed concern about the 20% of seniors who do not see a physician regularly. They felt that these seniors might be missing the possibility of early illness detection.

1.3.5 Age and Health Care Behaviours

In the literature on seniors' health care utilisation, researchers often express concern that some seniors may delay in seeking professional health care which could lead to the lack of early diagnosis and treatment of serious problems (Haug, Wykle, & Namazi, 1989; Herr & Mobily, 1991; Shapiro & Roos, 1985; Stoller, 1982). Although recent research suggests that seniors are less likely to delay medical contact than younger individuals (Leventhal et al., 1993; Leventhal et al., 1995), the possibility that this behaviour may vary across different symptoms, especially for chronic illnesses, needs to be considered. Hughes and colleagues (1994) found that longitudinally, self-reported arthritis pain is predictive of disability. They suggest that the acceptance of

musculoskeletal disease as part of ageing and the resulting lack of treatment may lead to seniors' experiencing a greater level of disability than necessary. Stoller (1982) noted in her literature review that "(a)lthough elderly persons exhibit a higher prevalence of chronic conditions and functional limitations, available literature suggests they consult a physician only one-third more often than persons under 65 years of age" (p.1080).

The literature is mixed on whether seniors' health care behaviours differ from younger individuals. The idea that there are age differences in health care behaviours is suggested by several writers (Clarke, 1987; DeForge, Sobal and Krick, 1989; Hickey, 1988b; Levkoff, Cleary, Wetle and Besdine, 1988; and Segall, 1987). While a few studies do support this belief (Keller, et al., 1989; Wolinsky, Mosely & Coe, 1986), many studies on seniors' health care behaviours, especially HSUB, do not support the existence of age differences (Branch, Jette, Evashwick, Polansky, Rowe & Diehr, 1981; Cook & Roy, 1995; Haug, Wykle, & Namazi, 1989; Keefe & Williams, 1990; Segall, 1987; Wan & Odell, 1981). These findings suggest that this issue is more complex than initially believed.

1.3.5.1 Three Groups of Health Service Utilisers

There is a tendency to treat the senior population as if it is a homogeneous group. However, the seniors

population is diverse and this diversity is reflected in their reactions to their physical symptoms. Some seniors seem to underreport their symptoms; whereas, others seem to overemphasise them (Parmelee, 1997). Similar diversity is found with seniors' HSUB. Roos and Shapiro (1981) interviewed seniors from the community (N = 2325) and institutionalised seniors (N = 201). On average, seniors visited the physician 2.7 times per year, a rate that was unrelated to age among the seniors in this sample. (This lack of age difference did not mean these seniors did not on average visit the physician more than middle-aged or young adults. Rather, within this sample, all of whom were seniors, there was no significant influence of age on physician visits.) Most seniors were not hospitalised and saw fewer specialists than the general population (108/1000 versus 121/1000). Community living seniors, however, had the lowest rates of ambulatory visits in comparison to those living in seniors' complexes and institutions. Also associated with greater rates of ambulatory visits were seniors with poorer self assessed health status, and higher numbers of symptoms.

Roos and Shapiro (1981) concluded that most seniors have the same health care utilisation patterns as other age groups but that there is a subgroup of seniors who are high health care users. They hypothesised that this subgroup accounts for the increase in health service utilisation

with age. They also noted another subgroup of seniors who use little or no health care services. They emphasise that with both subgroups (high users and low users) one can not assume that the amount of health care used is inappropriate. Rather, these individuals may simply be seeking the amount of health care necessary for their level of health. Other studies supported the existence of low and high health service use (Branch & Nemeth, 1985; Coulton & Frost, 1982; Hickey et al., 1991; Shapiro & Roos, 1985; Stoller, 1982).

Coulton and Frost (1982) used data obtained from the Study of Older People in Cleveland, Ohio, 1975, 1976. They found that the high use of health care services by seniors was due, in their sample, to a subgroup of seniors. Stoller (1982) found that 29.1% of the sample put off symptom reporting until they felt they had a problem ($N = 753$). Hickey, Akiyama and Rakowski (1991) used a daily health log and found that no action was taken for 36% of the symptoms reported. Furthermore, the seniors in their study were more likely to seek professional health care "... in the presence of pain, multiple symptoms, and/or symptoms of longer duration, and by persons in 'poor self-perceived health'" (p. 179).

Using data from the third wave of the Massachusetts Health Care Panel Study, Branch and Nemeth (1985) examined the factors influencing seniors who do not report their

symptoms. They found that 17 percent of the seniors ($N = 825$) surveyed responded that in the last year they did not seek medical care when they thought they should. When given four alternative reasons to choose from, 3% said it was due to appointment problems, 3% associated it with the cost factor, 3% felt it was due to transportation difficulties, and 12% stated they did not seek medical care because their symptom was due to age. Interestingly, when the actual number of visits made by these individuals to the physician was examined, age attribution was the only reason significantly associated with lower overall physician contact.

Shapiro and Roos (1985) were concerned about the subgroup of seniors who do not have regular contact with a physician. They used data gathered from the Manitoba Longitudinal Study to study this subgroup. Shapiro and Roos divided data from 2,422 seniors into nonusers (no contact in 2 years), low users (1-3 contacts in two years) and high users (4+ visits in two years). They found that nonusers were less educated and economically poorer than low users, and had greater mental impairment and social isolation than both low and high users. Those seniors who fell in the high user category tended to be female, had a greater education, lower self-esteem, poorer self-reported health status, and greater mental functioning than the nonusers. Over the seven years these three groups were studied,

Shapiro and Roos found that there was no difference between nonusers and low users in the chance of being admitted to a hospital but that nonusers were more likely to stay in the hospital longer and to die. Comparing nonusers and high users, they found that nonusers had less chance of being admitted to hospital but had an equal chance of staying for a long period of time and of dying. Comparing low users and high users, low users were less likely to have a negative outcome. They concluded that a general check up once every two years might be important for early detection and prevention of health problems.

In addition to those seniors who only use moderate levels of health care services, the existence of two subgroups (low & high users) may explain why seniors' HCB often seem to take two extreme forms. Some seniors appear to ignore the presence of illness, while others tend to exaggerate health related behaviours (Leventhal & Prohaska, 1986; Levkoff et al., 1988; Parmelee, 1997). Furthermore, it is also possible that these subgroups (low & high users) in the seniors population reflect similar trends in the general population. On the other hand, membership in these "subgroups" may not be stable across time. In their longitudinal study of seniors' HSUB, Stump, Johnson and Wolinsky (1995) found that the seniors who fell in the high user category were not the same individuals across time. They suggested that the individuals within the subgroup of

"high users" varied due to the natural fluctuations of illness.

1.4 Theoretical Models

As stated earlier, the purpose of this study was to investigate the influence of age-relevant and pain-relevant factors on seniors' health care behaviours. This project involved the analysis of the effects of three sets of variables on seniors' health care behaviours: demographics, perceived need, and beliefs. The three variable sets were developed by the author and reflect issues related to the previous research on seniors' HSUB, and the three theoretical models (Health Services Utilisation Model, Health Belief Model & Common Sense Model of Illness Representation). Although other HCB models exist, these models were chosen over other models because they dominated the literature on seniors' HSUB. Some of the alternative models not used in this study are briefly reviewed below; then the three models that were used are discussed. The purpose of this research project was not to assess these models, but rather to review the research associated with them in order to determine the predictor variables to be used in this research project. The literature on the three models provided a theoretical and research basis for these variables; whereas, the joint pain and ageing focus provided the specificity needed to increase the predictability of HSUB and SCB.

1.4.1 Brief Review of Alternative Models

Predicting behaviour has never been easy. A variety of models have been used in an attempt to explain HCB. As stated earlier, this study was based on three models that dominate the literature on seniors' HSUB (Health Services Utilisation Model, Health Belief Model & Common Sense Model of Illness Representation). However, these are not the only theories that have been used in an attempt to explain HCB. In the following section, a few of the models not used in this study are briefly described. These models include: (a) the Theory of Reasoned Action, (b) the Theory of Planned Behaviour, (c) the Health Decision Model, (d) the Social Learning Theory, and (e) the Protection Motivation Theory. These models were not excluded from the study due to any criticism of the models but because they were not as prominent in the literature on seniors' HSUB as the three models chosen.

1.4.1.1 The Theory of Reasoned Action

Ajzen and Fishbein (1980) proposed that behaviour could be predicted by individuals' intention to act. In their Theory of Reasoned Action, intention is influenced by two factors: (a) the attitude towards the behaviour and (b) the "subjective norm" (Becker, 1990). The attitude toward the behaviour incorporates the individual's belief about the outcome of the behaviour and the associated subjective

evaluation of these outcomes. The "subjective norms" include the individual's perceptions of what others expect and the individual's motivation to comply with them. The relative importance to the individual of the attitudes and subjective norms determines the weight given to the attitudes and norms (Becker, 1990).

1.4.1.2 The Theory of Planned Behaviour

Ajzen's Theory of Planned Behaviour evolved from the Theory of Reasoned Action (Becker, 1990; Conner & Sparks, 1996). This theory also proposes that behaviour is determined by an individual's intentions. However, rather than having two factors influencing intention, this model has three factors impacting an individual's intention to act. The first two are the same as the Theory of Reasoned Action: attitude towards the behaviour and "subjective norm". In addition to these two factors, the Theory of Planned Behaviour incorporates perceived behavioural control (Ajzen, 1988; Becker, 1990; Conner & Sparks, 1996). This third factor involves the perceived ease or difficulty in taking action. Past experiences, as well as, expected barriers were considered part of this third factor (Ajzen, 1988).

1.4.1.3 The Health Decision Model

The Health Decision Model proposed by Eraker, Kirscht,

and Becker in 1984 incorporates a large number of variables in an attempt to explain HCB (Becker, 1990). They proposed that both social interactions (i.e., social networks, social support, etc.) and sociodemographic variables impact an individual's health knowledge and experiences. In turn, health knowledge and experiences influence, and are influenced by, the individual's preferences and health beliefs, both general and specific. Then these preferences and beliefs interact with both the individual's health decisions and health compliance behaviours, resulting in health outcomes. These health outcomes create a feedback loop by impacting the individual's health experiences, knowledge, preferences and beliefs (Becker, 1990).

1.4.1.4 The Social Learning Theory

Bandura's Social Learning Theory emphasises the importance of outcome expectations and self-efficacy expectations (Becker, 1990). These factors influence an individual's decisions about goals and goal-directed behaviour (Maddux & DuCharme, 1997). An individual's outcome expectations reflect the person's beliefs about the outcomes that will result from a behaviour (Becker, 1990). The individual's self-efficacy expectations incorporate the person's beliefs about being capable of performing the behaviour. Both of these factors are beliefs which vary depending on the specific behaviour and situation (Becker,

1990). Also, both factors can be influenced by prior experiences, vicarious learning, external social pressures, and physiological arousal (Bandura, 1988; Becker, 1990). Self-efficacy is believed to affect all aspects of behaviour. In addition, it impacts the emotional reaction, the choice of behavioural setting, the effort expended, and the time committed (Becker, 1990; Maddux & DuCharme, 1997). However, the final decision to act is also impacted by the context and both personal and social restraints (Bandura, 1990).

1.4.1.5 The Protection Motivation Theory

The protection motivation theory has three phases: (a) sources of information, (b) cognitive mediating processes, and (c) coping modes (Rogers & Prentice-Dunn, 1997). The sources of information include both environmental (i.e., verbal persuasion and observational learning) and intrapersonal (i.e., personality and prior experiences) factors. These factors impact the next phase, the cognitive mediating processes (Rogers & Prentice-Dunn, 1997). In this phase, there are two key processes that influence an individual's protection motivation. The first process is the threat appraisal process, which involves the evaluation of maladaptive responses. The second process is the coping appraisal process, which involves the evaluation of adaptive responses. Both of these processes impact the

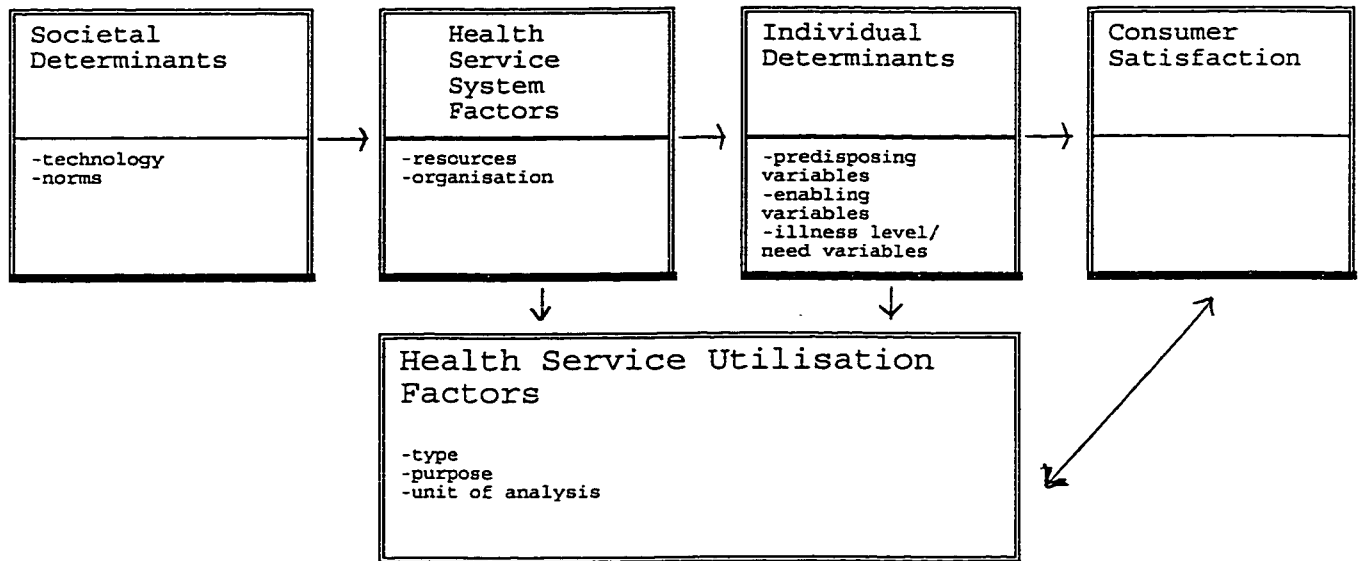
individual's protection motivation (Rogers & Prentice-Dunn, 1997). In addition, protection motivation is influenced by fear, which interrelates with the threat appraisal process. Finally in the last phase, the individual's protection motivation affects the choice of coping mode, adaptive versus maladaptive coping (Rogers & Prentice-Dunn, 1997).

1.4.2 Review of Models Used

In the following section, the models used in this study are reviewed. These models include the Health Service Utilisation Model, the Health Belief Model and the Common Sense Model of Illness Representation. As stated earlier, these models were chosen due to their prevalence in the seniors' HSUB literature.

1.4.2.1 Health Services Utilisation Model (HSUM)

The Health Services Utilisation Model (HSUM) is a model for understanding the factors that influence individuals' use of health services. In discussing this model, Andersen and colleagues (Aday & Andersen, 1974; Andersen & Newman, 1973) listed five areas that are important in understanding this process (see Figure 1.2). These areas include: (a) societal determinants (technology and norms), (b) health service system factors (resources and organisation), (c) individual determinants (predisposing variables, enabling variables and illness



HSUM: Individual Determinants - The Unit of Analysis

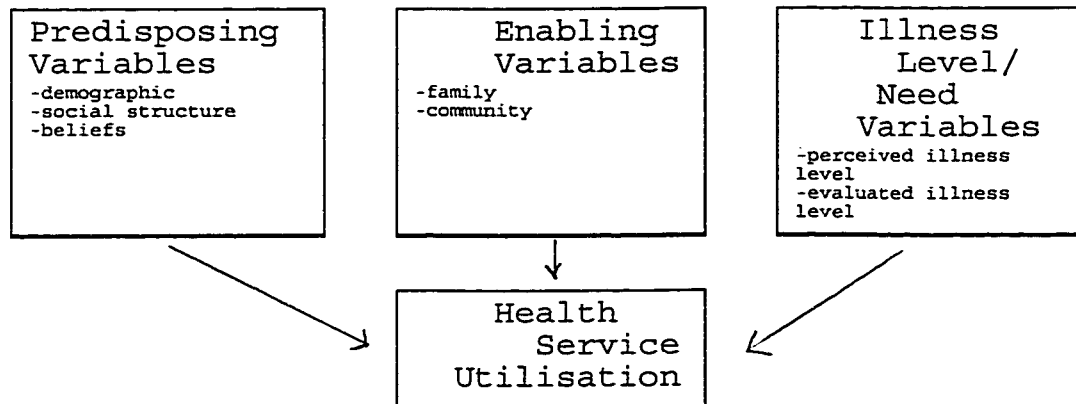


Figure 1.2: The Health Services Utilisation Model (HSUM)

level variables), (d) health service utilisation factors (type, purpose and unit of analysis) and (e) consumer satisfaction. The interaction among these five factors is complex (Aday & Andersen, 1974; Andersen & Newman, 1973). Health policy/societal factors influence both the characteristics of the health delivery system and individual determinants (characteristics of population at risk). The health delivery system characteristics affect both individual determinants and health service utilisation. The individual determinants influence both health service utilisation and consumer satisfaction. Finally, health service utilisation and consumer satisfaction interact. In other words, health service utilisation is thought to be directly affected by the characteristics of the health delivery system, individual determinants and consumer satisfaction.

This research project focused on the individual determinants, as does most of the research using the HSUM (Branch et al., 1981; Cook & Thomas, 1994; Coulton & Frost, 1982; Cronan et al., 1995; Stoller, 1982; Wan, 1989; Wan & Odell, 1981; Wolinsky & Johnson, 1991). In the HSUM, three general sets of individuals' characteristics are believed to affect the use of the health care system (Andersen & Newman, 1973; Aday & Andersen, 1974). These individual determinants include: predisposing factors, enabling factors and illness level factors. The first set,

predisposing factors, exist prior to the onset of the symptoms/illness and reflect "the propensity of individuals to use services" (Aday & Andersen, 1974, p. 213). Included within the category of predisposing factors are (a) demographic variables (age, sex, marital status, past illness), (b) social structure (education, occupation, family size, ethnicity, religion, residential mobility), and (c) beliefs (values concerning health and illness, attitudes toward health services, knowledge about disease) (Andersen & Newman, 1973).

The second set of individual determinants are enabling factors, those characteristics which "... make health resources available to the individual" (Andersen & Newman, 1973, p. 109). This category can be sub-divided into two groups of factors: family factors and community factors (Andersen & Newman, 1973; Aday & Andersen, 1974). Family factors include income, health insurance, type of regular health service source, and access to a regular source. Community factors include the ratio of health personnel and facilities to population, price of health services, region of country and the urban-rural character.

The final individual determinant category is illness level which is the "... perceived illness or probability of its occurrence for the use of health services to take place" (Andersen & Newman, 1973, p.109). More recently, this category has been labelled "need" rather than "illness

level". This category can be sub-divided into two groups: perceived illness level and evaluated illness level

(Andersen & Newman, 1973; Aday & Andersen, 1974).

Perceived illness level includes perceived disability, symptoms, diagnoses, and general health state. Evaluated illness level includes symptoms and diagnoses that are determined by a health care professional. In most research studies the illness level factors are called need factors, implying that the illness level (both perceived and evaluated) are a measure of actual need for health services.

Numerous studies on seniors' health care utilisation base their research on the HSUM (Bazargan, Bazargan, & Baker, 1998; Branch et al., 1981; Cook & Thomas, 1994; Coulton & Frost, 1982; Cronan et al., 1995; Kelman & Thomas, 1988; Stoller, 1982; Strain, 1991; Stump, Johnson & Wolinsky, 1995; Wan & Odell, 1981; Wolinsky & Johnson, 1991). Literature reviews and studies in this area indicate that the illness/need factor explains most of the variance of utilisation, and that the enabling and predisposing factors only explain a small percentage of additional variance (Coulton & Frost, 1982; Kelman & Thomas, 1988; Strain, 1991; Stump et al., 1995). Furthermore, even combining all three factors, this model tends to explain a small to moderate amount of the variation in seniors' health care services utilisation (Branch et al., 1981;

Wolinsky & Johnson, 1991). One exception to this finding was a recent study conducted by Bazargan and colleagues (1998). They used the HSUM to investigate factors influencing the frequency of African American seniors' visits to the physician. They were able to account for 55% of the variance of seniors' physician visits. In addition to accounting for a greater proportion of variance, unlike previous research, the predisposing and enabling variables together accounted for a significant portion of the variance (23%).

Cook and Thomas (1994); Cronan, Shaw, Gallagher, and Weisman (1995); and Strain (1990) conducted three of the few studies that focused on use of health care services by seniors with pain. They all used the HSUM as a guide for their analysis. Cook and Thomas (1994) studied the relationship between seniors' pain experiences and their HSUB. They used both traditional measures of health status and pain variables to operationalize the "need" factor. They found that pain did not add significantly to the regression model explaining their participants use of health care services. They also found that most of their participants chose to care for their pain on their own. However, pain was significantly correlated with both visits to physicians and general health service utilisation. It appears that pain did not contribute significantly to the regression analysis because it was highly correlated to the

traditional "need" variables entered into the analysis and failed to account for any additional variance beyond that accounted for by these other variables. Strain (1990) studied the frequency of lay consultations done by seniors with arthritis before and after visiting a physician. She found that almost all of the seniors she interviewed consulted family or friends about their arthritis (91%), with approximately 77% consulting someone prior to seeing their physician. Approximately half of these lay consultations involved the individuals relating facts about their arthritis not seeking advice. After having visited their physician, 91% of the seniors discussed the advice given by their physician with someone. Despite the high frequency of lay consultation, she also found that all but one of the seniors interviewed considered their physician their primary source of information about how to deal with health problems. Cronan et al. (1995) studied seniors with osteoarthritis and their HSUB in a HMO (Health Management Organisation). They found that the best predictor of HSUB was past service use. Other significant predictors included age, impairment level, and a sense of well being.

1.4.2.2 Health Belief Model (HBM)

The Health Belief Model (HBM) was originally formulated by Hochbaum, Leventhal, Kegeles and Rosenstock in an attempt to explain what influenced the preventative

and detection health care behaviours used by individuals who perceive themselves as being healthy and symptom free (Maiman & Becker, 1974; Rosenstock, 1966, 1974). The HBM focuses on understanding the connection between individuals' subjective experience and their behaviours (Rosenstock, 1966). In particular, it is designed to explain how individuals' health beliefs affect their health care behaviours. Rosenstock (1966) felt that these beliefs have two components, a cognitive and an affective component, but emphasised the importance of the affective component.

Specifically, the HBM is based on four factors believed to reflect individuals' internal experiences which vary across individuals, and influence individuals' health care behaviours (Rosenstock, 1966, 1974; see Figure 1.3). The first factor is the susceptibility individuals perceive themselves to have to any particular illness. This factor also includes individuals' beliefs about the diagnosis given, and susceptibility to illness in general (Janz & Becker, 1984; Rosenstock, 1966).

The second factor is perceived severity of the illness/symptom. Perceived severity is determined by accounting for both the perceived medical consequences and the perceived social/psychological consequences that the individual associates with the illness/symptom (Janz & Becker, 1984; Rosenstock, 1966, 1974). Furthermore,

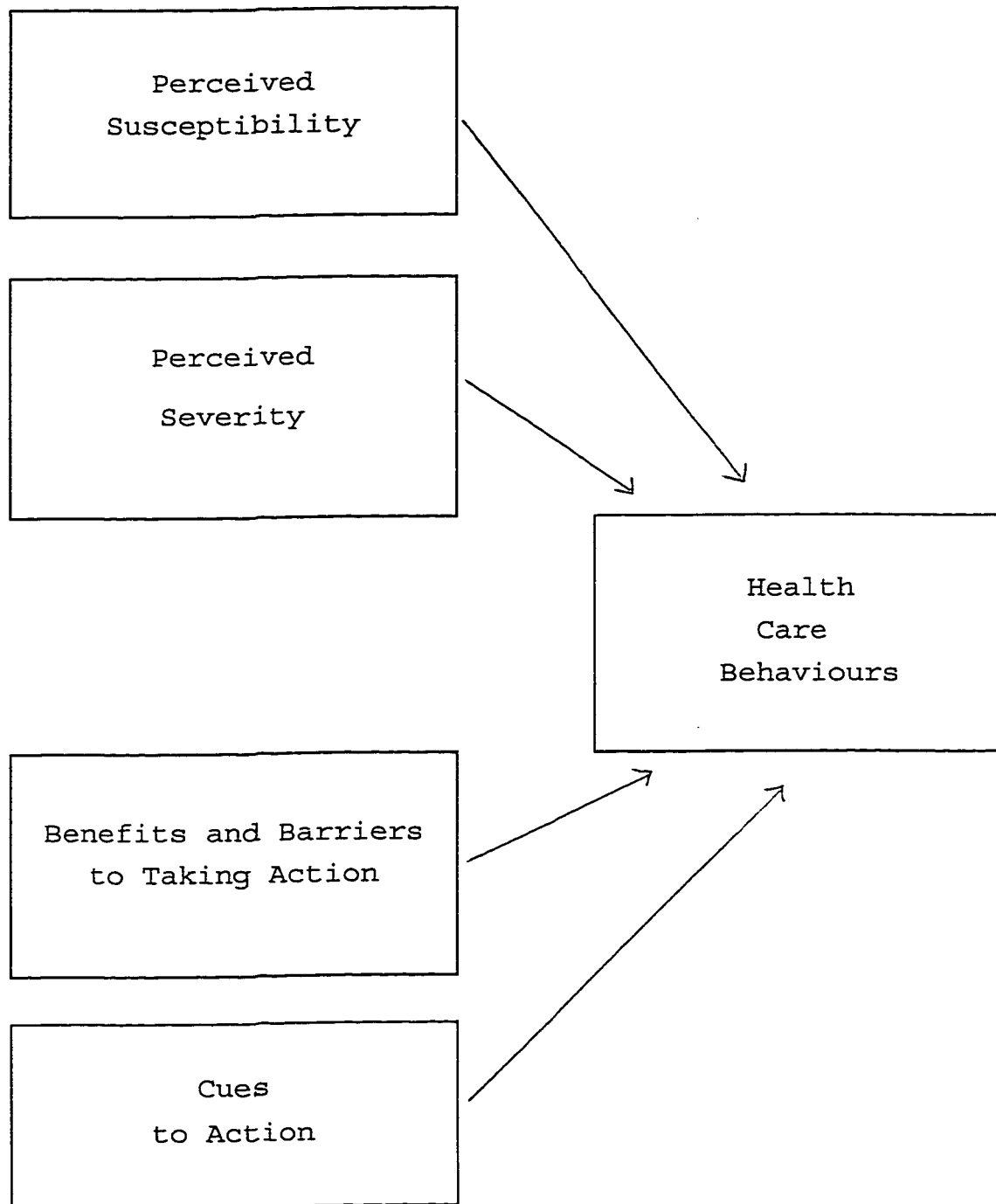


Figure 1.3: The Health Belief Model (HBM)

perceived severity includes "... the degree of emotional arousal created by the thought of a disease as well as by the kinds of difficulties the individual believes a given health condition will create for him" (Rosenstock, 1974, p.3).

The third factor is the benefits and barriers to taking action in response to the perceived illness symptoms. This factor includes both the beliefs about treatment efficacy and the ability of health services to help the symptom/illness, and the potential costs of utilising the health services (e.g., expense, discomfort involved). "An alternative is likely to be seen as beneficial if it relates subjectively to the reduction of one's susceptibility to or seriousness of an illness." (Rosenstock, 1974, p.4). Potential barriers to taking action include negative associations with the health care behaviour in question. These associations may involve beliefs such as the belief that the action is "... inconvenient, expensive, unpleasant, painful or upsetting" (Rosenstock, 1974, p.4).

The fourth factor involves the cues to action, which can be external or internal and trigger the health care behaviours (Rosenstock, 1966, 1974). All four factors interact to determine whether an individual takes action and the course of that action. Also, certain modifying variables are believed to affect individuals' perceived

susceptibility, perceived seriousness, benefits and barriers. These variables include demographic variables (age, sex, etc.), sociopsychological variables (personality, social class, peer and reference group pressures), and structural variables (knowledge about the disease, prior contact with the disease, etc.) (Rosenstock, 1974). "The required intensity of a cue that is sufficient to trigger behaviour presumably varies with differences in the level of readiness" (Rosenstock, 1966, p.101).

In the literature these previously described factors tend to be represented as perceived susceptibility, perceived severity, perceived benefits and perceived barriers (Janz & Becker, 1984). Most research ignores the issue of cues to action due to the difficulty in measuring and assessing such cues (Janz & Becker, 1984; Rosenstock, 1974). Following a review of the research, Janz and Becker (1984) concluded that factors influenced health care behaviours in the following order (from most to least): perceived barriers, perceived susceptibility, perceived benefits and perceived severity.

Most research uses the HBM to explain treatment compliance and preventative health care behaviours (Janz & Becker, 1984). However, Rosenstock (1966) felt that this model could also be used to understand what he called illness behaviours (individuals' reactions to symptoms). In Janz and Becker's review of the research on the HBM, a

few studies used the HBM to explain health care utilisation (Kirscht et al., 1976; Leavilt, 1979; Becker et al., 1974).

These studies found the same order of significance for the four factors as listed above (Janz & Becker, 1984). Other investigators also addressed the use of the HBM in explaining health care behaviours. Kirscht (1974) reinterpreted the four factors of the HBM in relation to illness behaviours. He identified the key factors as: "(1) health motivation aroused by the symptom experience, representing differences in degree of concern for health matters; (2) the threat posed by the symptoms, including physical harm and interference with functioning; (3) the benefits, efficacy or value of an action to reduce the threat; (4) barriers or costs of the action" (Kirscht, 1974, p.61). Kasl (1974) discussed the HBM and behaviour related to chronic illness. He perceived two health belief variables as being important to this issue: "(1) the perceived threat components: susceptibility, seriousness of consequences, and importance of health matters; and (2) expected net benefit of action: perceived effectiveness and costs or barriers" (Kasl, 1974, p.106). He also noted the exclusion of three areas relevant to chronic illness from the HBM and urged their incorporation. These areas include: "(1) the social environment (lay referral and social support), (2) the doctor-patient interaction, and (3) perception of symptoms and lay constructions ('social

representation') of illness and the sick role" (Kasl, 1974, p. 120).

1.4.2.3 The Common Sense Model (CSM)

The Common Sense Model (CSM), proposed by Leventhal and his colleagues (Leventhal, Meyer & Nerenz, 1980; Leventhal, Nerenz & Steele, 1984), "... is an information processing model in which individuals are seen as motivated to construct meanings for body sensations in order to engage in self-regulating behaviour" (Keller, Leventhal, Prohaska, & Leventhal, 1989, p. 247). In other words, individuals decide on the meaning of their "body sensations" which, in turn, affects their behaviour. Leventhal and colleagues delineate four major assumptions. First, individuals play an active role in processing information about their bodily sensations. Second, individuals engage in two parallel modes of processing, cognitive and emotional. The cognitive process results in a representation of the threat involved with the symptom(s) and the development of strategies to cope with this threat. The emotional process constitutes the affective reaction to this threat and the development of possible coping methods for managing these emotions. Third, individuals process the information in three recursive stages: representation, coping and appraisal (see Figure 1.4). Fourth, individuals are believed to process information

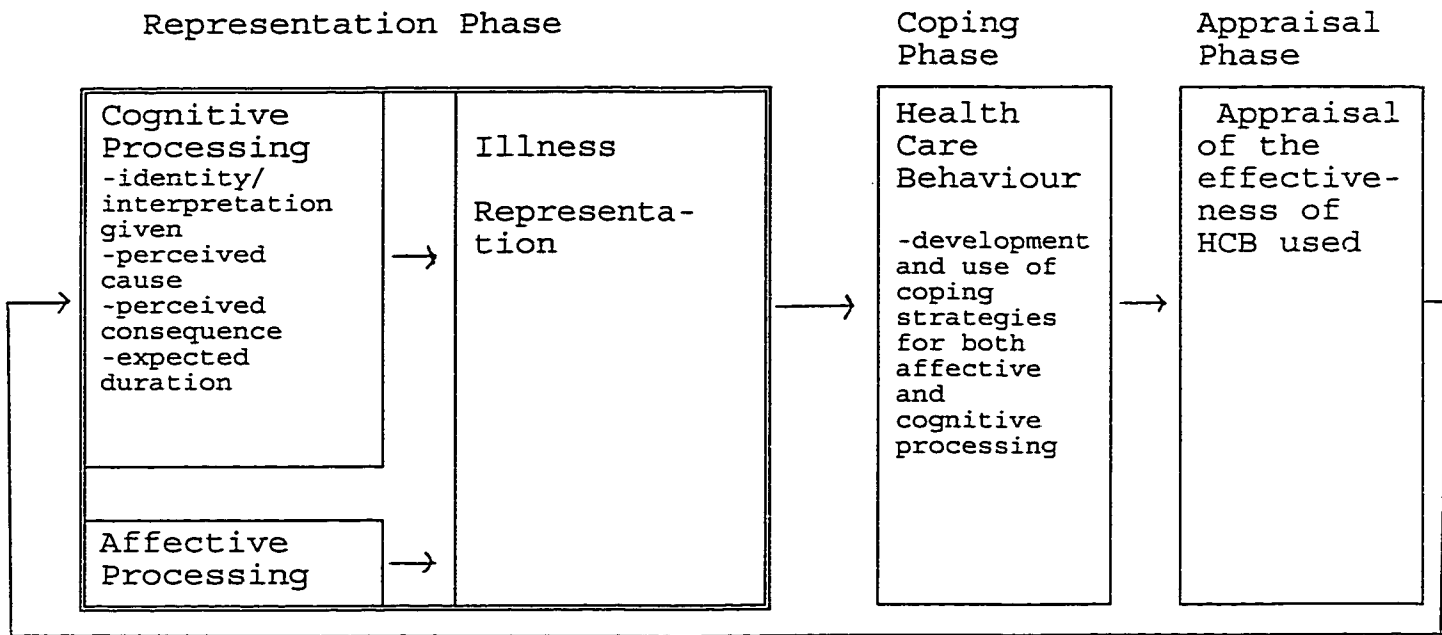


Figure 1.4: The Common Sense Model (CSM)

hierarchically, with both concrete and abstract processing occurring at each stage. The representation phase of this model is the stage when individuals attribute meaning to their bodily sensations. During this stage, individuals experiencing a sensation integrate both the emotional and cognitive components to develop an illness representation. The cognitive aspect includes four factors: (a) the identity/interpretation given to the sensation(s); (b) the cause associated with the body sensation; (c) the perceived consequences, and (d) the expected duration (Leventhal & Prohaska, 1986). Also, various forms of information about the illness, and one's own past illness experiences, influence the development of the illness representation (Leventhal, Nerenz & Steele, 1984).

This illness representation then influences the coping strategies developed and used. This process is considered the coping phase. The coping phase also includes both a cognitive and affective component. Individuals develop and carry out coping strategies in response both to the cognitive illness representation they have constructed and to the emotional reaction they have had to this construction. The appraisal phase occurs when individuals assess their coping techniques. This assessment then influences the original illness representation and the process begins again. The CSM has been used in research to study age differences between younger adults' and seniors'

illness representations and the influence this process has on health care behaviours (Keller, Leventhal, Prohaska, & Leventhal, 1989; Leventhal, 1984; Leventhal & Prohaska, 1986). This research was discussed earlier in the section on illness representations.

The CSM has also been used in research to evaluate factors which impact individuals' illness representations and thus affect their HSUB (Cameron, Leventhal & Leventhal, 1993). Cameron and colleagues (1993) found that when individuals who went to see their physician were compared to adults who did not go to their physician (matched for age, gender and health status), HSUB was associated with a more developed illness representation of a serious health risk, the belief that one was unable to cope, advice to see the physician, and life stress. In addition, they found that the experience of new symptoms seemed to be necessary but not sufficient to trigger HSUB. Also, they found that individuals who went to see their physician reported greater pain than those individuals that did not go to see their physician. Haug, Musil, Warner and Morris (1997) used the CSM when studying seniors' interpretations of bodily changes. They found that the majority of seniors gave their bodily changes an illness label (83%). Furthermore, the perceived severity of these changes and physician contacts were significantly related.

1.4.3 A Summary of the Models Used in This Study

As indicated by Dean (1989) these models tend to explain only small amounts of variance of the health care behaviours in seniors, perhaps because these theories focus on general beliefs and factors rather than on specific beliefs or symptom-related factors. Similarly, Rakowski et al. (1988) made two important observations: (a) that the research on health care behaviours is inconsistent in the choice of variables on which it focuses, and (b) that most research is only capable of explaining a small proportion of the variance.

When the three models are reviewed (Health Service Utilisation Model, Health Belief Model, Common Sense Model), a strong theme emerges. Each model includes the concept of "need", although only the HSUM uses the actual term "need". More specifically, "need" variables can be defined as those variables reflecting the subjective or objective perception of a symptom or illness and its corresponding need for treatment. "Need" can include the perceived severity and duration of the symptom or illness. Although the term "need" is not used, the HBM includes "perceived severity" as an important health belief. Also, the term "need" is not used in the CSM. However, the concepts of "perceived consequences" and "perceived duration" are incorporate within this model and together also indicate "need". In addition to being a prevalent

concept in all three models, "need" tended to be the variable set that accounted for the largest portion of significant HSUB variance (Cook & Thomas, 1994; Coulton & Frost, 1982; Dean, 1989; Kelman & Thomas, 1988; Stump et al., 1995). Given this pattern, the concept of "need" was considered to be an important factor to be included in this research project. For this study, the concept of "need" was operationalized as the combination of perceived severity variables and perceived duration variables.

In addition, another common theme exists between these three models. Each model included some reference to health beliefs. At this point, it is important to emphasise that the previously discussed "need" variables are, in fact, beliefs as well. However, additional beliefs other than "need" were incorporated into all three models. For this study, it was decided to separate the beliefs about "need" from the other beliefs. This division was done because in previous research the "need" variables were unique in their consistent association with significant HSUB variance. The author decided that for this study to contribute significantly to this literature, the other belief variables should account for a significant portion of unique variance beyond that associated with the "need" variable set. In choosing which beliefs to include in the belief set, the author attempted to draw from all three models. The belief variables chosen are discussed in the

following section and include: perceived treatment efficacy, perceived causal attributions (injury, illness and age attributions), comparative health perceptions, age perceptions, and the belief that pain is a normal part of ageing.

As well as including a "need" variable set and a "belief" variable set, the author decided to include a demographic set. Demographic variables are included within the "predisposing" and "enabling" variables of the HSUM. In the HBM, demographic variables are sometimes included in association with the "benefits and barriers to taking action". In addition the literature on the HBM often includes additional demographic variables as "modifying" variables. The author chose to include demographic variables in order to assess if "need" variables and "belief" variables were associated with unique significant variance beyond that associated with demographic variables.

1.5 Factors Predicting Health Care Behaviours

As Skelton (1982) stated, "...appraisals and reports of sensations and symptoms are only partly a function of physiological events; much of the variation in bodily experience and symptoms is therefore psychologically mediated. It thus behooves us to try to understand these mediating processes" (p.101). In addition to the broad hypotheses made in this research project about each

variable set (demographic, need, and beliefs), a number of variable-specific hypotheses were made about the potential predictor factors included within each set. Several of these predictor factors are mentioned earlier in the discussion on the theoretical models. This section reviews the predictor factors about which the author made variable-specific hypotheses, and describes the expected relationship between each variable and seniors' HCB.

1.5.1 Demographic Set Variables

In this study, a variety of demographic variables were included in the demographic variable set (work status, income, education level, age, sex, marital status and regular family physician). However, only one hypothesis was made relating to whether or not an individual had a regular family physician. Having a familiar, regular physician is the only health care system characteristic assessed in this study. The HSUM explicitly makes the characteristics of the health care system part of its model. A variety of factors have been measured in relation to this area, including the type of service provider (e.g., physician, dentist, pharmacist, etc.), the site where the care is received (e.g., physician's office, hospital outpatient department, emergency room, etc.), and the size of area the site is expected to service (Aday & Andersen, 1974). However, for this study the characteristics of the health care system

were limited to individuals' familiarity with their physician. In particular, it was expected that those seniors with a regular physician would be more likely to seek medical care than those without a regular physician.

1.5.2 Need Set Variables

As stated earlier, "need" has consistently accounted for significant variance in past research. For this study, the concept of need focused specifically on seniors' perceived severity and duration of their joint pain.

1.5.2.1 Symptom Severity

Symptom severity is explicitly mentioned in the HBM and the CSM. It is also often considered part of the HSUM's illness level/need factor. Studies have found that symptom severity affects both SCB (Holtzman et al., 1986; Haug et al., 1989) and HSUB (Holtzman et al., 1986). Haug and colleagues (1989) found that perceived severity not only affected SCB but also mediated the effect of other variables on SCB. With respect to severity, Holtzman and colleagues (1986) found that all of the 53 symptoms they asked seniors about could potentially be considered serious, meaning that more than 50% of seniors rated each symptom as serious. Furthermore, the symptoms most frequently endorsed as serious tended to be those "... that were painful, unusually persistent, inexplicable, or

potentially disruptive of daily routine..." (Holtzman, et al., 1986, p.192). There was a moderate to strong relationship between the perceived seriousness of a symptom and the endorsement of seeking professional health care. SCB were common across several symptoms; there was a tendency for symptom seriousness and self-care to be negatively correlated. This negative relationship does not mean that self-care was not used with symptoms perceived as serious (especially the use of over-the-counter medications) but, rather, that there was an increased endorsement of seeking professional help. In addition, some authors have suggested that symptom severity interacts with age-related factors, making it relevant to the study of seniors' HCB (Levkoff et al., 1988; Leventhal & Prohaska, 1986).

The concept of severity can be approached in two ways. First, there is the perceived intensity of the pain (i.e., mild, moderate, severe). Second, there is the perceived consequences of the disorder/problem. In other words, the extent to which the individual attributes negative consequences to the pain (e.g., leads to disability, affects ability to work, interferes with interpersonal relations). One would expect that the greater the joint pain individuals experience, the greater the likelihood they will use formal health care services in response to their pain. Also, one would expect that the greater the

perceived consequences of having joint pain, the greater the likelihood formal health care services will be used.

1.5.2.2 Symptom Duration

Another predictor "need" factor is the duration of the illness/symptom. In this study, the focus is the length of time the symptom/illness has been experienced. This factor is explicitly stated in the CSM and could be inferred to be part of the perceived illness level factor of the HSUM and of the perceived severity factor of the HBM. Levkoff and colleagues (1988) proposed that increases in chronic illness can partially explain the health care behaviours of seniors. They stated that because the onset of such illnesses may be gradual, and many of the symptoms mild, the chronic illness may be attributed to age. Further, since chronic illnesses last longer than acute illnesses, Levkoff et al. (1988) suggested that the prevalence of chronic illnesses shifts seniors' focus from a cure towards maintenance. This shift in focus may result in a corresponding shift in health care behaviours.

One would expect that the length of time individuals have been coping with the problem influences health care behaviours. As suggested by Levkoff et al. (1988), individuals who are coping with chronic problems may have different goals for dealing with their situation than those with acute difficulties. It would be expected that the

longer seniors have had their joint pain, the less they would use formal health care services in response to their joint pain.

1.5.3 Beliefs Set Variables

As mentioned earlier, health beliefs form one cluster of predictor factors which deserve consideration. All three models include health beliefs as a factor which influences the individuals' health care behaviours and incorporate a wide range of issues. Some of these beliefs include: the value put on health; the belief in the efficacy of health services and of one's health care professional; the perceived prevalence of and symptoms associated with different illnesses; the perceived diagnosis; the perceived consequences (both medical, social and psychological) of an illness/symptom; the perceived susceptibility to illness in general, as well as specific illnesses/symptoms; the perceived cause of symptom/illness; the perceived benefits to seeking help; the perceived barriers to seeking help; and the perceived duration of an illness. This study focused on specific beliefs about ageing and pain that may affect seniors' health care behaviours. These beliefs included: (a) the effectiveness of treatment, (b) the causes of the symptom(s), (c) comparative health perceptions, (d) age attributions, (e) age perceptions, (f) perceived negative feedback from family physicians, and (g) perceptions of pain as a normal

part of ageing.

1.5.3.1 Perceived Treatment Efficacy

Beliefs about treatment efficacy have been hypothesised to play a role in HSUB. In particular the HBM explicitly includes beliefs about the perceived benefits and risks of treatment (Rosenstock, 1966; 1974). The HSUM, although it does not make explicit reference to the issue of beliefs about treatment efficacy, does include the more generic factor of "health beliefs." Strain (1991) conducted a study to determine the role of a variety of factors, including specific health beliefs, on seniors' HSUB. Although she did not assess directly the participants' belief in treatment efficacy, she did assess the impact of what she called "medical skepticism" which to some degree is the opposite of believing in treatment efficacy. This variable was one of the only health belief variables to explain a statistically significant amount of the HSUB variance, supporting the importance of this belief in predicting general HSUB. However, it is not the general belief about formal health care service efficacy that is important to this research project; rather, the focus is on whether seniors believe that the formal health care services can provide effective treatment for the problem of joint pain. As mentioned earlier, this research project focused on the more specific joint pain belief with the

expectation that this specific focus should increase the ability to predict the HSUB. One would expect that the greater the belief that joint pain can be effectively treated by a health care professional, the greater the chance that seniors will use formal health care services in response to their joint pain.

1.5.3.2 Illness or Injury Attribution

Beliefs relating to the causes of one's symptoms can be incorporated within the framework of all three models. Both the HBM and the CSM explicitly state that beliefs about cause are important in influencing an individual's health care behaviours. One would expect that individuals who believed their symptoms were related to a treatable physical problem (injury or illness) would be more likely to make use of the formal health care services than individuals who attributed their symptoms to normal ageing (i.e., inevitable and untreatable). For this study, the particular health beliefs of interest are the beliefs seniors have about the causes of their joint pain. It is likely that the more seniors believe their pain is due to a disease/illness or injury, the more likely they will be to use the formal health care services in response to their pain.

1.5.3.3 Comparative Health Status

Another belief is whether the individual believes his/her health is the same as, better than, or worse than the rest of his/her age cohort. This belief is affected, in part, by the comparison group. Support for this concept is provided in two studies by Milligan and his colleagues (Milligan, Powell, Harley & Furchtgott, 1985; Milligan, Prescott, Powell & Furchtgott, 1989). Both studies presented participants with scenarios describing individuals of different ages. After the participants read the scenario they were asked to rate the individual's attitude toward ageing. They also rated their own attitudes toward ageing.

In the first study, the participants were three groups of elderly veterans whose physical health varied ("hospitalised veterans", "outpatient veterans", and "non-hospitalized 'healthy' veterans", p.75). The scenarios rated in this study were that of a "young man" and that of an "old man." Milligan et al. (1985) found that when rating themselves the healthy seniors were more likely to perceive themselves as being like the young man than like the older man. The unhealthy seniors perceived themselves as more like the old man, and rated the old man more positively than did the other participants.

In the second study, the researchers divided the participants into three age groups (young, middle-aged and

elderly). They rated four scenarios, two of a "young man" and two of an "old man". Both age groups included a scenario of a healthy individual and one of an unhealthy individual. Milligan and colleagues (1989) found that the unhealthy individuals were rated more negatively, regardless of age. Further, the elderly participants, but not the young or middle-aged participants, rated the "old man" scenarios more negatively than the "young man" scenarios. Also, Milligan and colleagues (1989) found that the older participants, especially those seniors who were healthy, tended not to associate themselves with the "old man" scenario.

The findings from both studies indicate that, in general, individuals with poor health or who are old are rated negatively. Further, seniors, especially the healthy seniors, judged the unhealthy seniors the harshest. Although seniors perceive the unhealthy old negatively, they often do not associate themselves with this "group," and this may affect their illness representations.

In a related Canadian study, Clarke (1987) found that although the older individuals surveyed were more likely to be diagnosed as ill, they were more likely than the younger participants to perceive themselves as healthy. Clarke's study highlights the fact that when individuals are asked about their perceptions of their health they tend to underestimate their health problems, resulting in a skewed

distribution. In this study, self-reported health is assessed in a different manner than previous research. Rather than simply asking seniors to rate their health, they are asked to rate their health relative to others their age. Furthermore, they are given predetermined response categories (i.e., "a lot more healthy", "slightly more healthy", etc.). How seniors perceive their health relative to others their age is expected to affect how they react to their pain symptoms. It is expected that as seniors' perceived comparative health status worsens, their HSUB will increase.

1.5.3.4 Age Attribution

Attribution of pain to ageing by seniors is another important belief. Generally in psychology, especially social psychology, attribution is defined as "(t)he process through which we seek to determine the causes of others' behaviour and gain knowledge of their stable traits and dispositions" (Baron & Byrne, 1987, p. 71). However, for the purposes of this study, age attribution is defined as the process through which individuals attribute the causes of their physical symptoms and illnesses to their age and/or ageing. For example, an individual may experience joint pain and attribute this pain to normal ageing. The attributions made about physical symptoms are part of how an individual represents an illness. In other words,

attribution is not separate from illness representation, but rather a part of it.

Several authors suggest that seniors sometimes attribute illnesses and/or illness symptoms to growing old (Butler & Gastel, 1980; Cook & Roy, 1995; Herr & Mobily, 1991; Kart, 1981; Keller, Leventhal, Prohaska, & Leventhal, 1989; Leventhal & Prohaska, 1986; Leventhal, 1984; Ross & Crook, 1995; Stoller, 1993). Direct support for this hypothesis was found in a study by Leventhal and Prohaska (1986). In this study, participants were presented with one of four illness scenarios, which varied in severity, duration, and presence of an illness label. They were then asked to imagine that they were the individual in the scenario and to rate whether they would carry out any of 26 different coping actions. They were also asked "whether the illness scenario could reflect their own ageing" (Leventhal & Prohaska, 1986, p. 189). They found that the older individuals were more likely than the younger participants to attribute symptoms (mild or severe) to age. Indirect support for the hypothesis that some seniors attribute illnesses to ageing was also found by this study. Older participants were less likely than younger participants to endorse symptoms of "weakness and aching" as signs of illness (Leventhal & Prohaska, 1986).

Stoller (1993) found that 54% of participants attributed at least one of the symptoms they reported

having to ageing and 5.5% attributed all reported symptoms to ageing. In addition, when asked specifically about muscle and joint pain, 43% of individuals reporting these symptoms attributed them to ageing. Also, Branch and Nemeth (1985) found that of 776 seniors, 90 (12%) seniors did not seek help for symptoms in the last year because they attributed them to age. Of the four possible reasons, this was the single most common reason for not seeking treatment. Age attribution was associated with seniors who had lower income, lower perceived health status, lower morale, and fewer functional problems. Also, age attribution was associated with lower levels of overall physician contact in the last 12 months. Although a causal connection can not be determined from Branch and Nemeth's study, the results suggest that age attribution may prevent seniors from seeking medical attention.

Haug, Wykle and Namazi (1989) examined the influence of age, perceived symptom seriousness, health attitudes and health conditions on the type of self-care and rates of self-care used by older adults. They interviewed 728 individuals, covering three age groups: 45-59, 60-74, 75+, using a semi-structured questionnaire. They found support for the hypothesis that when seniors attributed symptoms to age, it affected SCB, especially for non-serious symptoms. Also, they found that age itself did not appear to influence the frequency of SCB or the type of SCB, although

for type of SCB there were some trends which suggested age effects. This study provided some support for the idea that age attribution may influence seniors' health care behaviours even if age appears unrelated to HCB. This finding highlights the need to investigate the factors influencing seniors' health care behaviours even if there do not appear to be age differences in the use of health care behaviours. In studying ethnic variation in health care service utilisation, Cox (1986) found that "(t)he largest proportion of persons in each sample, 27% of the Vietnamese, 26% of the Portuguese, and 38% of the Hispanics, felt that health problems were caused by old age" (p. 671). Furthermore, information gathered from research studies and literature reviews suggest that health care professionals also attribute seniors' symptoms to ageing (Cook & Roy, 1995; Cook & Thomas, 1994; Rodin & Langer, 1980; Ross & Crook, 1995).

The above studies suggest that some seniors do attribute their physical symptoms to ageing. However, it does not necessarily follow that this age attribution is different across age groups. In fact, Gagliese and Melzack (1997b) found no age differences in people's tendency to attribute pain to ageing in general. Across all age groups, moderate age attribute was reported, further supporting the theory that age attribution occurs. However, it is possible that age attribution is perceived as more personally

relevant by older individuals; thereby, impacting seniors HSUB. Gagliese and Melzack (1997b) argue against this possibility based on the fact their older participants did not differ from younger individuals in reported self-efficacy with regard to managing their pain. However, it is equally possible that age attribution may help seniors accept their pain in a positive manner, allowing them to focus on non-medical pain management and helping to maintain their perceived self-efficacy.

The support for age attribution found by Branch & Nemeth (1985), Cox (1986), Haug et al. (1989), Leventhal & Prohaska (1986), and Stoller (1993) indicate that some seniors' attribute their physical symptoms to ageing. Age attribution may play a significant role both in seniors' understanding of, and reactions to, their physical symptoms. Based on this assumption, one would expect that individuals who attribute their joint pain to ageing would be less likely to use formal health care services in response to their pain than those seniors who do not make such attributions, by decreasing the seniors' belief in medical treatment effectiveness. Although possibly contradicting this hypothesis, Gagliese and Melzack's study (1997b) highlights the need for further investigations to clarify this issue.

1.5.3.5 Age Perception

Seniors' age perception is another relevant belief. For the present study, age perception refers to the degree to which seniors perceive themselves as old. There is no direct correlation between age perception and chronological age (Rodin & Langer, 1980). In one study (Robinson, 1992), a group of 40 seniors (age range: 60-90) were asked to pick one of four phrases (i.e., young adult, middle-aged adult, young elderly adult, and old elderly adult) to best describe themselves. The majority (57.5%) chose the term "young elderly adult", and five (12.5%) of the individuals chose "young adult". Only four (10%) individuals chose "old elderly adult". These results demonstrate that individuals' perceptions of themselves do not necessarily match their chronological age.

As stated by Furstenberg (1989), "... many people who are socially defined as old continue to view themselves as young or middle-aged" (p.268). She believes that individuals begin to identify themselves as old as they begin to see themselves as matching the criteria for being old. These criteria are thought to be based on "stereotypes or models of ageing" (p.269). To investigate the criteria by which seniors perceive themselves as old, Furstenberg (1989) conducted ethnographic interviews with ten older women. A number of markers were used by these women as criteria for their age perception. Interestingly,

chronological age, was used only by one woman. Other markers included: physical functioning, mental functioning, and level of involvement and participation. Combining her findings with past research, Furstenberg described three factors that are associated with maintaining a younger self-concept: "strong internal sense of control" (p.272), "social comparison" (p.273), and "selective use of markers of ageing" (p.273). Firstly, individuals with an internal locus of control seemed to perceive themselves as young despite poor health and disability. Furstenberg suggested that by perceiving themselves as having an impact on important events and being free to do what they want, people were able to avoid feeling old. Secondly, when using social comparison, those individuals who view themselves as being healthier and more active than same age peers tended to maintain a younger self-concept. Thirdly, Furstenberg discussed the fact that a variety of different criteria are used by people to define old age. By selectively ignoring the criteria for old age that they met, individuals are able to maintain a youthful self-concept.

Research indicates that although one's perception of one's health is not strongly related to one's chronological age (Carp & Carp, 1981; De Forge, Sobal, & Krick, 1989), accepting oneself as old is related to both one's subjective (Carp & Carp, 1981) and objective health (Bultena & Powers, 1978). Individuals who identify

themselves as being old or elderly are more likely to be ill. There needs to be a distinction between age attribution and age identity/perception. As stated above, age attribution refers to individuals' belief that their physical symptoms are due to their age. Age identity/perception refers to the meaning individuals give to their age. One would expect that the older seniors perceive themselves, the higher their HSUB.

1.5.3.6 Perceived Negative Feedback from Physician

The physician's attitude toward a senior's pain can have a major influence on the physician-patient relationship and the senior's perceptions of their difficulty (Cook & Roy, 1995). Although seniors may consult other sources, Strain (1990) found that they still perceived their physicians to be their main source of information on how to manage physical difficulties. How and what information is provided by their physician about their joint pain is expected to have an impact on how seniors manage their pain. It was expected that negative feedback from their physician would be associated with a lower likelihood by seniors to use health care services in response to their joint pain.

1.5.3.7 Belief that Pain is a Normal Part of Ageing

Finally, another belief is the general belief that

pain is a normal part of ageing (Cook & Roy, 1995; Ross & Crook, 1995). This belief is very similar to age attribution of pain symptoms. However, this belief encompasses not only the attribution of a pain symptoms to ageing but also involves the assumption that such pain is to be expected, or that it is "normal." In other words, seniors with this belief would view pain as a "normal," if not inevitable, part of getting older. It is expected that the more seniors perceive pain as a normal part of ageing, the less likely they are to make use of the formal health care services in response to their pain.

1.6 Validity

Part of this research project involved the construction of a questionnaire that would assess seniors' perceptions about their experiences and beliefs of joint pain and ageing. As a result, the issue of validity became critical. The general definition of validity is the degree to which an instrument measures what it is intended to measure (Allen & Yen, 1979; Christensen, 1985; Kaplan & Saccuzzo, 1993; Walsh, 1989). Validity of a test is not an absolute property of an instrument (Beech & Harding, 1990; Hubley & Zumbo, 1996). Rather, validity relates to the interpretations made from the test scores and the evidence for, and limitations of, these conclusions (Beech & Harding, 1990; Hubley & Zumbo, 1996; Kaplan & Saccuzzo,

1993). Validation of an instrument occurs over time and across studies. "(T)he realisation has grown that the validation of a test is a long process rather than a single event" (Walsh, 1989, p.26). Through this process, researchers learn more about the variable they are trying to measure and the assessment instrument they are using.

In 1955, Cronbach and Meehl suggested four types of validity to be considered: predictive, concurrent, content and construct. These forms of validity later became known as criterion validity (predictive and concurrent), content validity, and construct validity. However, there has been a recent movement toward a unitarian approach to validity. It has been argued that the trinitarian approach is misleading and promotes a simplistic understanding of validity (Messick, 1980). In fact, authors who use the trinitarian approach tend to emphasize that the three categories are not discrete types but overlapping concepts (Ghiselli, Campbell & Zedak, 1981; Kaplan & Saccuzzo, 1993). The following discussion will review each of the trinitarian categories, as well as, the unitarian approach.

1.6.1 Content-related Validity

Content validity is the extent to which the items of an instrument adequately measure the domain of interest (Beech & Harding, 1990; Ghiselli, Campbell & Zedak, 1981; Hubley & Zumbo, 1996; Walsh, 1989). This type of validation

is a subjective process based on logical reasoning (Allen & Yen, 1979; Kaplan & Saccuzzo, 1993; Walsh, 1989). Content analysis is enhanced by having professionals, who have knowledge in the subject area, examine the test content (Beech & Harding, 1990; Ghiselli, Campbell, & Zedak, 1981; Kaplan & Saccuzzo, 1993; Walsh, 1989).

1.6.2 Criterion-related Validity

Criterion validity can be defined as the extent to which the criterion variable can be predicted by the test scores (Allen & Yen, 1979; Beech & Harding, 1990; Ghiselli, Campbell, & Zedak, 1981; Hubley & Zumbo, 1996; Kaplan & Saccuzzo, 1993; Walsh, 1989). There are a number of subtypes of criterion validity, including concurrent, predictive, postdictive and synthetic. The most commonly discussed subtypes are concurrent and predictive. Concurrent validity is the extent to which one can determine an individual's current level on the criterion variable from her/his current test scores. Predictive validity is the extent to which one can determine an individual's future level on the criterion variable from her/his current test scores. Postdictive validity is the extent to which one can determine an individual's previous level on the criterion variable from his/her current test scores. Synthetic validity is when an individual's test scores are considered predictive of his/her future level on

the criterion variable based on the test scores ability to predict future levels on a similar criterion (Beech & Harding, 1990).

1.6.3 Construct-related Validity

Construct validity is difficult to define (Ghiselli, Campbell & Zedak, 1981; Hubley & Zumbo, 1996; Walsh, 1989). However, in general, this form of validity relates to the relationship between the test scores and the construct that the instrument is meant to measure (Allen & Yen, 1979; Ghiselli, Campbell & Zedak, 1981; Walsh, 1989). The construct validation process occurs over time and across studies as evidence is accumulated indicating what the test score represent (Allen & Yen, 1979; Beech & Harding, 1990; Walsh, 1989). The process of construct validation is never finished (Beech & Harding, 1990), but may be enhanced in a variety of ways, the most familiar method being the multimethod, multitrait approach. However, any procedure which increases the researchers understanding of what the test scores represent and what inferences can be made from them enhances construct validity (Beech & Harding, 1990; Walsh, 1989).

Ghiselli, Campbell & Zedak (1981, pp. 284-287) provided a list of 8 different procedures which help enhance construct validity. These procedures are listed below:

- (1) content-oriented construction - Processes which enhance content validity also enhance construct validity.
- (2) process analysis - This method requires participants to provide a rationale for their responses to a test item. The participants should be using a process reasonably close to that which the researcher had in mind when he or she developed the instrument.
- (3) Item intercorrelations should occur in patterns that would be expected given the theory and definitions of the constructs being measured.
- (4) Reliability estimates provide some supporting evidence for validity. The expected reliability estimates will depend on the constructs being measured and can be stated a priori.
- (5) The measure of the construct can be correlated with other measures (theory should explain expected relationship).
- (6) Correlating the measure with other variables that might account for, or rule out, potential sources of bias or irrelevant variance.
- (7) Multitrait, multimethod matrix - requires a minimum of 2 constructs to be measured by a minimum of 2 different measurement modalities.
- (8) Experimental studies which use the measure as a

dependent variable.

1.6.4 The Unity of Validity

A number of individuals have expressed concern about the trinitarian approach to validity (Angoff, 1988; Cronbach, 1988; Landy, 1986; Messick, 1980). In particular, the belief that content, criterion and construct forms of validity represent distinct independent types of validity has been criticised. Cronbach (1988) stated that it was no longer acceptable to view validity in this way. It has been emphasised that the three "types" of validity overlap and are difficult to separate (Landy, 1986). These cautions have also influenced those using the trinitarian approach, many of whom also expressed the same caution against treating the three categories as distinct types (Ghiselli, Campbell, & Zedak, 1981; Kaplan & Saccuzzo, 1993). Also, the unitarian perspective of validity emphasises that validation is an ongoing process and that the three "types" of validity are just different ways to approach accumulating evidence (Landy, 1986). Landy (1986) indicated that the number of ways to enhance validity is not limited simply to these three approaches. Furthermore, individuals promoting the use of a unitarian approach stress the need to focus on determining the validity of the inferences made from the test scores (Are they acceptable and appropriate?) rather than focusing on the validity of the instrument

itself (Angoff, 1988; Cronbach, 1988; Hubley & Zumbo, 1996; Messick, 1980). Despite the validation theory used, trinitarian or unitarian, there are some distinct trends in the current validation literature: (a) The concept of validation as a dynamic process not a static characteristic, (b) the belief that validation is ongoing (across studies and time) and is never complete, and (c) the contention that validation should focus not on the test but on the inferences that can be made from the test scores and the limitations of these conclusions.

1.7 Summary

Pain is a common experience in the lives of many seniors. Research suggests that 30-83% of seniors suffer from some form of pain, often interfering in their daily functioning. Joint pain is particularly frequent, affecting many seniors. The factors which affect health care services utilisation for seniors with joint pain are important to understand. This information could help in future development of interventions to maximise seniors' efficient and effective use of health care services.

The purpose of this study was to investigate the influence of age-relevant and pain-relevant factors on seniors' health care behaviours. This project involved the analysis of the effects of three sets of variables on seniors' health care behaviours: demographics, perceived

need, and beliefs. These factors were derived from the three theoretical models (Health Services Utilisation Model, Health Belief Model & Common Sense Model of Illness Representation) and adjusted to reflect issues relating to joint pain and/or ageing. The literature on the three models provided a theoretical and research basis for these variables; whereas, the joint pain and ageing focus provided the specificity needed to increase the predictability of HSUB and SCB.

This project has a number of potential benefits. First, the predictor factors being explored are more specific to either joint pain or ageing than previous research, following the prediction of Dean (1989) that such a focus will increase the amount of HSUB variance explained. Second, very little research has been done on seniors' health care utilisation behaviour in response to a specific disorder. Most studies assessed general health service utilisation. This study focused on those HSUB and SCB done in response to seniors' perceived joint pain, thereby, further increasing the specificity of this research project.

The following hypotheses are grouped according to the three sets of variables. The demographic set included work status, income, education, age, sex, marital status, and having a regular physician. The perceived need set included two variables reflecting perceived severity (perceived pain

intensity & perceived pain consequences) and one variable on perceived duration (past pain duration). The beliefs set included age attribution, age perception, comparative health status, effectiveness of treatment beliefs, illness attribution, injury attribution, belief that "pain is part of ageing", and physician feedback. As mentioned earlier, the predictor variables within the three sets (demographic, need, and belief) were chosen based on both theory and previous research. No one variable is likely to account for a large percentage of the HSUB variance. Rather, these variables are expected to interact with and supplement each other, together explaining moderate amounts of the variance in seniors' health care behaviours.

At this point, the hypotheses are stated in a general form, with more detailed hypotheses given in the analysis chapter. Except for one, all of the study's hypotheses are on HSUB. The literature on SCB does not provide enough information to make similar hypotheses with any degree of accuracy. However, exploratory statistical analysis was used to describe the relationships found between SCB and the predictor factors and is considered an important component in this study. It was expected that many of the same variables, which influence HSUB would also influence SCB, although the direction of the relationship was likely to differ. The hypotheses are presented in three blocks, representing the three variable sets that were entered into

the hierarchical set regression analysis. Each set has both a general hypothesis and specific hypotheses relating to each variable within the set.

- (1) Demographic Set: The general hypothesis for this set was that the demographic set would account for a significant amount of HSUB and SCB variance. There was only one variable-specific hypothesis for this set.

Variable-specific hypothesis:

regular physician: Those seniors with a regular physician will report greater levels of health care service use than those without a regular physician.

- (2) Perceived Need Set: The general hypothesis for this set was that it would account for a significant proportion of the HSUB and SCB variance beyond that explained by the first set. There were five variable-specific hypotheses, most specific to HSUB.

Variable-specific hypotheses:

perceived pain intensity:

- (i) SCB: Seniors will report greater levels of SCB in response to higher levels of pain.
- (ii) HSUB: The greater their ratings of the

intensity of their joint pain, the more formal health care services they will report using in response to their pain.

perceived pain consequences:

(i) SCB: The greater the perceived consequences of having joint pain, the higher the number of SCB in response to this pain.

(ii) HSUB: The greater the perceived consequences of having joint pain, the more formal health care services they will report using in response to their pain.

past pain duration: The shorter the duration of seniors' joint pain, the more formal health care services they will report using in response to their pain.

- (3) Beliefs Set: The general hypothesis for this set was that it would account for a significant amount of variance beyond that accounted for by the first two variable sets. There were eight variable-specific hypotheses, all relating to HSUB.

Variable-specific Hypotheses:

age attribution: The less seniors attribute their

joint pain to ageing, the more formal health care services they will report using in response to their pain.

age perception: The more seniors perceive themselves as old, the less they will use formal health care services.

comparative health status: The more individuals perceive their health to be worse than that of other seniors, the more formal health care services they will report using in response to their joint pain.

effectiveness of treatment: The greater the belief that their joint pain can be effectively treated by a health care professional, the greater use of formal health care services they will report using in response to their joint pain.

illness attribution: The greater the seniors' belief that their joint pain is due to an illness, the more formal health care services they will report using in response to their joint pain.

injury attribution: The greater the seniors' belief that their joint pain is due to an injury, the more formal health care services they will report using in response to their joint pain.

pain is part of ageing: The less the seniors' belief that pain is a normal part of ageing, the greater formal health care services they will report using in response to their joint pain.

feedback from physician: Negative feedback (e.g., "nothing can be done about your joint pain", "pain is to be expected as one ages") from their physician will be associated with lower levels of reported formal health care services.

2. QUESTIONNAIRE CONSTRUCTION AND PILOTING

2.1 Stage One: Construction of Questionnaire and Initial Piloting

2.1.1 Method

2.1.1.1 Participants

This stage involved three groups of participants. The first two groups consisted of people with expertise in pain or in health care with seniors. One group included one psychologist, four psychology graduate students and one psychology undergraduate student; the majority are active researchers in the study of pain. The second group included one psychology graduate student and five professionals who worked with seniors (two Pharmacists and three Masters level Registered Nurses). Many of these individuals were also active in other pain research projects. The third group consisted of a convenience sample of two younger adults and three seniors.

2.1.1.2 Procedure and Results

This stage of the study involved informal piloting of the Personal and Health Information Questionnaire compiled by the author. The personal and health information questionnaire was based on a detailed review of both the

theoretical and research literature in the areas of (a) seniors' health care behaviours and (b) seniors and pain. The questionnaire included modified questions from Kastenbaum et al. (1972 - "Ages of Me" Interview Schedule), Rakowski et al. (1988 - health diary), Robinson (1992 - health care behavior checklist), Williams et al. (1994 - Pain Beliefs and Perceptions Inventory), as well as questions constructed by the author. The format of the questionnaire was determined by both (a) guidelines discussed in Dillman's book on Mail and Telephone Surveys (1978), and (b) consideration of the seniors' population. The questionnaire was divided into three sections. The first section, on joint pain, covered a wide range of information on the individuals' experience and beliefs about joint pain. The second section assessed general health status and health beliefs. The third section focused on demographic variables and included age, sex, education level, occupation, employment status, living arrangement, and marital status. This theory-based test construction process contributed to the questionnaire's content and construct validity. See Appendix B for the specific literature related to each variable and the associated questions. Across the three stages of this study, four methods were used to enhance validity: theoretically based test construction, expert feedback, process analysis, and corroborative data. Two of these methods, theoretically

based test construction and expert feedback, were used in this stage (stage one).

Piloting completed during this stage involved the review of the questionnaire by the three participant groups. Initially, two convenience samples of experts were asked to review the questionnaire and to provide feedback. The members of both groups were provided with the hypotheses being tested, and information regarding which items related to which hypotheses and variables. These groups provided feedback consecutively. After each group had reviewed the questionnaire, it was revised. This expert feedback during the piloting process addressed issues of content and construct validity.

Next, a convenience sample of adults and seniors were asked to complete the personal and health information questionnaire. This stage was designed to improve item clarity and to decrease misinterpretation of questions. The participants were then interviewed to assess whether the instrument was easy to understand and complete. Also, process analysis interviews were conducted with each pilot participant in order to improve the procedure for the process analysis to be used in Stage Two. The interviews were audiotaped and reviewed by the author to determine that the appropriate procedure was being followed and whether changes were needed. Changes to the questionnaire and the process analysis procedure were made after each

interview. See Appendix C for the resulting questionnaire.

2.2 Stage Two: Assessment of Study Questionnaire

2.2.1 Method

2.2.1.1 Instrument

The Personal and Health Information Questionnaire refined during Stage One was assessed in Stage Two (see Appendix B). Details on the development of the questionnaire are described in the previous section.

2.2.1.2 Participants

This stage involved a convenience sample of 32 seniors, 4 men and 28 women, living independently in the community. Participants were recruited from the University Extension Seniors' Classes, the Society of Aging's Blood Pressure Clinic, the Arthritis Society, and through undergraduate students taking undergraduate psychology courses. Participants' ages ranged from 62 to 80 years, with an average age of 72 years. The most commonly endorsed education level was college/technical school (31.3%), with all individuals having a minimum level of grade seven. See Table 2.1 for the list of occupations held by participants. The majority of these individuals were retired (87.5%), with a few individuals endorsing the categories of "disability leave" or "full-time homemaker". Fifty-three percent of these individuals lived in a house, with the

Table 2.1: Occupations - Self Identified.

Occupations	N	%
Housewife	4	12.5
Tailoress	1	3.2
City Transit Operator	1	3.2
Bookkeeper	2	6.3
Director in Public Services	1	3.2
Nursing Educator	1	3.2
Farmer's Wife	2	6.3
Nurse	2	6.3
Lab Technician	2	6.3
Registered Nurse	3	9.4
Administrative Secretary	1	3.2
Computer Clerk	1	3.2
Sales Representative	1	3.2
Store Operator	1	3.2
Secretary	1	3.2
Medical Lab Instructor	1	3.2
Switchboard operator	1	3.2
Teacher	2	6.3
Service Station Operator	1	3.2
Department Manager - Retail	1	3.2
Farmer	1	3.2
Recreation Centre Co-ordinator	1	3.2

rest living in apartments, seniors' apartments, and condominiums. The majority of the seniors who participated were either married or widowed. Fifty-three percent of the participant's family income fell into the category of \$20,000-49,000. Twenty-eight percent of participant's income fell below \$20,000, while 19 percent of participant's income was over \$49,000.

The cut off age for inclusion was 60 years old. This cut off age was lower than the traditional cut off of 65 years in order to facilitate an assessment of age perception in Stage Three. All participants were fluent in written and oral English. Although cognitive status was not assessed, it was assumed that seniors with cognitive impairments would decline to participate given the requirements of the study. Furthermore, when seniors were recruited through undergraduate students, the students were asked to exclude individuals they knew who were not fluent in English or who had cognitive impairment.

2.2.1.3 Procedure

The second stage of the study involved further assessment and improvement of reliability and validity for the Personal and Health Information Questionnaire. In general, reliability can be defined as the extent to which unsystematic change is introduced into a measurement of a variable over repeated assessments of the same individual

(Ghiselli, Campbell & Zedak, 1981). At this stage, retest reliability and internal consistency were assessed.

A detailed discussion of validity was provided in the literature review. In general, validity can be defined as "(t)he extent to which you are measuring what you want to measure" (Christensen, 1985, p.87). As stated earlier, across the three stages of this study, four methods were used to enhance validity: theoretically based test construction, expert feedback, process analysis, and corroborative data. In this stage (stage two), process analysis was used. With the exception of the demographic questions, participants were questioned as to why they responded as they did to each test item related to the hypotheses. This form of analysis enhances validity by providing the researcher with a clearer sense of how test items are being interpreted by the participants (Ghiselli, Campbell & Zedack, 1981). This analysis is especially relevant for questions that are based on theoretical consideration, where it is important for the participants to interpret the questions as the researcher intended. Such a process provides the researcher with some assurance that the conclusions drawn from the test scores are relevant to the underlying theoretical constructs; thus, addressing issues of construct validity.

In order to determine retest reliability, a convenience sample of 32 seniors was asked to complete the

questionnaire twice (a week apart). The first visit took approximately one hour. The second visit took two to three hours. Any comments about the questionnaire were recorded. Also, after the second administration of the questionnaire, each participant was asked to provide feedback on the questionnaire for the purposes of process analysis. This procedure required careful questioning of the participants once they had completed the questionnaire to determine why they responded the way they did, and whether or not their interpretation of the questions corresponded with the constructs being measured (Ghiselli, Campbell & Zedak, 1981).

2.2.1.4 Analysis

For the reliability check, the two administrations of the questionnaire were correlated using Pearson product-moment correlations to estimate retest reliability. Retest correlations were calculated for both the individual questions related to the hypotheses and for the composites. A correlation equal to or greater than .70 was considered an acceptable retest level (Nunnally, 1978, p.245). For any variables that were being assessed by more than one question, composites were computed using z-scores. For these composites, internal consistency was also assessed using Cronbach's alpha. A Cronbach's alpha equal to or greater than .70 was considered acceptable internal

consistency. Both forms of reliability (retest and internal consistency) were considered important and given equal weight. If the retest correlation or Cronbach's alpha was below .70, the question was examined to determine what could possibly be leading to the unreliability and what the options were for dealing with the low reliability.

A form of process analysis was used to help establish validity (see the procedure section). The responses were analysed using content analysis. A rater experienced in qualitative analysis, and blind to the study's hypotheses, rated the participants' audiotaped responses. She was provided with the definitions of each variable and a copy of the questionnaire. In coding the responses she assessed the degree to which the individuals had interpreted the questions accurately in relation to the variable they were meant to tap. She gave each response one of the five following ratings: "clear fit," "less clear fit," "clearly doesn't fit," "less clear doesn't fit," and "can't code." Each question was then analysed to determine how many participants had responded to the questions in the appropriate way. Two cut-offs were used, a conservative one and a liberal one. For the conservative cut off, only the participants' responses which received a "clear fit" rating were accepted. The liberal cut off accepted both the responses coded as "clear fit" and "less clear fit". In both cases there had to be some indication that the

individual had interpreted the question in a way that matched the variable definition. Any question misinterpreted by five or more seniors was considered problematic, especially if this pattern was found for both the conservative and liberal cut-offs.

2.2.2 Results

As described above, each variable composite was assessed to determine if changes were required to improve reliability and validity. The original composites for each variable are indicated on Table 2.2. However, these original composites were not necessarily the final composites chosen. For the composite variables that had a retest reliability or internal consistency below the cut off of .70, questions were eliminated from the composite if this raised the statistic above the cut off. For some of the composite variables, a number of question combinations were assessed to determine the composite with the best internal consistency and retest reliability (see Table 2.2). Variables "SCB", "HSUB", "perceived pain consequences", and "feedback from MD" required some of the questions in the original composites to be excluded, in order to achieve satisfactory reliability (see table 2.2 for the composites chosen).

In addition to discarding some questions from the composite variables, questions were reworded or added in

Table 2.2: Reliability Statistics For Each Variable.

Variable	Question	r+	A++
Comparative Health Status	35	0.75	N/R
Effectiveness of Treatment	5	0.72	N/R
Regular Physician	37	1.00	N/R
Self Care Behaviours (SCB)	Composite 1	0.71	1st
	(original composite proposed)		0.68
			2nd
			0.68
	Composite 2	0.83	1st
			0.69
			2nd
			0.65
	Composite 3	0.79	1st
			0.73
			2nd
			0.65
	Composite 4	0.82	1st
			0.72
			2nd
			0.65
	Composite 5	0.84	1st
	(composite chosen)		0.71
			2nd
			0.69

+ test-retest correlation

++ Cronbach's alpha for both administrations of the questionnaire (1st & 2nd)

SCB Composite 1 = all portions of question 34 related to SCB.

SCB Composite 2 = all portions of question 34 related to SCB, except "Talk with family member, etc.", "other action", & " first aid".

SCB Composite 3 = all portions of question 34 related to SCB, except "Talk with family member, etc.", & " Stay in bed".

SCB Composite 4 = all portions of question 34 related to SCB, except "Talk with family member, etc.", "other action", & " stay in bed".

SCB Composite 5 = all portions of question 34 related to SCB, except "Talk with family member, etc.", "other action", "stay in bed", & " first aid".

Table 2.2: Reliability Statistics - Continued.

Variable	Question	r+	A++
Health Service Utilisation Behaviour (HSUB)	Composite 1	0.85	1st
	(original composite proposed)		0.78 2nd 0.68
	Composite 2	0.88	1st
	(composite chosen)		0.77 2nd 0.74
Perceived Pain Consequences	Composite 1: Q 11, 15 & 16	0.68	1st
	(original composite proposed)		0.41 2nd 0.55
	Composite 2: Q 15 & 16	0.78	1st
	(composite chosen)		0.7 7 2nd 0.7 5
Age Attribution	Composite 1: 12 & 40c	0.74	1st 0.43 2nd 0.31
Age Perception	36	0.36	N/R
Illness/Injury Attribution	Composite 1: Q 13 & 14	0.69	N/R
Belief that pain is a normal part of ageing	33	0.57	N/R
Perceived Pain Intensity	Composite 1 - all parts of 3	0.68	1st 0.88 2nd 0.66
+ test-retest correlation			
++ Cronbach's alpha for both administrations of the questionnaire (1 st & 2 nd)			
HSUB Composite 1 = Question 6, 7 (yes/no), 7 (actual #), all portions of question 34 related to HSUB, except "Emergency Room", and "Get someone else to call MD".			
HSUB Composite 2 = Question 6, 7 (yes/no), 7 (actual #), all portions of question 34 related to HSUB, except "Emergency Room", "Get someone else to call MD" and "Scheduling MD appointment for another day".			

Table 2.2: Reliability Statistics - Continued.

Variable	Question	r+	A++
Past Pain Duration	4	0.68	N/R
Feedback from MD	Composite 1 - Q 8, 9, 10 (original composite proposed)	0.73	1st 0.56 2nd 0.75
	Composite 2 - Q 8, 9 (composite chosen)	0.61	1st 0.42 2nd 0.66
+	test-retest correlation		
++	Cronbach's alpha for both administrations of the questionnaire (1 st & 2 nd)		

order to improve the reliability of the variables. Specifically, questions that had a retest reliability below .70 or did not meet the liberal cut-off in the process analysis were rewritten or new questions developed (see table 2.3 for these statistics). The rewritten and new questions were assessed in the next stage. Table 2.4 outlines the specific questions changed or added as a result of these findings. Questions for "age attribution", "age perception", "injury/illness attribution", "belief that pain is a normal part of ageing", "perceived pain intensity", "past pain duration", and "feedback from MD" required either re-writing or the development of additional questions. Questions for "comparative health status", "effectiveness of treatment", and "regular physician" met the criteria and required no changes. Also, in an attempt to improve the overall reliability of the questionnaire, the order in which the questions were presented was changed. These findings culminated in the revised questionnaire that was used in Stage Three.

Table 2.3: Reliability and Validity Findings.

Variable	Question	r+	A++	PA +++
Comparative Health Status	35	0.75	N/R	**
Effectiveness of Treatment	5	0.72	N/R	**
Regular Physician	37	1.00	N/R	*
Self-care Behaviours (SCB)	34 - portions related to SCB			
	Take non-pres. medicine	0.77	N/R	*
	Buy something.	0.60	N/R	*
	Read up on it.	0.50	N/R	*
	Talk with family member, etc.	0.36	N/R	*
	Stay in bed.	0.71	N/R	*
	Cut down on activities.	0.62	N/R	*
	Adjust device	0.38	N/R	*
	Minor first aid	0.60	N/R	*
	Change diet or fluid	0.42	N/R	*
	Use ice	0.91	N/R	*
	Use heat	0.83	N/R	*
	Exercise	0.68	N/R	*
	Relaxation/meditation	0.72	N/R	*
	Rub sore joint myself	0.64	N/R	*
	Get a massage - other	0.88	N/R	*
	Other Action	0.16	N/R	*
+ test-retest correlation				
++ standardised Cronbach's alpha				
+++ Process Analysis: * = both criteria met, ** = liberal criteria met, *** = neither criteria met				

Table 2.3: Reliability and Validity Findings - Continued.

Variable	Question	r+	A++	PA +++
HSUB	6	0.65	N/R	*
	7 - medical specialist - yes/no	0.72	N/R	*
	7 - actual number of visits	0.77	N/R	N/R
	34 (portions related to HSUB)			
	Ask MD for pres. medicine	0.66	N/R	*
	Buy and take pres. medicine	0.59	N/R	*
	Call and get advice	0.57	N/R	*
	Visit medical clinic	0.71	N/R	*
	MD appointment - another day	0.15	N/R	*
	Follow MD orders	0.68	N/R	*
Perceived Pain Consequences	11	0.48	N/R	**
	15	0.73	N/R	**
	16	0.79	N/R	**
Age Attribution	12	0.73	N/R	**
	40c	0.47	N/R	*
Age Perception	36	0.36	N/R	**
Illness/Injury Attribution	13	0.55	N/R	**
	14	0.72	N/R	*
Belief that pain is a normal part of aging	33	0.57	N/R	**
+ test-retest correlation				
++ Cronbach's alpha				
+++ Process Analysis: * = both criteria met, ** = liberal criteria met, *** = neither criteria met				

Table 2.3: Reliability and Validity Findings - Continued.

Variable	Question	r+	A++	PA +++
Perceived Pain Intensity	3 - Worst pain	0.50	N/R	**
	3 - Least pain	0.62	N/R	**
	3 - Average pain	0.60	N/R	**
Past Pain Duration	4	0.68	N/R	***
Feedback from MD	8	0.61	N/R	**
	9	0.39	N/R	**
	10 (composite of 10)	0.	N/R	***

+ test-retest correlation

++ Cronbach's alpha

+++ Process Analysis: * = both criteria met, ** = liberal
criteria met, *** = neither criteria met

Table 2.4: Comparison of Original and Revised Questionnaires

Original	Revised	
Questionnaire	Questionnaire	Changes
Question Number	Question Number	
1	1	no change
2	2	changed from 4 alternatives to checklist
3	5	wording changed, added pain right now
4	3	wording changed
5	4	wording changed
6	6	font changed
7	7	no change
8	8	no change
9	10, 11	split into two questions, wording changed
10	12	wording and font changed
11	-	dropped
12	13	no change
13	14	wording changed
14	15	no change
15	16	no change

Table 2.4: Comparison of the Original and Revised
Questionnaires - Continued.

Original	Revised	
Questionnaire	Questionnaire	Changes
Question Number	Question Number	
16	17	no change
17 - 32	32-47	no change
33	48	wording changed
34	19	wording changed
35	21	no change
36	22-27	replaced by
37	28	no change
38	29	no change
39	30	no change
40	31	no change
41	49	no change
42	50	no change
43	51	wording changed
44	52	wording changed
45	53	wording and options changed
46	54	no change
47	55	wording changed
48	56	no change
-	9	new
-	18	new
-	20	new

3. MAIN STUDY

3.1 Stage Three

3.1.1 Method

3.1.1.1 Instrument

The revised Personal and Health Information Questionnaire from Stage Two was used (see Appendix D). Further details on the development of the questionnaire are provided in Stage One and Two (see Chapter 2). This instrument was used to gather all the self-report data used in this study.

Fourteen criterion and predictor variables were assessed using the questionnaire. The criterion variables included self-care behaviours (SCB) and health service utilisation behaviours (HSUB). The SCB variable was a composite incorporating different components of question nineteen ("take non-prescription medicine", "buy something at store for it", "read up about the problem", "cut down on activities", "adjust a device", "use ice", "use heat", "exercise", "use relaxation or medication", "rub sore joint myself", "get a massage from someone else", and "change diet or fluid intake"). The HSUB variable was a composite incorporating question six and portions of question nineteen ("phone and get advice from physician/nurse",

"visit a drop-in clinic", "ask physician for a prescription for medicine", "buy and take prescription medicine", and "follow existing orders from physician"). The predictor variables included "regular physician", "perceived pain intensity", "perceived pain consequences", "past pain duration", "age attribution", "age perception", "comparative health status", "effectiveness of treatment", "illness attribution", "injury attribution", "belief pain is a normal part of ageing", and "physician feedback". The "regular physician" variable was assessed by question twenty-eight. The "perceived pain intensity" variable was assessed by the last section of question five (5d). The "perceived pain consequences" variable was a composite compiled of questions sixteen and seventeen. The "past pain duration" variable was assessed by question three. The "age attribution" variable was a composite of questions nine, thirteen and eighteen. The "age perception" variable was a composite of questions twenty-five, twenty-six, and twenty-seven. The "comparative health status" variable was assessed by question twenty-one. The "effectiveness of treatment" variable was based on question four. The "illness attribution" variable was assessed by question fourteen. The "injury attribution" variable was assessed by question fifteen. The "belief that pain is a normal part of ageing" variable was measured by question forty-eight. Finally, the "physician feedback" variable was based on a

composite of question eleven and twelve.

3.1.1.2 Participants

Participants were recruited by contacting individuals through community, church and housing groups, as well as through newspaper advertising. The questionnaire was distributed to these individuals either in person or through a distribution process agreed upon by the specific group. For some of the community or church groups, one of the researchers attended a group meeting and distributed questionnaires after presenting information about the study. However, some groups requested that they be sent a package of questionnaires that they could distribute themselves. For the housing groups, questionnaires were slid under apartment doors with a cover letter from the housing agency, an information page explaining the study, and a prepaid return envelope. The process for returning the completed questionnaire was individualised to each group contacted. For example, some groups preferred to fill out the questionnaire immediately, or to return them to the researcher at a second meeting, or to put them in a drop off box. Others mailed the questionnaire in pre-paid, pre-addressed envelopes provided by the researcher. The inclusion and exclusion criteria were the same as those used in Stage Two (see page 88).

In total 1,100 questionnaires were distributed.

Questionnaires were returned by 323 seniors (29% return rate). This modest return rate is likely due to a number of factors, including (a) the questionnaire focused on a specific subgroup, seniors with joint pain, and many individuals may not have fit this subgroup; (b) many of the questionnaires were distributed without personal contact which may have decreased motivation and triggered concern about personal security; and (c) many of the questionnaires were distributed over the summer when many seniors were away on holidays. However, this response rate may be better than it initially appears. Although studies vary dramatically in the frequency of seniors with pain (30-86%), those studies that had high prevalence rates tended to be based on restricted participant groups. Those studies based on more representative samples tended to find the percentage of seniors with pain fell in the 30s. If the prevalence of seniors with pain is in the 30% range, a return rate of 29% is quite good.

Of the 323 questionnaires, 253 (80%) were usable. Questionnaires with less than 10 questions left blank were considered usable. Mean replacement was used to deal with this missing data. This procedure is considered an acceptable method for dealing with missing data (Tabachnick & Fidell, 1989). The 70 unusable questionnaires included those questionnaires which were completed by individuals without pain, those that were returned completely blank,

and those which had been returned with 10 or more blank questions. Of the 253 usable questionnaires, three cases were later dropped because the individuals were younger than 60 years of age. One case was kept with an age below 60 because the age was calculated as 59.95. This step resulted in 250 usable questionnaires.

The sample size of 250 provided ample power for the statistical analysis. Specifically, it was determined a priori that a sample size of 230 would allow for the detection (using $\alpha = .05$) of a squared regression coefficient as small as .10 with an 85% probability when using 20 independent variables in a Standard Multiple Regression (Cohen & Cohen, 1983). In this study Hierarchical Set Multiple Regression was used. Power was not calculated specifically for this form of regression analysis since such calculation, done a priori, normally requires knowledge of the intercorrelations among the independent variables, which are not known for this study. Although estimates of these correlations could be made, the number of assumptions would limit the value of the calculation. Thus, the calculation of power for a Standard Multiple Regression was used as a rough guide.

Of the seniors who completed usable questionnaires, 70 percent identified themselves as female. The average age was 72.8, ranging from 60 to 92.91. The most commonly

endorsed education level was grade 10-12 (27%). Occupation³ was recoded into one of seven categories (see Table 3.1). The occupation categories were taken from Stevens and Cho (1985), with the exception of the category "homemaker" which was added by the author. The majority of participants were retired (74%). Forty-seven percent of the individuals lived in a house, with most others living either in apartments, seniors' apartments or condominiums. The majority of the seniors were either married (50%) or widowed (32%). Forty percent of the participants' reported family income fell into the \$20,000 - \$49,000 range. Forty-six percent of the participants endorsed either "\$10,000 & under" or "\$10,000 - \$19,000" categories.

3.1.1.2.1 study demographics compared to Canadian statistics. The demographics on seniors who participated in the study were compared to Canadian demographics to determine the extent to which they were representative of the general seniors' population. Since the age grouping for the Canadian Statistics do not start at age 60 years but at 65 years, only those participants age 65+ were included for this comparison ($N = 203$)⁴. As can be seen in Table 3.2,

³ Occupation included either current occupation or last occupation before retirement.

⁴ The information provided in Table 5 will differ from the demographic statistics provided in the earlier section since the participants younger than 65 years were excluded for this comparison.

**Table 3.1: Participant's Current or Pre-Retirement
Occupation**

Occupation Category	Frequency	Percent
Managerial & Professional Speciality	87	35
Technical, Sales & Administrative Support	47	19
Service	25	10
Farming, Forestry & Fishing	14	6
Precision Production, Craft & Repair	8	3
Operators, Fabricators & Labourers	13	5
Homemakers	34	14
Question Not Answered	22	9

Table 3.2: Comparing the Study Participants with Data from Statistics Canada

		Statistics Canada ^a	Study ^b
		%	%
Marital Status ^c	Married ^d	77	44
	Widowed	13	39
Education ^c	Grade 9 or less	42	20
	Grade 9-13	29	23
	Post Grade 12, non-	17	24
	University		
	University	12	32 ^e
Sex ^c	Female	58	73
Working Status ^c	Working	14	5
Income ^f	Under 10,000	57	14
	10-19,000	29	35
	20,000 +	14	51

a: Statistics from Statistics Canada referring to individuals 65 years and older.

b: Statistics from Stage 3 for individuals 65 years and older, N=203 (for comparative purposes).

c: Desjardins, B. (1993). Population Ageing and the Elderly: Current Demographic Analysis. Ottawa: Statistics Canada.

d: Married includes those individuals married, separated, and common-law.

e: This number includes both individuals who have taken some university courses (18%) and those who have a completed university degree (15%).

f: Pensions and incomes of the elderly in Canada, 1971-1985. (1989). Statistics Canada. 13-588 No.2.

there were a number of differences. The participants in this study were more likely to: be widowed, have a higher level of education, be female, not be working, and have an income above \$20,000 than the seniors described by the Statistics Canada. These differences will be considered when the results are interpreted.

3.1.1.3 Procedure

Participants were requested to complete the Personal and Health Information Questionnaire at home and return it in a pre-agreed manner. This questionnaire took approximately 30-60 minutes to complete. A contact name and phone number were provided on the front page of the questionnaire. On the last page of the questionnaire, permission was requested to contact the individual's family physician's office to confirm the number of visits to the physician in the last 12 months. This process provided an alternative source for determining the number of physician visits other than self-report. A subsection of the participant group was part of a retest procedure ($n = 52$)⁵.

⁵ Determining the acceptable N for a retest sample is difficult. It is not appropriate to use analysis of power to determine the sample size since testing the null hypotheses is not relevant. However, given a situation where the variance is not too limited and there is acceptable stability, a sample size of 30-40 is usually acceptable. If the items/subscale variance is limited, the resulting retest correlation (based on $N = 30$ or 40) should be considered a conservative measure of reliability since even a small deviation on the scale will cause a

These individuals' questionnaires were picked up in person by a research assistant or returned by mail.

3.1.1.4 Analyses

3.1.1.4.1 Descriptive Analyses. Frequency, mean, standard deviation, and percentage statistics were used to describe the data collected by the questionnaire. In particular, the participants' pain experiences, their visits to their family physician, and their use of alternative treatments are described.

3.1.1.4.2 Reliability and Validity. The retest process assessed the reliability of the variables that had been revised in Stage Two, as well as confirmed the reliability of those variables that were not altered. The internal consistency of the composite variables was re-assessed in order to determine the best combination of questions. The large number of participants recruited for Stage Three provided a reliable estimate of internal consistency. Both forms of reliability (retest and internal consistency) were considered important and given equal weight when determining which combination of questions would be used.

Across the three stages of this study, four methods were used to enhance validity: theoretically based test construction, expert feedback, process analysis, and

significant change in the correlation.

corroborative data. In this stage (stage three), collaborative data was gathered from physician records. For a subsection of the participants, physician offices were contacted (with consent from the participants) and asked how often the participants had seen their family physician in the last year. This process provided an alternative source for physician visits other than self-report. These two indices of physician visits were not expected to have a perfect correlation but were expected to correlate to some degree. This relationship helped provide boundaries to the conclusions that can be made from this study and addressed issues of construct validity.

3.1.1.4.3 Screening of data. The data was screened for the following factors prior to conducting the regression analyses: missing data, outliers, multicollinearity and singularity, normality, linearity and homoscedasticity (see Result section for details).

3.1.1.4.4 Choosing the type of multiple regression analysis. Three types of Multiple Regression were considered for this project: Standard, Hierarchical Set and Stepwise. Standard, although initially considered, was not chosen because it required entering all the variables at once and treating them as equally important. Stepwise was considered but was not chosen due to a number of major

criticisms of this approach by Tabachnick and Fidell (1989) and Cohen and Cohen (1983). Specifically, this procedure's difficulties relate to "capitalisation on chance and overfitting of data" (Tabachnick & Fidell, 1989, p. 153). Variables are included or excluded in the regression model based on statistical differences within one sample which may be quite small. As a result, minor differences between samples can result in dramatically different regression analyses. Also, stepwise regression may not result in the optimal R^2 since individual variables that do not significantly contribute on their own to the analysis may be excluded, even though they may contribute significantly if they were combined with other variables (Tabachnick & Fidell, 1989). Furthermore, Cohen and Cohen (1983) stated that the significance tests of both individual variables, as well as the overall multiple squared R , could not be considered valid with this approach. Finally, Hierarchical Set multiple regression analysis was chosen because it allows the hierarchical arrangement of general sets while still using Standard multiple regression within the sets. This process helped overcome the difficulties of entering all the variables at once but also did not require the ordering of each individual variable.

3.1.1.4.5 Testing hypotheses. Hierarchical set multiple regression analysis was used to determine which

predictor factors significantly contribute to each of the two criterion variables: (a) self-care, and (b) health services utilisation. See Appendix E for a description of the computations of each variable. In total, 2 hierarchical set multiple regression calculations were computed (one regression analysis for each criterion variable). Analysis was performed using SPSS REGRESSION. The following sets were used in the regression equations: (a) Demographics, (b) Perceived Need Variables, and (c) Beliefs.

The demographic set was entered first since one of the objects of the study was to determine if the following two sets explained any significant variance beyond the demographic variables. This set included work status, income, education, age, sex, marital status, and having a regular physician. Although there were more demographic variables being collected than these seven, these variables were chosen because they have accounted for significant variance in previous research (Wan, 1989). It was hypothesised that the demographic set would account for significant portions of variance in the regression analysis. There was only one variable-specific hypothesis for the demographic set and this referred to having a regular Family Physician.

Variable-Specific Hypothesis:

Regular Physician:

Having a regular physician will be associated

with significant levels of HSUB variance, such that having a regular physician will be associated with greater levels of health service utilisation.

The perceived need set was entered next. This set included two variables on perceived severity (perceived pain intensity and perceived pain consequences), and one variable on perceived duration (past pain duration). It was entered second because in previous research the most consistent predictors of health care behaviours were need variables (Cook & Thomas, 1994; Coulton & Frost, 1982; Dean, 1989; Kelman & Thomas, 1988; Stump et al., 1995). It was hypothesised that this variable set would explain a significant portion of variance in the HSUB and SCB beyond that explained by the demographics set. Specific hypotheses were made for each variable. Most of these hypotheses were specific to HSUB. The analysis of SCB was exploratory and specific hypotheses were not made except in reference to the variables of perceived pain intensity and perceived pain consequences.

Variable-Specific Hypotheses:

Perceived Pain Intensity: perceived severity of pain symptom:

- (i) SCB: Joint pain intensity will be associated with significant amounts of SCB variance, with

greater pain intensity being associated with higher use of SCB.

(ii) HSUB: Joint pain intensity will be associated with significant amounts of HSUB variance, with greater intensity being associated with higher health service use.

Perceived Pain Consequences: perceived consequences of disorder:

(i) SCB: The perceived consequences of having joint pain will account for significant SCB variance: greater levels of perceived consequences will be associated with higher use of SCB.

(ii) HSUB: The perceived consequences of having joint pain will account for significant HSUB variance: the greater the perceived consequences, the higher the use of health care services.

Past Pain Duration:

Past pain will be associated with the significant levels of HSUB variance: the shorter the past duration has been the greater the level of HSUB

The beliefs set was entered last. This set included age attribution, age perception, comparative health status, effectiveness of treatment beliefs, illness attribution, injury attribution, belief that "pain is part of ageing", and physician feedback. It was entered last in order to

determine if the specific beliefs assessed accounted for significant portions of either HSUB and SCB variance beyond the variance accounted for by the two previous variable sets. It was hypothesised that this set should be associated with significant unique HSUB and SCB variance. Specific hypotheses about these beliefs are listed below. Again, these specific hypotheses were only about HSUB.

Hypotheses:

Age Attribution:

Age attribution will account for a significant portion of HSUB variance, such that lower levels of age attribution will be associated with greater levels of health service utilisation.

Age Perception:

Age perception will be positively associated with age attribution and thus will account for a significant portion of the variance of HSUB. The "older" the seniors' age perception, the lower the expected level of HSUB.

Comparative Health Status:

The tendency to perceive oneself as having worse health than others will significantly add to the variance of HSUB accounted for, such that the perception of worse comparative health will be associated with greater HSUB.

Effectiveness of Treatment:

The belief that their joint pain can be effectively treated by a health care professional will significantly add to the variance accounted for in HSUB, such that the greater this belief the greater the HSUB.

Illness Attribution:

The belief that their joint pain is due to an illness will explain a significant amount of HSUB variance, such that high levels of illness attribution will be associated with greater levels of health service utilisation.

Injury Attribution:

The belief that their joint pain is due to injury will account for a significant amount of HSUB variance, such that high levels of injury attribution will be associated with be greater levels of health service utilisation.

Pain is Part of Ageing:

The belief that pain is a normal part of ageing will account for a significant portion of the variance of HSUB; the weaker this belief, the greater the level of HSUB.

Feedback from Physician:

Negative feedback from their physician (e.g., "nothing can be done") will be associated with

significant HSUB variance. This variable was scored so that the lower the score the greater the negative feedback. The higher the score of this variable, the higher the level of HSUB.

Although this study does not attempt to test the models reviewed earlier (the Health Services Utilisation Model, the Health Belief Model, and the Common Sense Model of Illness), the variables included in the analyses are based on these models and the research literature in the area of seniors and pain. The testing of these hypotheses concerning health service utilisation, as well as the exploratory analysis of SCB, were aimed at increasing the knowledge on how seniors perceive and react to their joint pain.

3.1.2 Results

3.1.2.1 Descriptive Statistics

3.1.2.1.1 Description of seniors' pain experience.

Participants endorsed a wide variety of pain sites (see Table 3.3). The top three most frequently endorsed pain sites were (a) finger/hand (57%), (b) lower back (56%), (c) knee (55%). Most individuals (87%) endorsed more than one site with the mean number of sites being 4.3. The pain reported by the participants was chronic in duration. Many of these individuals had had their pain for over 15 years (31.6%) and the majority had had their pain for over 3 years (80.8%). Each participant rated the severity of their pain in four different ways: "current" pain level, "worst" pain level in last month, "least" pain level in last month, and "average" pain level in last month (see Table 3.4). They used an 11 point numeric scale (0 = No pain, 10 = Pain as bad as it could be). The mean self-reported "average" pain level was 5.76 (SD = 2.21).

3.1.2.1.2 Description of seniors' visits to their family physician. A large number of seniors reported no visits in the previous year to their family physician for their pain (43%). Two to four visits per year was the next most frequently endorsed category (see Table 3.5). The

Table 3.3: Pain Site Frequencies

Site	Frequency	%
Finger/Hand	142	56.8
Lower Back	140	56.0
Knee	138	55.2
Hip	109	43.6
Shoulder	105	42.0
Foot	80	32.0
Wrist	70	28.0
Ankle	70	28.0
Upper Back	48	19.2
Elbow	33	13.2
Other	20	8.0
Jaw	15	6.0

Table 3.4: Pain Severity

	Mean	SD	N
Pain Now	5.08	2.83	246
Worst Pain*	7.76	2.40	246
Least Pain*	3.50	2.16	247
Average Pain*	5.76	2.21	250

* Pain in last month, all pain ratings made on an 11 point numeric scale (0 = No Pain, 10 = Pain as Bad as it Could Be).

Table 3.5: General and Joint Pain Specific Visits to the Family Physician

	Self-reported Visits for Joint Pain		Self-reported General Visits	
	Frequency	%	Frequency	%
0 visits	107	43	10	4
1 visit	37	15	47	19
2-4 visits	74	30	119	48
5-7 visits	17	7	39	16
8-10 visits	4	2	10	4
11+ visits	6	2	21	9

majority reported no visits to medical specialists for their pain (70%). Participants were also asked how frequently they saw their family physician over the past year for any reasons. The most frequently endorsed category of visits was 2-4 visits (48%). One visit per year was the second most endorsed category (19%).

Finally, participants were also asked for permission to contact their family physician for confirmation of the number of general visits they had made to their family physician in the last year. Of the 250 participants, 101 gave permission. Letters were sent out to the family physicians' offices, followed up by a phone call or letter. Of the 101 MD offices, 76 (75%) returned the information requested. The information provided by the family physicians was divided into the same categories as used in the questionnaire (see Table 3.6). For this subsection of seniors, participants' self-report of physician visits (for any reason) was correlated with information about the number of visits in the last year provided by their family physician ($N = 76$, $r = .66$).

3.1.2.1.3 description of seniors' use of alternative treatments. Although alternative forms of treatments were not the focus of this study, seniors were asked to indicate whether they had used a variety of alternative treatments for their joint pain in the past twelve months. These

Table 3.6: Self-reported and MD Reported Visits to the Family MD.

Number of MD Visits	Permission	Permission Given	
	Not Given	MD Contacted	
	N = 148	N = 76	
	Self-reported General Visits %	Self-reported General Visits %	MD Reported General Visits %
0	5	3	4
1	21	16	4
2-4	46	50	26
5-7	15	17	32
8-10	5	3	15
11+	7	10	19

alternative types of treatment included: yoga, fasting, going to a reflexologist, going to an acupuncturist, going to a naturopath, going to a chiropractor, going to a homeopath, going to an iridologist, going to a health food store, having accupressure, using herbal remedies, using home remedies, using immune therapy, using spirital or faith healing, using sauna, using metavitamins, and going to a psychologist. On average, seniors reported using approximately one of these alternatives for their joint pain (range = 0 to 8). Forty-six percent of the seniors reported that they did not use any of these alternative treatments ($N = 116$). However, all types were used by at least one senior with the exception of going to a psychologist. The three most frequently used treatments were going to a chiropractor ($N = 60$), going to a health food store ($N = 44$), and using home remedies ($N = 43$). Excluding going to a psychologist, the three least frequently used treatments were going to a homeopath ($N = 1$), going to an iridologist ($N=1$), and using immune therapy ($N = 3$).

3.1.2.2 Reliability and Validity

All 15 variables were checked for retest reliability. Those variables that were composites were also checked for internal consistency using Cronbach's Alpha. In some cases a number of composites were calculated to determine the

composites with the best reliability. Thus, the composites chosen from the Stage Two analyses were not necessarily the composites used for the Stage Three analyses. See Table 3.7 for the specific variable composites. All variables had retest correlations equal to or above .70 with the exception of the variable "Pain is a Normal Part of Ageing". All composite variables had Cronbach's Alpha equal to or above .70 with the exception of "SCB" and "Feedback from Physician" (both of these variables did have retest correlations equal to or above .70). See Table 3.8 for the specific retest correlations and Cronbach's Alpha for the finalised variables. Both forms of reliability were considered important and given equal weight. Also, the reliability analysis was not used to exclude variables. Rather, all variables were kept in the analysis at this point. However, for the three variables that did not meet the criteria, interpretations of the results were considered more tentative.

3.1.2.3 Screening

As mentioned earlier, prior to conducting the regression analysis, the following factors were screened for: missing data, outliers, multicollinearity and singularity, normality, linearity and homoscedasticity. As stated questionnaires with 10 or more questions missing were excluded from the study. For those questionnaires with

Table 3.7 Variable Composites in Stage 3

Variable	Questions	Differences From Stage 2 ⁺
HSUB	16 and part of 19 ⁺⁺	One question dropped (#7); #19 wording changed (same parts as chosen in Stage 2)
SCB	part of 19 ⁺⁺⁺	Wording changed
Age Attribution	9,13,18	9 & 18 new questions
Age Perception	25,26,27	All new questions
Past Pain Duration	3	Same as Stage 2
Comparative Health Status	21	Same as Stage 2
Effectiveness of Treatment	4	Same as Stage 2
Pain is a Normal Part of Ageing	48	Same as Stage 2
Perceived Pain Intensity	5d	#5 rewritten, only (d) used rather than all parts

⁺ Question #s are from the Revised Questionnaire.

⁺⁺ Relevant parts from # 19 included: Phone and get advice, Visit a drop-in clinic, Ask physician for a prescription, Buy and take prescription, Follow existing orders.

⁺⁺⁺ Relevant parts from # 19 included: Take non-prescription medicine, Buy something at store, Read up about the problem, Cut down activities, Adjust device, Use ice, Use heat, Exercise, Use relaxation or meditation, Rub sore joint myself, Get a massage, Change diet or fluid intake.

Table 3.7 Variable Composites in Stage 3 - continued

Variable	Questions	Differences
		From Stage 2 ⁺
Pain Consequences	16,17	Same as composite chosen in Stage 2
Illness Attribution	14	Rewritten
Injury Attribution	15	Rewritten
Regular MD	28	Same as Stage 2
MD Feedback	11 & 12	One question dropped (#8), one question added (#12), one question rewritten (#11)

⁺ Question #s are from the Revised Questionnaire.

⁺⁺ Relevant parts from # 19 included: Phone and get advice, Visit a drop-in clinic, Ask physician for a prescription, Buy and take prescription, Follow existing orders.

⁺⁺⁺ Relevant parts from # 19 included: Take non-prescription medicine, Buy something at store, Read up about the problem, Cut down activities, Adjust device, Use ice, Use heat, Exercise, Use relaxation or meditation, Rub sore joint myself, Get a massage, Change diet or fluid intake.

Table 3.8: Reliability Statistics

Variable	Cronbach's	Retest
	Alpha	Correlation
HSUB	.73	.87
SCB	.64	.84
Age Attribution	.87	.83
Age Perception	.85	.79
Past Pain Duration	-	.85
Health Perception	-	.76
MD Effectiveness	-	.72
Pain is a Normal Part of Ageing	-	.56
Perceived Pain Intensity	-	.74
Perceived Pain Consequences	.91	.79
Illness Attribution	-	.80
Injury Attribution	-	.80
Regular MD	-	.70
MD Feedback	.62	.74

less than 10 questions missing, mean replacement was used. Regarding outliers, only one outlier was found and it was rescored to a value of one below the next farthest case from the mean (Age perception: from -20.54 to -8.11). Multicollinearity and singularity were assessed and no highly correlated variables were found. Problems of lack of normality, linearity and homoscedasticity do not necessarily invalidate a regression equation but they do weaken it (Tabachnick & Fidell, 1989). When these difficulties occurred, transformation of the appropriate variables was carried out to reduce or eliminate these negative influences. The following variables were transformed: "HSUB" (square root transformation), "Comparative Health Status" (square root transformation), "Pain as a Normal Part of Ageing" (reflected square root transformation), "Perceived Pain Intensity" (square root transformation), "Perceived Pain Consequences" (square root transformation), "Illness Attribution" (inversed transformation), "Feedback from Physician" (square root transformation). In addition, the variable "Regular Physician" was dropped due to extreme skewness. All participants except for eight individuals ($N = 250$) had a regular physician. No differences were found using t -tests between those individuals with a regular physician and those without one, on age ($t = .84$, ns), marital status ($t = -1.78$, ns), education level ($t = -2.10$, ns), income ($t =$

-.69, ns), and sex ($t = -.12$, ns).

3.1.2.4 A Priori Regression Analyses

3.1.2.4.1 Health Service Utilisation Behaviours (HSUB)

The results of the hierarchical set multiple regression analysis for HSUB are displayed in Table 3.9. For each set entered into the analysis, a regression coefficient was computed. Hypotheses about each set were tested (see analysis section). Also, eleven specific variable hypotheses were tested for HSUB. The twelfth specific variable hypothesis for HSUB was not tested because the variable was dropped during screening (Regular Physician).

The demographic set did not significantly contribute to the regression model, whereas, the need set and health belief set did. The demographic set accounted for 2 percent of the variance of the HSUB variable (Adjusted R square = .02), which was not significantly different from zero [F change(6,243) = 1.89, $p = .08$]. The next set was the need set. The demographic set and the need set combined accounted for 26 percent of variance of the HSUB variable [F (9,240) = 10.61, $p < .01$]. The need set had an adjusted R square change = .24 and accounted for a significant amount of unique variance [F change (3,240) = 26.86, $p < .01$]. When the health belief set was added to the previous sets, the three sets accounted for 50 percent of the variance of the

Table 3.9: HSUB Hierarchical Set Regression Analysis (N = 250)

Step One:	R	R ²	Adj R ²	Std Error	F	df	sig	R ² Change	F Change	df	sig
Demographic Set	.21	.05	.02	.44	1.89	6,243	.08	.05	1.89	6,243	.08
Step Two:											
Demographics & Need Set	.53	.29	.26	.38	10.61	9,240	.01	.24	26.86	3,240	.01
Step Three:											
Demographic, Need & Belief Set	.73	.54	.50	.31	15.85	17,232	.01	.25	15.84	8,232	.01

HSUB variable [$F(17,232) = 15.85, p < .01$]. The belief set had an adjusted R square change of .25 and accounted for a significant amount of unique variance [F change $(8,232) = 15.84, p < .01$]. These results did not support the general hypothesis about the demographic set but did support the general hypotheses about the other two sets.

The variance accounted for by the specific variables within each set was determined by squared semi-partial correlations calculated during the regression analysis (see Table 3.10). T-tests were conducted as part of the multiple regression analysis to determine if the amount of variance added by each variable was significant. For HSUB, when the demographic set was added during the first step of the analysis, no specific variable had a significant t-test. During the second step (demographic set and need set), two variables, "Perceived Pain Intensity" and "Perceived Pain Consequences", had significant t-tests ($t = 5.34, p < 0.01$; $t = 4.36, p < 0.01$, respectively). During the third step (demographic set, need set, and health belief set) four variables ("Perceived Pain Intensity", "Perceived Pain Consequences", "Effectiveness of Treatment", and "Feedback from Physician") had significant t-tests ($t = 5.06, p < 0.01$; $t = 2.33, p = 0.02$; $t = 3.39, p < 0.01$; $t = -8.54, p < 0.01$, respectively).

Table 3.10: HSUB Variable Specific Regression Results
(N = 250).

Variable	B	SE B	β
STEP ONE:			
Work Status	0.01	0.07	0.01
Income	-0.07	0.04	-0.13
Education	-0.01	0.02	-0.04
Age	-0.00	0.00	-0.06
Sex	0.00	0.08	0.00
Marital Status	-0.10	0.06	-0.11
STEP TWO:			
Work Status	0.01	0.06	0.01
Income	-0.02	0.03	-0.04
Education	0.01	0.02	0.05
Age	-0.01	0.00	-0.08
Sex	-0.01	0.07	-0.01
Marital Status	-0.06	0.06	-0.07
Pain Intensity ^o	0.32	0.06	0.34**
Pain Consequences ^o	0.26	0.06	0.27**
Past Pain Duration	0.00	0.02	0.01
STEP THREE			
Work Status	0.02	0.05	0.02
Income	-0.02	0.03	-0.03
Education	0.01	0.02	0.02
Age	0.00	0.00	0.02
Sex	-0.01	0.06	-0.01
Marital Status	-0.01	0.05	-0.02
Pain Intensity ^o	0.26	0.05	0.27**
Pain Consequences ^o	0.12	0.05	0.13*
Past Pain Duration	-0.02	0.01	-0.07
Age Attribution	0.01	0.01	0.03
Age Perception	-0.00	0.01	-0.02
Health Perception	0.08	0.07	0.07
MD Effectiveness	0.08	0.02	0.17**
Illness Attribution	-0.00	0.08	-0.00
Injury Attribution	0.02	0.02	0.05
Pain is a Normal Part of Aging	0.15	0.10	0.08
MD Feedback	-0.52	0.06	-0.44**

* $p \leq 0.05$

** $p \leq 0.01$

^o As perceived by the participant.

It was hypothesised that the variables "pain intensity", "pain consequences", "past pain duration", "age attribution", "age perception", "comparative health perception", "effectiveness of treatment", "illness attribution", "injury attribution", "the belief that pain is a normal part of ageing", and "MD feedback" would be associated with significant HSUB variance. As stated above, "perceived pain intensity", "perceived pain consequences", "effectiveness of treatment" and "feedback from physician" were associated with significant portions of HSUB (see table 3.10). However, only three of these four variable were correlated with HSUB in the hypothesised directions. For "Perceived Pain Intensity", the data supported the hypothesis that greater levels of perceived pain were associated with greater levels of HSUB ($r = 0.46$, $p < 0.01$).

For "Perceived Pain Consequences", greater levels of perceived consequences were associated with greater levels of HSUB ($r = 0.42$, $p < 0.01$). For "Effectiveness of Treatment", the greater the belief that a Family Physician could help them, the greater level of HSUB were reported ($r = 0.35$, $p < 0.01$). However, for "Feedback from Physician", the significant result was in the opposite direction from what was hypothesised. For "Feedback from Physician", the more negative the feedback (lower score on MD feedback), the greater level of HSUB were reported ($r = -0.61$, $p < 0.01$).

As is clear from the above results, most of the specific variables were not associated with significant HSUB variance (see table 3.10). For "past pain duration", the data did not support the hypothesis that shorter pain duration would be associated with significantly greater levels of HSUB. In addition, the correlation was in the opposite direction from what was predicted, with longer duration being positively correlated with higher HSUB ($r = 0.13$, $p = 0.02$). For "age attribution", the data did not support the hypothesis that lower levels of age attribution would be associated with significantly greater levels of HSUB. With age attribution, the correlation was also in the opposite direction from what was predicted, with greater levels of age attribution being associated with greater levels of HSUB ($r = 0.08$, $p = 0.11$). For "age perception", the data did not support the hypothesis that "older" age perception would be associated with significantly lower levels of HSUB, although the correlation was in the correct direction ($r = -0.14$, $p = 0.01$). For "comparative health perception", the hypothesis that the perception of worse comparative health would be associated with significantly greater HSUB was not supported, although the relationship was in the correct direction ($r = 0.26$, $p < 0.01$). For "illness attribution", the data did not support the hypothesis that higher levels of illness attribution would be associated with significantly greater levels of HSUB.

Also for "illness attribution", the correlation with HSUB was in the opposite direction from that predicted ($r = -0.14$, $p = 0.01$). For "injury attribution", the data did not support the hypothesis that greater levels of injury attribution would be associated with significantly greater HSUB, although the correlation between "injury attribution" and HSUB was in the expected direction ($r = 0.12$, $p = 0.03$). For "the belief that pain is a normal part of ageing", the hypothesis that a lower belief in pain being a normal part of ageing would be associated with significantly greater HSUB was not supported. However, the correlation between this belief and HSUB was in the predicted direction ($r = 0.07$, $p = 0.13$). For this variable, due to the statistical transformation done (reflected and then square rooted), the greater the score on the variable "pain is a normal part of ageing", the lower the actual belief; thus, the hypothesised direction of the correlation between this variable and HSUB was positive.

3.1.2.4.2 Self-care Behaviours (SCB) The results of the hierarchical set multiple regression analysis for SCB are displayed in Table 3.11. For each set entered into the analysis, a regression coefficient was computed. The demographic set did not significantly contribute to the regression analysis, whereas, the need set and health belief set did. Specifically, the demographic set accounted

Table 3.11: SCB Hierarchical Set Regression Results (N = 250).

Step One:	R	R ²	Adj R ²	Std Error	F	df	sig	R ² Change	F	df	sig
							≤				≤
Demographic Set	.19	.04	.01	3.92	1.57	6,243	.16	.04	1.57	6,243	.16
Step Two:							≤				≤
Demographics & Need Set	.37	.14	.11	3.72	4.33	9,240	.01	.10	9.50	3,240	.01
Step Three:							≤				≤
Demographic, Need & Belief Set	.53	.28	.23	3.46	5.33	17,232	.01	.14	5.70	8,232	.01

for 1 percent of the variance of the SCB (adjusted R square = .01), which was not significantly different from zero [F change(6,243) = 1.57, $p = 0.16$]. The next set was the need set. The demographic set and the need set combined accounted for 11 percent of variance (adjusted R square) of the SCB variable [F (9,240) = 4.33, $p < .01$]. The need set alone had an adjusted R square change = .10 and accounted for a significant amount of unique variance [F change (3,240) = 9.50, $p < .01$]. When the health belief set was added to the previous sets, the three sets accounted for 23 percent of the variance of the SCB variable [F (17,232) = 5.33, $p < .01$]. The belief set alone had an adjusted R square change of 0.14 and accounted for a significant amount of unique variance [F change (8,232) = 5.70, $p < .01$]. These results did not support the general hypothesis about the demographic set but did support the general hypotheses about the other two sets.

The variance accounted for by the specific variables within each set was determined by the squared semi-partial correlation calculated during the regression analysis (see Table 3.12). T-tests were conducted as part of the multiple regression analysis to determine if the amount of variance added by each variable was significant. For SCB, when the demographic set was added during the first step of the analysis, no variable had a significant t-test. During the

Table 3.12: SCB Variable Specific Regression Results
(N = 250).

Variable	B	SE B	β
STEP ONE:			
Work Status	0.26	0.61	0.03
Income	-0.61	0.34	-0.14
Education	0.16	0.20	0.06
Age	0.00	0.03	0.00
Sex	1.16	0.67	0.13
Marital Status	0.11	0.57	0.01
STEP TWO:			
Work Status	0.18	0.59	0.02
Income	-0.34	0.33	-0.07
Education	0.31	0.20	0.11
Age	-0.01	0.03	-0.02
Sex	1.03	0.64	0.11
Marital Status	0.24	0.55	0.03
Pain Intensity \diamond	1.51	0.58	0.18**
Pain Consequences \diamond	1.58	0.57	0.19**
Past Pain Duration	0.18	0.15	0.08
STEP THREE			
Work Status	0.07	0.56	0.01
Income	-0.13	0.32	-0.03
Education	0.13	0.19	0.05
Age	0.02	0.03	0.04
Sex	1.15	0.61	0.13
Marital Status	0.40	0.52	0.05
Pain Intensity \diamond	0.98	0.56	0.12
Pain Consequences \diamond	0.55	0.57	0.07
Past Pain Duration	0.06	0.14	0.03
Age Attribution	0.23	0.11	0.14*
Age Perception	0.11	0.11	0.07
Health Perception	0.63	0.72	0.06
MD Effectiveness	-0.04	0.26	-0.01
Illness Attribution	-0.97	0.88	-0.07
Injury Attribution	0.61	0.19	0.18**
Pain is a Normal Part of Aging	1.09	1.08	0.06
MD Feedback	-3.25	0.67	-0.31**

* $p \leq 0.05$

** $p \leq 0.01$

\diamond As perceived by the participant.

second step (demographic set and need set), two variables, "Perceived Pain Intensity" and "Perceived Pain Consequences", had significant t-tests ($t = 2.60$, $p = 0.01$; $t = 2.75$, $p < 0.01$, respectively). During the third step (all three sets), three variables, "Age Attribution", "Injury Attribution", and "Feedback from Physician", had significant t-tests ($t = 2.16$, $p = 0.03$; $t = 3.14$, $p < 0.01$; $t = -4.86$, $p < 0.01$, respectively). For "Age Attribution", greater levels of attributing joint pain to ageing was associated with greater levels of SCB ($r = 0.14$, $p = 0.01$). For "Injury Attribution", greater levels of attributing pain to injury were associated with greater levels of SCB ($r = 0.22$, $p < 0.01$). For "Feedback from Physician", more negative feedback was associated with greater use of SCB ($r = -0.40$, $p < 0.01$). "Perceived Pain Intensity" and "Perceived Pain Consequences" no longer were significant ($t = 1.76$, $p = 0.08$; $t = 0.96$, $p = 0.34$, respectively), although "Perceived Pain Intensity" approached significance. Also, 'Sex' approached significance ($t = 1.90$, $p = 0.06$).

Only two variable specific hypotheses were made about SCB (re: "perceived pain intensity" and "perceived pain consequences"). After the final step of the multiple regression, neither hypothesis was supported. For "perceived pain intensity", the data did not support the hypothesis that greater levels of pain intensity would be

associated with greater SCB, although pain intensity was correlated with HSUB in the expected direction ($r = 0.27$, $p < 0.01$). For "perceived pain consequences", the hypothesis that greater perceived consequences would be associated with greater levels of HSUB was not supported, although again the correlation was in the predicted direction ($r = 0.28$, $p < 0.01$).

3.1.2.5 Post-hoc Regression Analyses

Two hierarchical set multiple regression analyses were conducted post-hoc (one for HSUB, one for SCB). The post hoc regression analyses involved a replication of the above regression analysis using only the complete questionnaires ($N = 127$). This process helps address any concerns about the impact of the incomplete questionnaires. However, these results should be considered tentative since they were done post-hoc and because each additional analysis increases the likelihood of experimentwise error.

3.1.2.5.1 Health Service Utilisation Behaviours (HSUB)

The results of the hierarchical set multiple regression analysis on complete questionnaires only for HSUB are displayed in Table 3.13. For each set entered into the analysis, a regression coefficient was computed. As in the a priori analysis, the demographic set did not significantly contribute to the regression analysis,

Table 3.13: HSUB Hierarchical Set Regression Results - Complete Questionnaires Only
(N = 127).

Step One:	R	R ²	Adj R ²	Std Error	F	df	sig	R ² Change	F	df	sig
Demographic	.22	.05	.00	.43	1.04	6,120	.41	.05	1.04	6,120	.41
Set							≤				≤
Step Two:											
Demographics	.56	.32	.26	.37	5.98	9,117	.01	.27	15.13	3,117	.01
& Need Set							≤				≤
Step Three:											
Demographic, Need & Belief Set	.75	.57	.50	.30	8.41	17,109	.01	.25	7.95	8,109	.01
							≤				≤

whereas, the need set and health belief set showed a significant contribution. The demographic set accounted for .2 percent of the variance of the HSUB variable (Adjusted R square = .002), which was not significantly different from zero [F change(6,120) = 1.04, $p=0.41$]. The next set was the need set. The demographic set and the need set combined accounted for 26 percent of variance of the HSUB variable [F (9,117) = 5.98, $p<.01$]. The need set had an adjusted R square change = .27 and accounted for a significant amount of unique variance [F change (3,117) = 15.13, $p<.01$]. When the health belief set was added to the previous sets, the three sets accounted for 50 percent of the variance of the HSUB variable [F (17,109) = 8.41, $p<.01$]. The belief set had an adjusted R square change = .25 and accounted for a significant amount of unique variance [F change (8,109) = 7.95, $p<.01$]. These results confirm the results from the original a priori regression analysis.

The variance accounted for by the specific variables within each set was determined by the squared semi-partial correlation calculated during the regression analysis (see Table 3.14). T-tests were conducted as part of the multiple regression analysis to determine if the amount of variance added by each variable was significant. For HSUB, when the demographic set was added during the first step of the analysis no variable had a significant t-test. During the

Table 3.14: HSUB Variable Specific Regression Results - Complete Questionnaires Only (N = 127).

Variable	B	SE B	β
STEP ONE:			
Work Status	0.12	0.10	0.11
Income	-0.04	0.05	-0.08
Education	-0.04	0.03	-0.13
Age	0.00	0.01	0.03
Sex	-0.05	0.10	-0.05
Marital Status	-0.05	0.09	-0.06
STEP TWO:			
Work Status	0.09	0.09	0.09
Income	-0.03	0.05	-0.05
Education	-0.00	0.03	-0.01
Age	-0.00	0.01	-0.04
Sex	-0.06	0.09	-0.06
Marital Status	-0.02	0.08	-0.02
Pain Severity \diamond	0.35	0.08	0.38**
Pain Consequences \diamond	0.24	0.08	0.27**
Past Pain Duration	-0.01	0.02	-0.05
STEP THREE			
Work Status	0.07	0.07	0.07
Income	-0.02	0.04	-0.05
Education	-0.01	0.03	-0.04
Age	0.00	0.01	0.00
Sex	-0.09	0.08	-0.09
Marital Status	0.01	0.07	0.01
Pain Intensity \diamond	0.25	0.07	0.27**
Pain Consequences \diamond	0.11	0.08	0.12
Past Pain Duration	-0.02	0.02	-0.10
Age Attribution	0.01	0.01	0.06
Age Perception	0.00	0.01	0.01
Health Perception	-0.06	0.10	-0.05
MD Effectiveness	0.12	0.03	0.27**
Illness Attribution	-0.16	0.12	-0.10
Injury Attribution	0.03	0.03	0.07
Pain is a Normal Part of Aging	0.20	0.14	0.10
MD Feedback	-0.45	0.08	-0.40**

* $p \leq 0.05$

** $p \leq 0.01$

\diamond As perceived by the participants.

second step (demographic set and need set), two variables, "Perceived Pain Intensity" and "Perceived Pain Consequences", had significant t-tests ($t = 4.30$, $p < 0.01$; $t = 3.02$, $p < 0.01$, respectively). During the third step (demographic set, need set, and belief set) three variables, "Perceived Pain Intensity", "Effectiveness of Treatment", and "Feedback from Physician", had significant t-tests ($t = 3.50$, $p < 0.01$; $t = 3.80$, $p < 0.01$; $t = -5.34$, $p < 0.01$, respectively). Two of these significant results supported the hypotheses made. For "Perceived Pain Intensity", greater levels of perceived pain intensity were associated with greater levels of HSUB ($r = 0.49$, $p < 0.01$). For "Effectiveness of Treatment", the more seniors believed their Family Physician could help their pain, the more often they reported HSUB ($r = 0.43$, $p < 0.01$). For "Feedback from Physician", as with the a priori analysis, the findings were in the opposite direction of what was hypothesised. For "Feedback from Physician", more negative feedback (lower score on feedback variable) was associated with greater levels of HSUB ($r = -0.60$, $p < 0.01$). These results support the a priori analysis with the exception of "Perceived Pain Consequences" which was not significant after the final step.

3.1.2.5.2 Self-care Behaviours (SCB) The results of the hierarchical set multiple regression analysis of

completed questionnaires for SCB are displayed in Table 3.15. For each set entered into the analysis, a regression coefficient was computed. As in the a priori analysis, the demographic set did not significantly contribute to the regression analysis, whereas, the need set and health belief set did. Specifically, the demographic set accounted for 5 percent of the variance of the SCB (adjusted R square = .05), which was not significantly different from zero [F change(6,120) = 2.08, p = 0.06]. The next set was the need set. The demographic set and the need set combined accounted for 16 percent of variance (adjusted R square) of the SCB variable [F (9,117) = 3.70, p <.01]. The need set alone had an adjusted R square change = .13 and accounted for a significant amount of unique variance [F change (3,117) = 6.39, p <.01]. When the health belief set was added to the previous sets, the three sets accounted for 25 percent of the variance (adjusted R square) of the SCB variable [F (17,109) = 3.50, p <.01]. The belief set alone had an adjusted R square change = 0.13 and accounted for a significant amount of unique variance [F change (8,109) = 2.77, p = .01]. These results confirmed the earlier a priori regression analysis.

The variance accounted for by the specific variables within each set was determined by the squared semi-partial correlation calculated during the regression analysis (see

Table 3.15: SCB Hierarchical Set Regression Results - Complete Questionnaires Only
(N = 127).

Step One:	R	R ²	Adj R ²	Std Error	F	df	sig	R ² Change	F	df	sig
Demographic Set	.31	.09	.05	3.93	2.08	6,120	.06	.09	2.08	6,120	.06
Step Two:											
Demographics & Need Set	.47	.22	.16	3.69	3.70	9,117	.01	.13	6.39	3,117	.01
Step Three:											
Demographic, Need & Belief Set	.59	.35	.25	3.48	3.50	17,109	.01	.13	2.77	8,109	.01

Table 3.16). T-tests were conducted as part of the multiple regression analysis to determine if the amount of variance added by the variables was significant. For SCB, when the demographic set was added during the first step of the analysis one variable, "Sex", had a significant t-test ($t = 2.01$, $p = .05$). During the second step (demographic set and need set), three variables, "Sex", "Perceived Pain Intensity" and "Perceived Pain Consequences", had significant t-tests ($t = 2.10$, $p = .04$, $t = 2.51$, $p = 0.01$; $t = 2.03$, $p = 0.05$, respectively). During the third step (demographic set, need set, and health belief set) four variables, "Sex", "Perceived Pain Intensity", "Injury Attribution", and "Feedback from Physician", had significant t-tests ($t = 2.45$, $p = 0.02$; $t = 2.20$, $p = 0.03$; $t = 2.99$, $p < 0.01$; $t = -3.05$, $p < 0.01$, respectively). For "Sex", being female was associated with higher levels of SCB ($r = 0.26$, $p < 0.01$). For "Perceived Pain Intensity", greater perceived pain intensity was associated with greater levels of SCB ($r = 0.31$, $p < 0.01$). For "Injury Attribution", greater levels of attributing pain to an injury were associated with greater SCB ($r = 0.19$, $p = 0.02$). For "Feedback from Physician", the more negative the feedback (lower score) the greater use of SCB ($r = -0.38$, $p < 0.01$). During the step three, "Perceived Pain Consequences" no longer was significant. These results were similar to those found during the a priori analysis. One

Table 3.16: SCB Variable Specific Regression Results -
Complete Questionnaires Only (N = 127).

Variable	B	SE B	β
STEP ONE:			
Work Status	0.58	0.90	0.06
Income	-0.35	0.49	-0.08
Education	0.28	0.30	0.10
Age	0.06	0.05	0.11
Sex	1.90	0.94	0.22*
Marital Status	-0.16	0.86	-0.02
STEP TWO:			
Work Status	0.31	0.85	0.03
Income	-0.23	0.46	-0.05
Education	0.52	0.28	0.18
Age	0.02	0.05	0.04
Sex	1.86	0.89	0.21*
Marital Status	0.01	0.81	0.00
Pain Intensity \diamond	2.03	0.81	0.23*
Pain Consequences \diamond	1.63	0.80	0.20*
Past Pain Duration	0.11	0.20	0.05
STEP THREE			
Work Status	0.12	0.82	0.01
Income	0.32	0.47	0.07
Education	0.24	0.29	0.09
Age	0.05	0.05	0.09
Sex	2.25	0.91	0.26*
Marital Status	0.26	0.79	0.03
Pain Intensity \diamond	1.79	0.81	0.21*
Pain Consequences \diamond	0.38	0.86	0.05
Past Pain Duration	0.03	0.20	0.01
Age Attribution	0.10	0.14	0.07
Age Perception	0.21	0.15	0.13
Health Perception	1.29	1.16	0.11
MD Effectiveness	-0.05	0.36	-0.01
Illness Attribution	-1.84	1.36	-0.12
Injury Attribution	0.89	0.30	0.26**
Pain is a Normal Part of Aging	-0.01	1.56	0.00
MD Feedback	-2.95	0.97	-0.28**

* $p \leq 0.05$

** $p \leq 0.01$

\diamond As perceived by the participant.

difference was that both "Sex" and "Perceived Pain Intensity" reached significance; whereas, for the a priori analysis they only approached significance.

3.1.2.6 Summary of Regression Analyses

In summary, for both HSUB and SCB, the need and health belief variable sets significantly contributed to the regression analysis. These results were replicated with a subsection of questionnaires in a post hoc analysis. A few of the specific variable hypotheses were also supported. For HSUB, greater levels of "Perceived Pain Intensity" and greater belief in "Effectiveness of Treatment" were consistently found to be significantly associated with greater levels of HSUB, thus, supporting the hypotheses. "Feedback from Physician" was also consistently significant, but in the opposite direction hypothesised. The more negative the feedback, the greater the level of HSUB that was reported. For SCB, "Injury Attribution" and "Feedback from Physician" were consistently significant. There was no hypothesis related to these variables. The specific variable hypotheses made for SCB were not consistently supported.

4.DISCUSSION

4.1 Health Service Utilisation Behaviour (HSUB)

Recently, there has been an increased interest in understanding which factors influence seniors' use of health care services. Unfortunately, the research has had difficulty accounting for more than small to moderate amounts of variance (mainly in the 30% range). Dean (1989) suggested that by focusing on more specific factors, researchers may be able to explain a greater portion of variance. This research project strove to develop a more specific focus by combining the study of seniors' physician-related health services utilisation behaviours with the study of seniors' chronic joint pain experiences. By limiting HSUB to only physician-related actions done in response to joint pain (excluding such HSUB as home care) and specifically focusing on predictor factors relating to either joint pain and/or ageing, this study was able to explain 50% of the variance (Adjusted R^2) associated with self-reported HSUB. These percentages are much higher than previously found in this literature. This study provided support for the idea that greater portions of HSUB variance can be explained if researchers focus on (a) a specific medical problem and (b) predictor variables that are specific either to the medical problem being investigated or to the population being studied.

This study had three general hypotheses about how the

three variable sets (demographic, need, and belief) would relate to HSUB. First, it was hypothesised that the "demographic" variable set would account for significant portions of HSUB variance. Second, it was hypothesised that the "need" variable set would be associated with significant portions of HSUB variance beyond that accounted for by the "demographic" variable set. Thirdly, it was hypothesised that the "belief" variable set would account for significant unique portions of HSUB variance beyond that accounted for by both previous two variable sets. The results supported two of these hypotheses. The "demographic" variable set was not associated with significant HSUB or SCB variance, thus, failing to support the first hypothesis. The later two hypotheses were supported, with both the "need" and "belief" variable sets being associated with unique variance (R^2 Change = 24 and 25 respectively).

The lack of support for the first hypothesis was disappointing. A number of reasons may explain for why the "demographic" variable set did not account for significant variance. The participants in this study on average were better educated and had a higher income than Canadian seniors in general. It is possible that with a more representative participant group the "demographic" variable set may have had a greater impact. Another possibility is that Canada's socialised medical care system allows for

greater access to services for all seniors, thereby making the "demographic" variables less relevant.

In regard to the second hypothesis, having the "need" variable set account for significant variance was not surprising since most of the previous research found that "need" variables (perceived or objective) accounted for the greatest proportion of variance. However, in past research, other variables sets, even when statistically significant, did not explain much additional variance. Yet, in this study, the "belief" set accounted for both a statistically significant and practically significant amount of variance beyond that explained by the "need" or "demographic" sets (25%). Although further research will be needed to confirm these results, the findings suggest that when specific health or ageing beliefs are used together, it is possible to increase our understanding of what factors may mediate seniors' HSUB.

In addition to the hypotheses about each variable set, a number of hypotheses were made about the specific variables within the sets. The hypotheses relating to "past pain duration", "age attribution", "age perception", "comparative health status", "illness attribution", "injury attribution", and the "belief that pain is part of ageing" were not supported. These findings suggest that most of the specific variables do not account independently for significant HSUB variance and alone are unlikely to predict

seniors' HSUB. However, in combination these variables accounted for significant variance. This finding makes sense since motivation for behaviour is complex and multifaceted, and actual behaviours likely result from a combination of various factors. Finding one or two overriding factors which would predict behaviour (other than past behaviour) is less likely than finding a group of small factors which when combined can account for the actions taken. Also, it is consistent with other research, which has found that behaviour is best predicted by a multiple of variables (Andrews & Bonta, 1994). One implication of this finding is that non-significant predictors should not necessarily be discarded based on their statistical significance alone. They may help account for significant variance when they are included within a set of similar variables. This finding supports the use of theoretical factors to determine what variables should remain in the analysis.

Although many of the specific variables did not account for significant portions of HSUB variance, it is informative to consider their relationship with HSUB. As stated in the results section, the "age perception", "comparative health status", "injury attribution" and "the belief that pain is a normal part of ageing" variables were all correlated with HSUB in the expected direction even though they did not account for significant HSUB variance.

However, for the "past pain duration", "age attribution" and "illness attribution" variables, in addition to not accounting for significant HSUB variance, they were also not correlated with HSUB in the expected direction.

Surprisingly, for "past pain duration", longer pain duration was associated with greater HSUB. It had been predicted that the shorter the past pain duration, the greater the HSUB since it was believed that joint pain which had developed more recently may be more likely to engender concern and lead to a visit to the physician. However, this pattern was not found in this study. A number of possibilities may account for this finding. It is possible that the longer individuals have joint pain the more concerned about it they become, thereby increasing their HSUB. It could also be that, with time, people become more frustrated with their joint pain, resulting in increased HSUB. Another possibility is that the longer seniors have had their pain the more readily they may recognise that medical interventions are needed and thus be more likely to go to their physician. Finally, it could also be that "past pain duration" is connected with the type of joint pain problem individuals have. Those seniors who have had joint pain for a longer period of time may have more serious types of joint problems, resulting in a greater need to consult with their physician.

As stated earlier, another surprising finding was that

not only did "age attribution" not account alone for significant HSUB variance, it was also not correlated with HSUB in the expected direction. Rather than lower levels of age attribution being associated with higher levels of HSUB, higher levels of age attribution were associated with greater levels of HSUB. Specifically, seniors were more likely to go to their physician the more they attribute their joint pain to ageing. This finding is counterintuitive, since by attributing their joint pain to ageing, one would expect that seniors would perceive their pain as less amenable to medical interventions. This finding suggests the reverse may be true. However, caution needs to be taken in interpreting these results since the correlation between HSUB and "age attribution" was very small and not statistically significant ($r = 0.08$, $p = 0.11$). It is quite possible that this finding actually reflects a lack of association between HSUB and "age attribution".

"Illness attribution" was the third variable that not only did not account for a significant portion of HSUB variance, but also was correlated with HSUB in the opposite direction predicted. Greater levels of HSUB were associated with lower levels of illness attribution. Again from this study it is impossible to determine why this negative correlation occurred. However, one possibility is that seniors associate the term "illness" with having a physical

problem which they can manage on their own, such as the flu or a cold.

Although most individual variables did not contribute significantly, a few variables did. In particular, for HSUB, "perceived pain intensity", "perceived pain consequences", "effectiveness of treatment", and "MD feedback" each significantly contributed to the main HSUB regression model. When incomplete questionnaires were excluded (the post hoc analysis), three of the four variables (excluding "perceived pain consequences") were significant. Both "perceived pain intensity" and "perceived pain consequences" were included in the "need" variable set. For "perceived pain intensity", support was found for the hypothesis that greater pain intensity would be associated with higher HSUB. For "perceived pain consequences", support was found for the hypothesis that the greater the perceived consequences, the higher the HSUB. The support for these hypotheses is consistent with previous research, which found "need" variables (i.e., "perceived pain intensity", "perceived pain consequences") to be significantly related to HSUB. Also, the significance of perceived pain intensity in the HSUB regression analysis is consistent with other research, which has found that pain symptoms often trigger physician visits.

Interestingly, Cook and Thomas (1994), in a study that was published while this research project was in progress,

found that pain did not explain a significant proportion of variance in health service use. At first glance, this finding seems to differ from the above finding that perceived intensity of pain contributed significantly to the regression analysis. However, Cook and Thomas (1994) did find that their pain factor (composed of pain frequency, severity, intensity, and chronicity) was correlated with health service utilisation. The reason the pain factor did not account for significant HSUB variance seems largely due to the fact that Cook and Thomas (1994) included both traditional measures of "need", as well as their pain factor. These two different sources of "need" were highly correlated and the pain factor did not explain any significant unique variance beyond that measured by the more traditional methods of assessing "need".

The significance of the "effectiveness of treatment" and the "feedback from MD" variables suggests that seniors' family physicians can potentially affect their use of health care services. Both the "effectiveness of treatment" and the "feedback from MD" variables were in the "belief" variable set. For "effectiveness of treatment", support was found for the hypothesis that the stronger the belief that their joint pain can be treated effectively by a health care professional, the higher their HSUB. For "feedback from MD", the hypothesis was that negative feedback would be associated with lower levels of HSUB. Interestingly,

although significant, the "MD feedback" variable was not correlated to HSUB in the hypothesised direction. Instead of negative MD feedback accounting for lower levels of HSUB, it was associated with increases in these behaviours. Causation can not be determined from this study. A variety of different factors could explain these results. One possibility is that a third variable, such as the type of joint disease, may account for this finding. Seniors with a more severe degenerative joint problem may be more likely to (a) be told their pain can not be managed and (b) require more frequent physician visits. Another possibility is that when seniors are told little can be done for their joint pain, they may have trouble accepting this feedback and continue to visit their physicians looking for help. These findings suggests that how a physician communicates with his or her older patients about treatment or methods of coping has a significant impact on their HSUB. It is possible that the more active coping strategies physicians offer seniors, the less seniors will need to visit their physicians. These finding may also be important in understanding seniors who may be underusing or overusing services. Adjusting how information is communicated about chronic pain, especially chronic joint pain, may influence how and when seniors' contact their physician.

Based on this study's findings on seniors' HSUB, it is possible to tentatively hypothesise a profile of

characteristics associated with seniors who respond to their joint pain by using higher levels of health care services. This tentative profile would include the following characteristics: higher perceived pain intensity, higher perceived pain consequences, longer perceived past pain duration, greater age attribution, lower age perception, poorer perceived comparative health, greater belief in MD's effectiveness, lower illness attribution, greater injury attribution, lower belief that pain is part of ageing, and greater perceived negative feedback from MD. Importantly, the results from this study suggest that it is the combination of these characteristics together that is associated with greater HSUB, rather than any one variable alone. As stated earlier, the above profile is tentative, requiring replication before any conclusions are drawn from them. In the future after further research, some of these variables may be dropped. In particular, those variables that both were not associated with significant portions of HSUB in the regression analysis and were not significantly correlated with HSUB when taken alone (i.e., "age attribution" and "the belief that pain is part of ageing") should likely be dropped if this pattern continues.

Finally, the issue of having a regular family physician needs to be considered. This variable was not included in the regression analyses because most seniors in the study (97%) had a physician; thus, the variable was too

skewed to be used. This lack of variance may relate to the fact that most of the participants for this research were not poor. However, this finding may also relate to the socialised medical care system in Canada, which allows for easier access to the medical system than in the United States. Thus, the results may not be generalisable to the United States or to other countries with private medical care.

4.2 Self Care Behaviour (SCB)

Previous research has found that in addition to HSUB, individuals also respond to physical symptoms with SCB. In fact, SCB are used more frequently than HSUB. Using multiple regression analysis, this study was able to account for significant portions of SCB variance. This information is important since the area of SCB is not as well explored as that of HSUB. Specifically, this research project assessed the degree to which "demographic", "need", and "belief" variables could be used to account for SCB variance. As stated earlier, these variable sets together were able to account for moderate amounts of variance (25-28%).

It was hypothesised that each variable set would account for unique SCB variance when the "demographic" set was entered first, followed by the "need" set and then the "belief" set. The "demographic" variable set did not

account for significant SCB variance. As with the HSUB regression analysis, a number of reasons may explain why the "demographic" variable set did not account for significant variance. The participants in this study on average were better educated and had a higher income than Canadian seniors in general. It is possible that with a more representative participant group that the "demographic" variable set may have had a greater impact. However, another possibility is that Canada's socialised medical care system allows for greater access to services for all seniors, thereby making the "demographic" variables less relevant.

Not surprisingly, the need variable set accounted for a significant amount of unique SCB variance. However, the belief set also accounted for equal or greater amounts of unique SCB variance. These findings suggest that both need and belief variables are important in understanding SCB. As one might expect, SCB seem to be mediated by some of the same variables that mediate HSUB. However, overall, in the SCB regression analysis, less variance was accounted for than in the HSUB regression analysis. This finding suggests that, for SCB, other variables (or variable sets) which were not assessed in this study may carry greater weight. Both Kart and Engler (1994) and Spitzer and colleagues (1996) found perceived control over health status was significantly related to SCB. The role that self-efficacy

plays in mediating SCB was not assessed in this study and may increase the portion of SCB variance explained if used in future research. Another possible area overlooked in this research is the use of mental fortitude and/or an accepting attitude as a method of coping with joint pain. Many of the seniors the author spoke to while conducting this research pointed out that this approach was not included in this study.

As with HSUB, most of the individual variables in the SCB regression analysis did not account for significant portions of variance. Only two specific-variable hypotheses were made about SCB, regarding "perceived pain intensity" and "perceived pain consequences". Unlike with HSUB, the hypotheses for these variables were not supported in the a priori analysis, although both were correlated with HSUB in the predicted direction. A few individual variables did explain statistically significant amounts of SCB variance. These individual variable results were not as stable across analyses (a priori vs. post hoc) for the SCB as they were with the HSUB. For the a priori analysis, "age attribution", "injury attribution", and "MD feedback" were statistically significant. For the post hoc analysis, "sex", "pain intensity", "injury attribution", and "MD feedback" were significant. This instability suggests that the results regarding "age attribution", "sex", and "pain intensity" are questionable. However, the consistent

significance of "injury attribution" and "MD feedback" suggest that these individual variables may be significantly related to SCB. "Injury attribution" and SCB were positively correlated, suggesting that the greater the belief that joint pain is due to an injury, the greater likelihood that the person will respond with SCB. With "MD feedback", greater levels of perceived negative feedback from the family physician were associated with greater levels of SCB. In considering these results it is important to remember that SCB and HSUB are not overlapping and that the use of one does not negate the occurrence of the other.

4.3 Implications for Theoretical Models

This study focused on the Health Service Utilisation Model, the Health Belief Model, and the Common Sense Model due to their prevalence in the literature on seniors' health care behaviours, particularly the literature focusing on seniors' HSUB. This study did not set out to assess the three theoretical models. Rather, these models were used to guide the selection of the predictor variables that were used. The overriding aim of this study was to determine if, by increasing the specificity of both the physical problem being studied and the predictor variables being assessed, one would be able to increase the portion of seniors' HCB variance accounted for in a regression analysis. This study succeeded and was able to account for

approximately 50% of the HSUB variance and approximately 25% of the SCB variance by focusing on a specific health problem relevant to seniors (joint pain) and by assessing both age-related and pain-related predictor variables. For HSUB, the results were particularly strong and have theoretical implications. These results suggest that it may not be the theories that need to be modified but rather, as suggested by Dean (1989), how they are implemented in research that needs to be addressed. In particular, these findings suggest that by using these models to study specific health problems and specific predictor variables, one can explain a greater portion of the HSUB. When assessing the role of beliefs in predicting seniors' HSUB, this approach implies that researchers should go beyond the general beliefs studied previously and attempt to assess specific beliefs that are relevant to the seniors they are studying. For SCB, the results were not as dramatic and only modest amounts of variance were accounted for. These results suggest that the models used in this study do not account adequately for SCB. As stated earlier, for SCB, additional factors may need to be considered and alternative models used.

4.4 Limitations

As with all research, this study has a number of limitations that must be kept in mind when considering

these results. First of all, the participants of this study were part of a convenience sample and differed somewhat from typical Canadian seniors. In general the participants were more likely to be widowed, have a higher level of education, be female, not be working and have an income above \$20,000. Many of these difference (e.g., education level, sex, income) are typical of psychological research (Kazdin, 1980). However, these differences suggest that although the results can likely be generalised to middle-class, female, widowed, educated, retired individuals, caution should be taken in assuming that these results will reflect the experiences of individuals outside of this subgroup, especially those individuals with lower education and income. Also, for this study, the demographic variable set did not explain a significant amount of variance in any of the regression analyses. This finding may be due in part to the fact that the demographics of the participants in this study were not representative of the general population.

A second limitation is the modest return rate (29%). As stated in the methods section, this return rate is likely due to a number of factors such as the limited target group which was focused on (community living, seniors with joint pain), the lack of personal contact with many of the participants, and the time period in which the study was completed (i.e., summer). With regards to the

target group focused on (community living seniors with joint pain), a number of additional comments need to be made. Firstly, in this study seniors were recruited from a variety of community sources rather than through their family physicians. This process was chosen in order to avoid selection biases that would occur if seniors were recruited only through their family physician (i.e., access to only those seniors who go to their physician and have serious enough pain for the physicians to identify them for the study). However, this process also introduces other biases such as modest return rates associated with survey research. Secondly, the target group was seniors with pain. Although studies vary dramatically in the frequency of seniors with pain (30-83%), those studies that had high prevalence rates tended to be based on restricted participant groups. Those studies based on more representative samples tended to find the percentage of seniors with pain fell in the 30s. If the prevalence of seniors with pain is in the 30% range, a return rate of 29% is quite good. However, even if the return rate is considered good, given the convenience nature of the sampling, caution must be taken in generalising the results.

A third limitation of this study is that although many steps were taken to enhance the questionnaire's reliability, three variables did not meet the .70 criteria

for both internal consistency and test-retest reliability statistics ("Pain is a Normal part of Ageing", "SCB", and "Feedback from Physician"). However, it is important to note that "SCB" and "MD feedback" met the criteria for the test-retest reliability statistic ($r = .84$ & $.74$, respectively). Furthermore, both of these variables were close to meeting the criteria for the internal consistency statistic ($\alpha = .64$ & $.62$, respectively). For these two variables, it seems appropriate to accept them as having sufficient reliability, while recognising that the results associated with them would need to be replicated in order to be confidently accepted. For the third variable, "Pain is a Normal part of Ageing", even more caution needs to be used since it had a lower retest correlation ($r = .56$) and had no internal consistency statistic (single question variable). Thus, results associated with this variable should be considered tentative.

A fourth limitation of the study is that it is based on retrospective, self-reported data and is therefore vulnerable to the biases associated with memory and subjective reporting. For the health belief, severity and duration variables, this form of measurement is not an issue since the aim of the study is to understand how seniors perceive these variables. With regard to SCB and HSUB, this form of measurement is more of a concern. An attempt to address this issue was made by correlating the

number of physician visits in the last year as reported by the participant with the number of visits in the last year as reported by the participants' family physicians. As was expected, this correlation was not perfect; however, the correlation ($r = .66$) does suggest that there was a moderate relationship between the two sources. This relationship between the two sources suggests that a moderate amount of confidence can be placed in the participants' self-report of their behaviours. However, it also suggests that there is a certain degree of error that is introduced by the self-report nature of the measure, which should be considered when interpreting the results. In particular, the seniors tended to underreport the number of visits they made to their physician. Thus, although the results of the study seemed to cast additional light on the area of seniors' pain experiences and their resulting SCB and HSUB, these insights should be considered cautiously given the method of data collection, as well as, the previously mentioned limitations.

4.4 Future Research

Research in the area of seniors' health care behaviours is growing. This statement is supported by the fact that, prior to the start of this study, no research was published which focused specifically on both seniors'

experience of chronic pain and health care behaviours. While this study was being conducted, a number of studies were published in this area. Chronic pain is a frequent problem for many seniors. Research studying how they cope with this problem and how it affects their HSUB is likely to continue growing as the seniors' population grows. This study's results seem to provide some important insight into these areas. However, further research is needed. First of all, this study's results need to be replicated in order for there to be any strong degree of confidence in the findings. In particular, it would be helpful to try to replicate these results with either a participant group, which was demographically reflective of Canadian citizens or which reflected some of the subgroups that were underrepresented in this study (e.g., poorer, less educated, etc.). Another possible future avenue for evaluating this study's participant group would be to compare the demographics of the present sample with the demographics of people who report pain or chronic illness, rather than with the general population, based on available surveys. In addition, it would be very beneficial to attempt to replicate these findings using a longitudinal, prospective method of data collection.

Another area of future research suggested by this study is the area of SCB. This area of research has also been growing in the last 5 years. However, although much

data has been gathered in assessing the types of SCB individuals use and some data has been gathered on the predictor variables typically used in HSUB research, little research has focused on attempting to identify predictor variables that are unique to SCB. Further work is needed to determine and evaluate predictor variables that are unique to SCB.

One area that may be interesting to explore is the concept that "doing nothing" is a SCB. In this study, the question on "doing nothing" was dropped from the analysis in the second stage due to the lack of reliability. It is possible that this concept could be divided into two different areas: (1) "doing nothing" as a conscious SCB choice done when individuals consider their pain symptoms and decide that the best method of coping is to do nothing or to be stoic and (2) "doing nothing" that occurs due to feelings of hopeless and helpless that lead individuals to believe that there is nothing they can do to deal with their pain. The former "doing nothing" seems to fit the concept of SCB given that it originates from a conscious decision to cope; whereas, the latter "doing nothing" is less conscious and seems to do more with apathy than the concept of SCB.

4.5 Conclusions

The present investigation was able to provide

important information for both the issue of health care behaviours and seniors' chronic pain experiences. As stated earlier, it confirmed the hypothesis that by using more specific variables, one is able to explain a greater proportion of the variance associated with seniors' health service utilisation behaviours than explained by earlier research. Furthermore, it found that although few health or ageing beliefs were individually significant in explaining HSUB, a set of theoretically derived belief variables entered together did have the ability to account for a statistically, and practically, significant amount of HSUB. In addition, although the study's approach to SCB was exploratory, the findings suggest that many of the variables, which mediate health service utilisation behaviours also, mediate self-care behaviours. However, as would be expected, the amount of variance explained by these variables differed dramatically, indicating that other variables may be more important in explaining the self-care behaviours variance.

The major lesson of the study is that when seniors are faced with chronic pain they react in a complex manner. This study addressed this complexity by concentrating on seniors as they experience one type of pain, namely joint pain, and on beliefs specific to that pain. Further, the issue of age, and age attribution, allowed for a subjective understanding of the seniors' self-perception. This

greater specificity has increased the ability to account for seniors' HSUB and SCB. From a research standpoint, the present results remind investigators of the importance of focusing research to allow clear answers to important questions. From a pragmatic clinical standpoint, practitioners are reminded to not oversimplify or ignore seniors' experiences of pain but, instead, to attend to the individual differences of how their clients understand themselves and their pain.

References

Aday, L. A., & Andersen, R. (1974). A framework for the study of access to medical care. Health Services Research, 9, 208-220.

Ajzen, I. (1988). Attitudes, personality and behavior. Chicago, IL: The Dorsey Press.

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour. New York: Prentice Hall.

Allen, M. J., & Yen, W. M. (1979). Introduction to measurement theory. Monterey, CA: Brooks/Cole.

Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical care utilisation in the United States. Milbank Memorial Fund Quarterly, 51, 95-124.

Andrews, D. A., & Bonta, J. (1994). The psychology of criminal conduct, Cincinnati, OH: Anderson Publishing.

Angoff, W. H. (1988). Validity: An evolving Concept. In H. Wainer & H.I. Braun (eds.), Test validity. Hillsdale, NJ: Laurence Erlbaum.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Baron, R. A., & Byrne, D. (1987). Social psychology: Understanding human interaction (5th ed.). Toronto: Allyn and Bacon.

Bazargan, M., Bazargan, S., & Baker, R. (1998). Emergency department utilization, hospital admissions, and physician visits among elderly African American persons. The Gerontologist, 38(1), 25-36.

Becker, M. H. (1990). Theoretical models of adherence and strategies for improving adherence. In S. A. Shumaker, E. B. Schron, & J. K. Ockene (Eds.), The Handbook of Health Behavior Change (pp. 5-43). New York: Springer Publishing.

Becker, M. H., Drachman, R. H., & Kirscht, J. P. (1974). A field experiment to evaluate various outcomes of continuity of physician care. American Journal of Public Health, 64, 1062-1070.

Beech, J. R., & Harding, L. (ed.) (1990). Testing people: A practical guide to psychometrics. Windsor, England: Nfer-Nelson.

Berkanovic, E., Telesky, C., & Reeder, S. (1981). Structural and social psychological factors in the decision to seek medical care for symptoms. Medical Care, 19, 693-709.

Bienenstock, H., & Fernando, K. R. (1976). Arthritis in the elderly. Medical Clinics of North America, 60, 1173-1189.

Branch, L., Jette, A., Evashwick, C., Polansky, M., Rowe, F., & Diehr, P. (1981). Toward understanding elders' health service utilisation. Journal of Community Health, 7(2), 80-92.

Branch, L., & Nemeth, K. (1985). When elders fail to visit physicians. Medical Care, 23, 1265-1275.

Brattberg, G., Parker, M. G., & Thorslund, M. (1996). The prevalence of pain among the oldest old in Sweden. Pain, 67, 29-34.

Brody, E. M., & Kleban, M. H. (1983). Day-to-day mental and physical health symptoms of older people: A report on health logs. Gerontologist, 23(1), 75-85.

Bultena, G. L., & Powers, E. A. (1978). Denial of age: Age identification and reference group orientation. Journal of Gerontology, 33(5), 748-754.

Butler, R. N., & Gastel, B. (1980). Care of the aged: Perspectives on pain and discomfort. In L. K. Y. Ng & J. J. Bonica (Eds.), Pain, Discomfort and Humanitarian Care (pp. 297-311). New York: Elsevier North Holland.

Cameron, L., Leventhal, E. A., & Leventhal, H. (1993). Symptom representations and affect as determinants of care seeking in a community-dwelling, adult sample population. Health Psychology, 12(3), 171-179.

Carp, F. M., & Carp, A. (1981). Mental health characteristics and acceptance - rejection of old age. American Journal of Orthopsychiatry, 51(2), 230-241.

Chapman, C. R. (1984). Pain perception in the elderly patient: An overview of issues. Gerodontology, 3(1), 71-76.

Christensen, L. B. (1985). Experimental methodology (3rd ed.). Boston: Allyn & Bacon.

Clarke, J. (1987). The paradoxical effects of ageing on health. Journal of Gerontological Social Work, 10(3/4), 3-20.

Cohen, J., & Cohen, P. (1983). Applied Multiple Regression/Correlation Analysis for the Behavioural Sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

Conner, M., & Sparks, P. (1996). The theory of planned behaviour and health behaviours. In M. Conner, P. Norman, & Paul (Eds.). Predicting health behaviour: Research and practice with social cognition models (pp.121-162). Buckingham, England UK: Open University Press.

Cook, A., & Roy, R. (1995). Attitudes, beliefs, and illness behaviour. In R. Roy (Ed.), Chronic Pain in Old Age: An Integrated Biopsychosocial Perspective (pp. 20-37). Toronto, Canada: University of Toronto Press.

Cook, A. J., & Thomas, M. R. (1994). Pain and the use of health Services among the elderly. Journal of Ageing and Health, 6(2), 155-172.

Cote, Pierre, Cassidy, J. D., & Carroll, L. (1998). The Saskatchewan health and back pain survey: The prevalence of neck pain and related disability in Saskatchewan adults. Spine, 23(15), 1689-1698.

Coulton, C., & Frost, A. K. (1982). Use of social and health services by the elderly. Journal of Health and Social Behaviour, 23, 330-339.

Cox, C. (1986). Physician utilisation by three groups of ethnic elderly. Medical Care, 24, 667-676.

Cronan, T. A., Shaw, W. S., Gallagher, R. A., & Weisman, M. (1995). Predicting health care use among older osteoarthritis patients in an HMO. Arthritis Care and Research, 8(2), 66-72.

Cronbach, L. J. (1988). Five perspectives on validity argument. In H. Wainer & H.I. Braun (Eds.), Test validity. Hillsdale, NJ: Laurence Erlbaum.

Davis, G. C., Cortez, C., & Rubin, B. R. (1990). Pain management in the older adult with rheumatoid arthritis or osteoarthritis. Arthritis Care and Research, 3(3), 127-131.

Davis, M. A. (1988). Epidemiology of Osteoarthritis. Clinics in Geriatric Medicine, 4(2), 241-255.

Dean, K. (1989). Conceptual, theoretical and methodological issues in self-care research. Social Science and Medicine, 29(2), 117-123.

DeForge, B. R., Sobal, J., & Krick, J. P. (1989). Relation of perceived health with psychosocial variables in elderly osteoarthritis patients. Psychological Reports, 64, 147-156.

DeFriese, G. H., Konrad, T. R., Woomert, A., Kincade Norburn, J. E., & Bernard, S. (1994). Self-care and quality of life in old age. In R. P. Abeles, H. C. Gift, & M. G. Ory (Eds.), Aging and Quality of Life (pp.99-117). New York: Springer Publishing.

Denton, F. T., Feaver, C. H., & Spencer, B. G. (1987). The Canadian population and labour force: Retrospect and prospect. In V. W. Marshall (Ed.), Ageing in Canada: Social Perspectives (2nd ed., pp. 11-38). Markham, Canada: Fitzhenry & Whiteside.

Dillman, D. A. (1978). Mail and Telephone Surveys: The Total Design Method. New York: John Wiley & Sons.

Ferrell, B. A. (1996). Overview of aging and pain. In B. R. Ferrell & B. A. Ferrell (Eds.), Pain in the Elderly: Task Force on Pain in the Elderly (pp. 1-10). Seattle, WA: IASP Press.

Furstenberg, A. L. (1989). Older people's age self-concept. Social Casework, 70(5), 268-275.

Gagliese, L., & Melzack, R. (1997a). Chronic pain in elderly people. Pain, 70, 3-14.

Gagliese, L., & Melzack, R. (1997b). Lack of evidence of age differences in pain beliefs. Pain Research and Management, 2(1), 19-28.

Gibson, M. C., Thomas, M. R., & Cook, A. J. (1998). Pain research and treatment in the gerontological context: A discussion of the issues. Pain Research and Management, 3(2), 91-96.

Gibson, S. J., Katz, B., Corran, T. M., Farrell, M. J., & Helme, R. D. (1994). Pain in older persons. Disability and Rehabilitation, 16(3), 127-139.

Ghiselli, Campbell, & Zedak (1981). Measurement theory for the behavioral sciences.

Haug, M. R., Musil, C. M., Warner, C. D., & Morris, D. L. (1997). Elderly persons' interpretation of a bodily change as an illness symptom. Journal of Aging and Health, 9(4), 529-552.

Haug, M. R., Wykle, M. L., & Namazi, K. H. (1989). Self-care among older adults. Special issue: Health self-care. Social Science and Medicine, 29(2), 171-183.

Herr, K. A., & Mobily, P. R. (1991). Complexities of pain assessment in the elderly: Clinical considerations. Journal of Gerontological Nursing, 17(4), 12-19.

Hickey, T. (1988a). Changing health perceptions of older patients and the implication for assessment. Geriatric Medicine Today, 7(6), 59-66.

Hickey, T. (1988b). Self-care behaviour of older adults. Family and Community Health, 11(3), 23-32.

Hickey, T., Akiyama, H., & Rakowski, W. (1991). Daily illness characteristics and health care decisions. Journal of Applied Gerontology, 10(2), 169-184.

Holtzman, J. M., Akiyama, H., & Maxwell, A. J. (1986). Symptoms and self-care in old age. Journal of Applied Gerontology, 5(2), 183-200.

Hopman-Rock, M., Kraaiaam, F. W., & Bijisma, J. W. J. (1997). Quality of life in elderly subjects with pain in the hip or knee. Quality of Life Research, 6, 67-76.

Hubley, A. M., & Zumbo, B. D. (1996). A dialectic on validity: Where we have been and where we are going. The Journal of General Psychology, 123(3), 207-215.

Hughes, S.L., Dunlop, D., Edelman, P., Chang, R. W., & Singer, R. H. (1994). Impact of joint impairment on longitudinal disability in elderly persons. Journal of Gerontology: Social Sciences, 49(6), S291-S300.

Hughes, S. L., Edelman, P. L., Singer, R. H., & Chang, R. W. (1993). Joint Impairment and self-reported disability in elderly persons. Journal of Gerontology: Social Sciences, 48(2), S84-S92.

Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A decade later. Health Education Quarterly, 11(1), 1-47.

Jensen, M. P., Turner, J. A., & Romano, J. M. (1994). What is the maximum number of levels needed in pain intensity measurement? Pain, 58, 387-392.

Kaplan, R. M., & Saccuzzo, D. P. (1993). Psychological testing: Principles, applications, and issues (3rd ed.). Pacific Grove, CA: Brooks/Cole.

Karloy, P., & Jensen, M. P. (1987) Multimethod assessment of chronic pain. Pergamon Press.

Kart, C. (1981). Experiencing symptoms: Attributions and misattributions of illness among the aged. In M. R. Haug (Ed.), Elderly Patients and Their Doctors (pp. 70-78). New York: Springer.

Kart, C. S., & Engler, C. A. (1994). Predisposition to self-health care: Who does what for themselves and why? Journal of Gerontology: Social Sciences, 49(6), S301-S308.

Kart, C. S., & Engler, C. A. (1995). Self-health care among the elderly: A test of the health-behavior model. Research on Aging, 17(4), 434-458.

Kasl, S. V. (1974). The Health Belief Model and behaviour related to chronic illness. In M. H. Becker (Ed.), The Health Belief Model and Personal Health Behaviour (pp. 106-127). Thorofare, NJ: Charles B. Slack.

Kastenbaum, R., Derbin, V., Sabatini, P., & Artt, S. (1972). "The Ages of Me": Toward personal and interpersonal definitions of functional aging. Aging and Human Development, 3(2), 197-211.

Kazdin, A. E. (1980). Research design in clinical psychology. New York: Harper & Row.

Keefe, F. J., & Williams, D. A. (1990). A comparison of coping strategies in chronic pain patients in different age groups. Journal of Gerontology: Psychological Sciences, 45(4), P161-P165.

Keller, M. L., Leventhal, H., Prohaska, T. R., & Leventhal, E. A. (1989). Beliefs about ageing and illness in a community sample. Research in Nursing and Health, 12(4), 247-255.

Kelman, H. R., & Thomas, C. (1988). Hospital and ambulatory service use by the urban elderly under different health care delivery systems. Medical Care, 26, 739-749.

King, J. B. (1984). Illness attributions and the health belief model. Health Education Quarterly, 10(3/4), 287-312.

Kirscht, J. P. (1974). The Health Belief Model and illness behaviour. In M. H. Becker (Ed.), The Health Belief Model and Personal Health Behaviour (pp. 60-81). Thorofare, NJ: Charles B. Slack.

Kirscht, J. P., Becker, M. H., & Eveland, J. P. (1976). Psychological and social factors as predictors of medical behavior. Medical Care, XIV(5), 422-431.

Landy, F.J. (1986). Stamp collecting versus science: Validation as hypothesis testing. American Psychologist, 41, 1183-1192.

Leavitt, F. (1979). The health belief model and utilization of ambulatory care services. Journal of Social Science & Medicine, 13A, 105-112.

Leventhal, E. A. (1984). Ageing and the perception of illness. Research on Ageing, 6(1), 119-135.

Leventhal, E. A., Easterling, D., Leventhal, H., & Cameron, L. (1995). Conservation of energy, uncertainty reduction, and swift utilization of medical care among the elderly: Study II. Medical Care, 33(10), 988-1000.

Leventhal, E. A., Leventhal, H., Schaefer, P., & Easterling, D. (1993). Conservation of energy, uncertainty reduction, and swift utilization of medical care among the elderly. Journal of Gerontology: Psychological Sciences, 48(2), 78-86.

Leventhal, E. A., & Prohaska, T. R. (1986). Age, symptom interpretation and health behaviour. Journal of the American Geriatrics Society, 34(3), 185-191.

Leventhal, H., Meyer, D., & Nerenz, D. (1980). The commonsense representation of illness danger. In S. Rachman (Ed.), Contributions to Medical Psychology (Vol 2, pp. 7-30), New York: Peragmun.

Leventhal, H., Nerenz, D. R., & Steele, D. J. (1984). Illness representations and coping with health threats. In A. Braum, S. E. Taylor, & J. E. Singer (Eds.), Handbook of Psychology and Health: Vol. 5. Social Psychological Aspects of Health (pp. 219-252). Hillsdale, NJ: Lawrence Erlbaum.

Levkoff, S. E., Cleary, P. D., Wetle, T., & Besdine, R. W. (1988). Illness behaviour in the aged: implications for clinicians. Journal of the American Geriatrics Society, 36(7), 622-629.

Maddux, J. E., & DuCharme, K. A. (1997). Behavioral intentions in theories of health behavior. In D. S. Gochman (Ed.), Handbook of health behavior research I: Personal and social determinants (pp. 133-151). New York: Plenum Press.

Maiman, L. A., & Becker, M. H. (1974). The Health Belief Model: Origins and correlates in psychological theory. In M. H. Becker (Ed.), The Health Belief Model and Personal Health Behaviour (pp. 9-26). Thorofare, NJ: Charles B. Slack.

Melanson, P. M., & Downe-Wamboldt, B. (1995). The stress of life with rheumatoid arthritis as perceived by older adults. Activities, Adaptation & Ageing, 19(4), 33-47.

Messick, S. (1980). Test validity and the ethics of assessment. American Psychologist, 35, 1012-1027.

Milligan, W. L., Powell, D. A., Harley, C., & Furchtgott, E. (1985). Physical health correlates of attitudes toward ageing in the elderly. Experimental Ageing Research, 11(2), 75-80.

Milligan, W. L., Prescott, L., Powell, D. A., & Furchtgott, E. (1989). Attitudes towards ageing and physical health. Experimental Ageing Research, 15(1), 33-41.

Mobily, P. R., Herr, K. A., Clark, M. K., & Wallace, R. B. (1994). An epidemiologic analysis of pain in the elderly: The Iowa 65+ Rural Health Study. Journal of Ageing and Health, 6(2), 139-154.

Morley, J. B. (1977). Chronic pain syndromes in the elderly. Australian Family Physician, 6, 643-648.

Newton, P. A. (1984). Chronic Pain. In C. Cassel & T. Walsh (Eds.), Geriatric Medicine (Vol. 2, pp. 236-274). New York: Springer - Verlag.

Nunnally, J.C. (1978). Psychometric Theory (2nd ed.). New York: McGraw-Hill Book Company.

Parmelee, P. A. (1997). Pain and psychology function in late life. In D. I. Mostofsky & J. Lomranz (Eds.). Handbook of Pain and Aging. New York: Plenum Press.

Rakowski, W., Julius, M., Hickey, T., Verbrugge, L. M., & Halter, J. B. (1988). Daily symptoms and behavioural responses: Results of a health diary with older adults. Medical Care, 26(3), 278-296.

Robinson (formerly Weick), L. K. (1992). Assessing the attribution of chronic pain to ageing: The development of an interview schedule. Unpublished master's thesis, University of Saskatchewan, Saskatoon, Canada.

Rodin, J. (1986). Ageing and health: Effects of the sense of control. Science, 233(4770), 1271-1276.

Rodin, J., & Langer, E. (1980). Ageing labels: The decline of control and the fall of self-esteem. Journal of Social Issues, 36(2), 12-29.

Rogers, R. W., & Prentice-Dunn, S. (1997). Protection motivation theory. In D. S. Gochman (Ed.), Handbook of health behavior research I: Personal and social determinants (pp. 113-131). New York: Plenum Press.

Roos, N. P. (1989). Predicting hospital utilisation by the elderly: The importance of patient, physician and hospital characteristics. Medical Care, 27, 905-917.

Roos, N. P., & Shapiro, E. (1981). The Manitoba longitudinal study on ageing. Medical Care, 19(6), 644-657.

Rosenstock, I. M. (1966). Why people use health services. Milbank Memorial Fund Quarterly, 44, 94-127.

Rosenstock, I. M. (1974). Historical origins of the Health Belief Model. In M. H. Becker (Ed.), The Health Belief Model and Personal Health Behaviour (pp. 1-8). Thorofare, NJ: Charles B. Slack.

Ross, M. M., & Crook, J. M. (1995). Pain in Later Life: Present State of Knowledge. In R. Roy (Ed.), Chronic Pain in Old Age: An Integrated Biopsychosocial Perspective (pp. 3-19). Toronto, Canada: University of Toronto Press.

Roy, R., & Thomas, M. (1986). A survey of chronic pain in an elderly population. Canadian Family Physician, 32, 513-516.

Roy, R., & Thomas, M. (1987). Elderly persons with and without pain: A comparative study. The Clinical Journal of Pain, 3, 102-106.

Roy, R., Thomas, M., & Makarenko, P. (1989). Memories of pain: Comparison of "Worst Pain Ever" experienced by senior citizens and college students. The Clinical Journal of Pain, 5, 359-362.

Roy, R., Thomas, M., & Makarenko, P. (1990). A comparative study of pain complaints in a non-clinical Canadian population of university students and seniors. The Pain Clinic, 3(4), 213-222.

Segall, A. (1987). Age differences in lay conceptions of health and self-care responses to illness. Canadian Journal on Ageing, 6(1), 47-65.

Shapiro, E., & Roos, N. P. (1985). Elderly non-users of health care services. Medical Care, 23, 247-257.

Skelton, J. A. (1982). The psychology of physical symptoms and sensations. In G. S. Sanders & J. Suls (Eds.), Social Psychology of Health and Illness (pp. 99-128). Hillsdale, NJ: Lawrence Erlbaum.

Spitzer, A., Bar-Tal, Y., & Ziv, L. (1996). The moderating effect of age on self-care. Western Journal of Nursing Research, 18(2), 136-148.

Stevens, G., & Cho, J. H. (1985). Socioeconomic indexes and the new 1980 census occupational classification scheme. Social Science Research, 14, 142-168.

Stolee, P., Rockwood, K., & Robertson, D. (1982). Saskatchewan Health Status Survey of the Elderly: Report II, The Elderly in the Community, University of Saskatchewan, Division of Geriatric Medicine.

Stoller, E. P. (1982). Patterns of physician utilisation by the elderly: A multivariate analysis. Medical Care, 20(11), 1080-1089.

Stoller, E. P. (1993). Interpretations of symptoms of older people: A health diary study of illness behavior. Journal of Aging and Health, 5(1), 58-81.

Stoller, E. P., & Forster, L. E. (1994). The impact of symptom interpretation on physician utilization. Journal of Aging and Health, 6(4), 507-534.

Stoller, E. P., Forster, L. E., & Portugal, S. (1993). Self-care responses to symptoms by older people: A health diary study of illness behavior. Medical Care, 31(1), 24-42.

Strain, L. A. (1990). Lay consultation among the elderly: Experience with arthritis. Journal of Aging and Health, 2(1), 103-122.

Strain, L. A. (1991). Use of health services in later life: The influence of health beliefs. Journal of Gerontology: Social Sciences, 46(3), S143-S150.

Stump, T. E., Johnson, R. J., & Wolinsky, F. D. (1995). Changes in physician utilization over time among older adults. Journal of Gerontology: Social Sciences, 50B(1), S45-S58.

Tabachnick, B. G., & Fidell, L. S. (1989). Using Multivariate Statistics (2nd ed.). New York: Harper Collins.

Thomas, M. (1995). Pain among healthy elderly individuals. In R. Roy (Ed.), Chronic Pain in Old Age: An Integrated Biopsychosocial Perspective (pp. 38-55). Toronto, Canada: University of Toronto Press.

Thomas, M., & Roy, R. (1988). Age and pain: A comparative study of the "younger and older" elderly. Pain Management, (July/August), 174-179.

Thomas, C., & Kelman, H. R. (1990). Gender and the use of health services among elderly persons. In M. Ory & H. R. Warner (Eds.), Gender, Health, and Longevity: Multidisciplinary Perspectives (pp. 137-156). New York: Springer.

Walsh, W. B. (1989). Tests and measurements (4th ed.). Englewood Cliffs, NJ: Prentice Hall.

Wan, T. T. H. (1989). The behavioural model of health care utilisation by older people. In M. G. Ory & K. Bond (Eds.), Ageing and Health Care: Social Science and Policy Perspectives (pp. 52-77). London: Tavistock.

Wan, T. T. H., & Odell, B. G. (1981). Factors affecting the use of social and health services among the elderly. Ageing and Society, 1, 95-115.

Weiner, D., Pieper, C., McConnell, E., Martinez, S., & Keefe, F. (1996). Pain measurement in elders with chronic low back pain: Traditional and alternative approaches. Pain, 67, 461-467.

Williams, D. A., Robinson, M. E., & Geisser, M. E. (1994). Pain beliefs: Assessment and utility. Pain, 59, 71-78.

Wolinsky, F. D., & Johnson, R. J. (1991). The use of health services by older adults. Journal of Gerontology: Social Sciences, 46(6), S345-357.

Wolinsky, F. D., Mosely, R. R., & Coe, R. M. (1986). A cohort analysis of the use of health services by elderly Americans. Journal of Health & Social Behaviour, 27, 209-219.

Appendices

Appendix A: Definitions

Appendix A: Definitions

Age Attribution

The extent to which individuals attribute the causes of physical symptoms and illnesses to their age and/or ageing.

Age Perception/Identity

The degree to which elderly persons perceive themselves as old.

Common Sense Model (CSM)

A model for understanding HCB. Its an information processing involving both cognitive and emotional information. The model has 3 recursive stages: representation, coping, and appraisal.

Comparative Health Status

The perception or belief of whether one's health is the same, better, or worse than others within one's age cohort.

Health Belief Model (HBM)

A model for explaining HCB based on four factors: perceived susceptibility, perceived severity, benefits/barriers to service, and cues to action.

Health Care Behaviours (HCB)

Any behaviours that individuals make in response to perceived physical symptoms (note: this is a narrower definition than is often used in that it does not include behaviours that attempt to maintain or improve one's health e.g., preventative or detective behaviours).

Health Service Utilisation Behaviours (HSUB)

Behaviours that individuals make in response to perceived physical symptoms that involve the formal health care system. HSUB are a type of health care behaviour.

Health Services Utilisation Model (HSUM)

A model for understanding HSUB that focuses on a variety of variables including individual variables. The individual variables are divided into 3 sets: predisposing, enabling, and illness level factors.

Illness Attributions

The extent to which individuals believe their physical symptoms are related to an illness or disease process.

Appendix A: Definitions Continued

Illness Behaviours

Those behaviours that occur in response to the experience of physical symptoms that are related to, or interpreted as being related to, being ill (Rosenstock, 1966). Thus, health care behaviours and illness behaviours, as defined in this paper, are the same. However, for this research the term health care behaviours, not illness behaviours, will be used.

Injury Attribution

The extent to which individuals believe their physical symptoms are related to an injury.

Illness Representation

How an individual conceptualises an illness or symptom, including the perceived symptom identity, cause, consequence and duration, and the emotional reaction to this perception (Leventhal, Meyer & Nerenz, 1980; Leventhal, Nerenz & Steele, 1984).

Self-care Behaviours (SCB)

Those behaviours that individuals make in response to perceived physical symptoms that do not include the formal health care system. SCB are a type of health care behaviour.

Appendix B: Validity

Appendix B: Validity

The descriptions found below include the following information: (a) the definitions of each variable, (b) the hypothesis related to the variable, (c) the references of the articles relating to the variable, (d) the questions tapping the variable, and (e) the source of the questions. This information reflects the theoretical and research basis of the questionnaire. As discussed in the main text, this theoretical basis enhanced the validity of the questionnaire.

Description of Each Variable

A. Criterion/Dependent Variables.

1. Self-care behaviours

Definition:⁶ Those behaviours that individuals make in response to their perceived joint pain that do not include the formal health care system.

Hypotheses: There are 2 hypotheses relating to this variable [(2ai) and (2bi)], both relating to severity. Please see the discussion below of the independent variables for these hypotheses.

Literature Reviewed on this variable: Haug, Wykle, & Namazi, 1989; Hickey, 1988b; Hickey, Akiyama & Rakowski, 1991; Holtzman, Akiyama, & Maxwell, 1986; Rakowski et al., 1988; Roos, 1989; Segall, 1987; Stoller, 1982; Strain, 1990.

Stage 2 Questions (original composite): relevant sections of question 34 including "take non-prescription medicine", "buy something at store for it", "read up about the problem", "talk with a family member, relative or friend for advice", "stay in bed all or part of day", "cut down on activities in other ways", "adjust a device", "do minor first aid", "change diet or fluid intake", "use ice", "use heat", "exercise", "use relaxation or meditation techniques", "rub sore joint myself", "get a massage from someone else", "other action"

⁶ For this section, the definition of each variable is specific to this study and to joint pain; thus, the wording may be slightly different than that provided in Appendix A: Definitions.

Stage 3 Questions: relevant sections of question 19 including "take non-prescription medicine", "buy something at store for it", "read up about the problem", "cut down on activities in other ways", "adjust a device", "use ice", "use heat", "exercise", "use relaxation or medication techniques", "rub sore joint myself", "get a massage from someone else", "change diet or fluid intake".

Source of Stage 3 Question: The behaviours listed are from research done by Rakowski et al. (1988). The format of the question was modified from a checklist of behaviours to focus on joint pain symptoms.

2. Health service utilisation behaviours (HSUB)

Definition: Those behaviours that individuals make in response to their perceived joint pain that involve the formal health care system.

Hypotheses: All of the hypotheses, with the exception of (2ai) and (2bi) involve this variable. Please see the discussion below of the independent variables for these hypotheses.

Literature Reviewed on this variable: Berkanovic, Telesky, & Reeder, 1981; Branch et al., 1981; Branch & Nemeth, 1985; Coulton & Frost, 1982; Cox, 1986; Haug, Wykle & Namazi, 1989; Hickey, 1988a; Hickey, Akiyama, & Rakowski, 1991; Kelman & Thomas, 1988; Leventhal & Prohaska, 1986; Levkoff et al., 1988; Rakowski et al., 1988; Roos, 1989; Roos & Shapiro, 1981; Segall, 1987; Shapiro & Roos, 1985; Stoller, 1982; Thomas & Kelman, 1990; Wan & Odell, 1981; Wolinsky, Mosely & Coe, 1986.

Stage 2 Questions (original composite): 6, 7, and relevant sections from 34 including "ask physician for a prescription for medicine", "buy and take prescription medicine", "call and get advice from physician/nurse", "visit a medical office/clinic", "follow existing orders from physician", "schedule medical doctor's appointment for another day"

Stage 3 Questions: 6, and relevant sections from 19 including "phone and get advice from physician/nurse", "visit a drop-in medical office/clinic", "ask physician for a prescription for medicine", "buy and take prescription medicine", "follow existing orders from physician"

Source of Stage 3 Question: Question 6 was constructed for this study. Question 19 was based on Rakowski et al., 1988 (see SCB).

B. Predictor/Independent Variables

1. Age Attribution

Definition: The extent to which individuals attribute the causes of their joint pain to their age and/or ageing.

Hypothesis: (1a) Age attribution will account for a significant portion of the HSUB variance, such that lower levels of age attribution will be associated with greater levels of health service utilisation.

Literature Reviewed on this variable: Butler & Gastel, 1980; Haug, Wykle, & Namazi, 1989; Kart, 1981; Keller, Leventhal, Prohaska & Leventhal, 1989; Leventhal & Prohaska, 1986; Leventhal, 1984.

Study 2 Questions (original composite): 12, response to portion of 40 (you thought your problem was just due to your age).

Study 3 Questions: 9, 13, 18

Source of Stage 3 Question: Questions 9, 13, 18 were constructed for the study.

2. Age Perception

Definition: The degree to which seniors perceive themselves as old.

Hypothesis: (1b) Age perception will be positively associated with age attribution and thus will explain a significant portion of the variance of HSUB. The "older" the seniors' age perception, the greater the expected level of HSUB.

Literature Reviewed on this variable: Bultena & Power, 1978; Carp & Carp, 1981; DeForge, Sobal, & Krick, 1989; Furstenberg, 1989; Robinson, 1992; Rodin & Langer, 1980.

Stage 2 Question: 36

Stage 3 Questions: 25, 26, 27

Source of Stage 3 Question: Questions 25, 26, and 27 were

based on research by R. Kastenbaum, V. Derbin, P. Sabatini, & S. Artt (1972). Specifically, these questions were based on questions that Kastenbaum et al. believed assessed absolute age perception instead of comparative age.

3. Comparative health status.

Definition: The perception or belief of whether one's health is the same, better, or worse than others within one's age cohort.

Hypothesis: (1d) The tendency to perceive oneself as having worse health than others will significantly add to the variance of HSUB accounted for, such that the perception of worse comparative health will be associated with greater HSUB.

Literature Reviewed on this variable: Milligan, Powell, Harley, & Furchgott, 1985; Milligan, Prescott, Powell, & Furchtgott, 1989.

Stage 2 Question: 35

Stage 3 Question: 21

Source of Stage 3 Question: Question 21 was originally constructed for an earlier study (Robinson, 1992). The majority (67.5%) of individuals in this study felt their health was better than others their age, although a few (32.5%) indicated that they felt their health was the same as others their age. No one indicated that their health was worse than others their age.

4. Effectiveness of treatment

Definition: The extent to which individuals believe effective treatment can be provided by a physician for their joint pain.

Hypotheses: (1e) The belief that their joint pain can be effectively treated by a health care professional will significantly add to the variance accounted for in HSUB, such that the greater this belief the greater the HSUB.

Literature Reviewed on this variable: Kasl, 1974; Rosenstock, 1966, 1974. Although this variable was not the focus in most articles, it was a repeated theme in the literature on HSUB (Berkanovic, Telesky, & Reeder,

1981; Branch et al., 1981; Branch & Nemeth, 1985; Coulton & Frost, 1982; Cox, 1986; Haug, Wykle & Namazi, 1989; Hickey, 1988a; Hickey, Akiyama, & Rakowski, 1991; Kelman & Thomas, 1988; Leventhal & Prohaska, 1986; Levkoff et al., 1988; Rakowski et al., 1988; Roos, 1989; Roos & Shapiro, 1981; Segall, 1987; Shapiro & Roos, 1985; Stoller, 1982; Strain, 1991; Thomas & Kelman, 1990; Wan & Odell, 1981; Wolinsky, Mosely & Coe, 1986).

Stage 2 Question: 5

Stage 3 Question: 4

Source of Stage 3 Question: Question 4 was constructed for the study.

5. Illness attribution.

Definition: The extent to which individuals believe their joint pain is related to an illness or disease process.

Hypothesis: (1f) The belief that their joint pain is due to an illness will explain a significant amount of HSUB variance, such that high levels of illness attribution will be associated with greater levels of health service utilisation.

Literature Reviewed on this variable: Butler & Gastel, 1980; Haug, Wykle, & Namazi, 1989; Kart, 1981; Keller, Leventhal, Prohaska & Leventhal, 1989; Leventhal & Prohaska, 1986; Leventhal, 1984. This variable was developed based on the same literature as the variable "age attribution". Although, age and illness attribution are often viewed as opposites of a single dimension, it is possible that an individual could attribute his/her joint pain to both. Therefore, these variables were assessed separately.

Stage 2 Question: 13

Stage 3 Question: 14

Source of Question: Question 14 was developed for the study.

6. Injury attribution.

Definition: The extent to which individuals believe their joint pain is related to an injury.

Hypothesis: (1f) The belief that their joint pain is due to an injury will explain a significant amount of HSUB variance, such that high levels of injury attribution will be associated with greater levels of health service utilisation.

Literature Reviewed on this variable: Butler & Gastel, 1980; Haug, Wykle, & Namazi, 1989; Kart, 1981; Keller, Leventhal, Prohaska & Leventhal, 1989; Leventhal & Prohaska, 1986; Leventhal, 1984. This variable was developed based on the same literature as the variable "age attribution". Although, age and injury attribution are often viewed as opposites of a single dimension, it is possible that an individual could attribute his/her joint pain to both. Therefore, these variables were assessed separately.

Stage 2 Question: 14

Stage 3 Question: 15

Source of Question: Question 15 was developed for the study.

7. Belief that pain is a normal part of ageing.

Definition: The extent to which an individual believes that pain is a normal part of ageing.

Hypothesis: (1g) The belief that pain is a normal part of ageing will account for a significant portion of the variance of HSUB; the weaker this belief, the greater the level of HSUB.

Literature Reviewed on this variable: Butler & Gastel, 1980; Haug, Wykle, & Namazi, 1989; Kart, 1981; Keller, Leventhal, Prohaska & Leventhal, 1989; Leventhal & Prohaska, 1986; Leventhal, 1984.

Stage 2 Question: 33

Stage 3 Question: 48

Source of Question: Question 48 was constructed for the study.

8. Severity

General Definition: Perceived severity is subdivided into

two categories: (a) perceived severity of pain intensity and (b) perceived consequences of the disorder.

Literature Reviewed on this variable: Janz & Becker, 1984; Levkoff et al., 1988; Leventhal, Nerenz & Steele, 1984; Leventhal & Prohaska, 1986; Rosenstock, 1966, 1974.

(a) Perceived Pain Intensity

Definition: The degree to which an individual's pain hurts as reported by the respondent.

Hypotheses: (2a)

- (i) SCB: Perceived pain intensity will explain a significant amounts of SCB variance, with greater pain intensity being associated with higher use of SCB.
- (ii) HSUB: Perceived pain intensity will explain a significant amount of HSUB variance, with greater intensity being associated with higher health service use.

Stage 2 Questions: all sections of 3 (worst, least and average joint pain)

Stage 3 Questions: 5d (average joint pain)

Source of Question: Question 5 was constructed for this study. A numeric rating scale was chosen as the format for rating the pain level. Numerical rating scales have been shown to be valid measures of pain intensity, correlating positively to other measures of pain intensity (Karloly & Jensen, 1987). Furthermore, numerical scaling of pain is easy to administer and easy for participants to understand. The choice of a 11-point scale was based on research showing that 11 levels provided sufficient levels of discrimination in rating pain (Jensen, Turner, & Romano, 1994).

(b) Perceived Pain Consequences

Definition: The extent to which the individual attributes negative consequences to the pain.

Hypotheses: (2b)

- (i) SCB: The perceived consequences of having joint pain will account for a significant amount of the variance of SCB: greater levels of perceived consequences will be associated with

higher use of SCB.

(ii) HSUB: The perceived consequences of having joint pain will account for a significant portion of the variance of HSUB: the greater the perceived consequences, the higher the use of health care services.

Stage 2 Questions (original composite): 11, 15, 16

Stage 3 Questions: 16, 17

Source of Question: Questions 16, 17 were constructed for this study.

9. Past Pain Duration

Definition: The length of time the individual has had joint pain.

Literature Reviewed on this variable: Leventhal & Prohaska, 1986; Levkoff et al., 1988; Wan & Odell, 1981; Williams, D.A. & Thorn, B.E. (1989); Williams, D.A., Robinson, M.A. & Geisser (1994).

Hypothesis: (3) Past pain will be associated with the significant levels of HSUB variance: the shorter the past duration has been the greater the level of HSUB

Stage 2 Question: 4

Stage 3 Question: 3

Source of Question: Question 3 was constructed for the study.

10. Feedback from Physician

Definition: The extent to which the participant's physician indicates that something can be done to improve or manage the individual's joint pain.

Hypothesis: (4a) Negative feedback from their physician (e.g., nothing can be done, pain is to be expected as one ages, etc.) will be associated with significant HSUB variance. This variable was scored so that the lower the score the greater the negative feedback. The lower the score on this variable, the higher the level of HSUB will be.

Literature Reviewed on this variable: Aday & Andersen, 1974; Andersen & Newman, 1973; Branch et al., 1981;

Coulton & Frost, 1982; Cox, 1986; Stoller, 1982; Wan, 1989; Wan & Odell, 1981.

Stage 2 Questions (original composite): 8,9,10

Stage 3 Questions: 11, 12

Source of Questions: Questions 11 & 12 were constructed for the study.

11. Regular physician

Definition: A familiar physician whom they have seen before and whom they would go to if they needed medical care.

Hypothesis: (4b) Having a regular physician will be associated with significant levels of HSUB variance, such that having a regular physician will be associated with greater levels of health service utilisation.

Literature Reviewed on this variable: Berkanovic, Telesky, & Reeder, 1981; Branch et al., 1981; Branch & Nemeth, 1985; Coulton & Frost, 1982; Cox, 1986; Haug, Wykle & Namazi, 1989; Hickey, 1988a; Hickey, Akiyama, & Rakowski, 1991; Kelman & Thomas, 1988; Leventhal & Prohaska, 1986; Levkoff et al., 1988; Rakowski et al., 1988; Roos, 1989; Roos & Shapiro, 1981; Segall, 1987; Shapiro & Roos, 1985; Stoller, 1982; Thomas & Kelman, 1990; Wan & Odell, 1981; Wolinsky, Mosely & Coe, 1986.

Stage 2 Question: 37

Stage 3 Question: 28

Source of Question: Question 28 was constructed for this study.

Appendix C: Original Questionnaire⁷

⁶ In the following questionnaire, the font size and presentation of the questions has been modified to meet the Graduate Studies criteria. However, the order of the questions has not been modified.

JOINT PAIN IN ADULTS OVER 60: BELIEFS AND BAHAVIORS

This survey is part of a study on seniors' experience of pain in their joints and their thoughts about this pain. Joint pain includes pain in one's fingers, hands, wrists, elbows, shoulders, neck, jaw, upper back, lower back, hips, knees, ankles, and feet.

This questionnaire takes most people 30-60 minutes to complete. All information provided will be kept confidential. By answering the questions and returning this questionnaire, you are giving consent to participate in the study. Participation in this study is completely voluntary. If you do not wish to take part in the study simply do not answer any of the questions.

If you do wish to be part of the study, please answer all of the questions unless the instructions tell you not to. Take as much time as you need. If you wish to comment on any questions or qualify your answers, please feel free to use the space in the margins. Your comments will be read and taken into account.

Thank you for your participation.

Lara Robinson, M.A. or Carl von Baeyer, Ph.D.
Department of Psychology
University of Saskatchewan
Saskatoon, Saskatchewan
S7N 0W0
Phone: 996-6671

Date completed _____

Joint Pain includes pain in one's fingers, hands, wrists, elbows, shoulders, neck, jaw, upper back, lower back, hips, knees, ankles, and feet.

1. Have you experienced pain or aches in your joints (for example your finger joints, hips, legs) in the last month?
(please check one)
- ☐ No → IF "No", GO TO QUESTION 34 ON PAGE 12
- ☐ Yes

2. During the past 12 months in a typical month, how often did you experience the following types of joint pain or aches?
Check one response for each type of pain)

Finger/hand ☐ Never
☐ Sometimes
☐ Often
☐ Always

Wrist ☐ Never
☐ Sometimes
☐ Often
☐ Always

Elbow ☐ Never
☐ Sometimes
☐ Often
☐ Always

Shoulder ☐ Never
☐ Sometimes
☐ Often
☐ Always

Neck ☐ Never
☐ Sometimes
☐ Often
☐ Always

Jaw ☐ Never
☐ Sometimes
☐ Often
☐ Always

<p>Continued from previous page</p> <p>2a. During the <u>past 12 months</u>, in a typical month, how often did you experience the following types of joint pain or aches? (check one response for each type of pain)</p>	<p>Upper Back <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p>
	<p>Lower Back <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p>
	<p>Hip <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p>
	<p>Knee <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p>
	<p>Ankle <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p>
	<p>Foot <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p>
	<p>Other <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always</p> <hr/> <p>(describe)</p>

The following questions will focus on your experience of joint pain. If you have more than one type of joint pain you may want to focus on the type which bothers you the most.

3.	<p>We would like to know how much your pain typically hurt or ached. Please answer parts (a), (b) and (c) using the following scales for rating your joint pain. This scale goes from 0 to 10, with 0 = no pain and 10 = pain as bad as it could be.</p>		
a)	<p>In the last 12 months, what was the WORST your joint pain hurt? (circle a number to show how much your pain hurts when its at its worst)</p>		
NO PAIN	<p>0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD AS IT COULD BE</p>		
b)	<p>In the last 12 months, what was the LEAST your joint pain hurt? (circle a number to show how much your pain hurts when its at its least)</p>		
NO PAIN	<p>0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD AS IT COULD BE</p>		
c)	<p>When you had pain in the last <u>12 months</u>, how much did your joint pain typically hurt (your AVERAGE level of pain)? (circle a number to show how much your pain hurt on average)</p>		
NO PAIN	<p>0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD AS IT COULD BE</p>		
4.	<table border="1"> <tr> <td data-bbox="372 1142 877 1289"> <p>Please indicate how long you have experienced joint pain (the kind which bothers you the most). (please check one)</p> </td> <td data-bbox="1052 1142 1516 1507"> <p><input type="checkbox"/> 6 months or less <input type="checkbox"/> 7-12 months <input type="checkbox"/> 1-2 years <input type="checkbox"/> 3-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> 11-15 years <input type="checkbox"/> 16 or more years</p> </td> </tr> </table>	<p>Please indicate how long you have experienced joint pain (the kind which bothers you the most). (please check one)</p>	<p><input type="checkbox"/> 6 months or less <input type="checkbox"/> 7-12 months <input type="checkbox"/> 1-2 years <input type="checkbox"/> 3-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> 11-15 years <input type="checkbox"/> 16 or more years</p>
<p>Please indicate how long you have experienced joint pain (the kind which bothers you the most). (please check one)</p>	<p><input type="checkbox"/> 6 months or less <input type="checkbox"/> 7-12 months <input type="checkbox"/> 1-2 years <input type="checkbox"/> 3-5 years <input type="checkbox"/> 6-10 years <input type="checkbox"/> 11-15 years <input type="checkbox"/> 16 or more years</p>		
5.	<table border="1"> <tr> <td data-bbox="372 1512 877 1696"> <p>How much do you believe that treatments or medications given by a physician (medical doctor) can help lessen your joint pain? (check one)</p> </td> <td data-bbox="1052 1512 1516 1730"> <p><input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot</p> </td> </tr> </table>	<p>How much do you believe that treatments or medications given by a physician (medical doctor) can help lessen your joint pain? (check one)</p>	<p><input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot</p>
<p>How much do you believe that treatments or medications given by a physician (medical doctor) can help lessen your joint pain? (check one)</p>	<p><input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot</p>		

<p>6. In the last <u>12 months</u>, how often have you been to a general practitioner or family physician (medical doctor) specifically about your joint pain? (please check one)</p>	<p><input type="checkbox"/> Zero visits <input type="checkbox"/> 1 visit <input type="checkbox"/> 2-4 visits <input type="checkbox"/> 5-7 visits <input type="checkbox"/> 8-10 visits <input type="checkbox"/> 11 or more visits</p>
<p>7. In the last <u>12 months</u> have you been to see a medical specialist for you joint pain? (check one)</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p> <p>→ If you answered YES what type of specialist have you seen:</p> <p>→ (1) _____</p> <p>→ approximately how many times did you see him/her _____</p> <p>→ (2) _____</p> <p>→ approximately how many times did you see him/her _____</p> <p>→ (3) _____</p> <p>→ approximately how many times did you see him/her _____</p>	
<p>8. Has a doctor suggested what caused you joint pain? (check one)</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p> <p>→ If "Yes" what cause was suggested? _____</p> <p>_____</p> <p>_____</p>	
<p>9. Has your physician told you that your pain can be improved or managed? (check one)</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p>	

<p>10. What method of treatment has your doctor suggested? (You may check more than one answer)</p> <p><input type="checkbox"/> Rest</p> <p><input type="checkbox"/> Use ice</p> <p><input type="checkbox"/> Use heat</p> <p><input type="checkbox"/> Exercise</p> <p><input type="checkbox"/> Massage</p> <p><input type="checkbox"/> Change diet</p> <p><input type="checkbox"/> Over-the-counter medication → what type: _____</p> <p><input type="checkbox"/> Prescription medication → what type: _____</p> <p><input type="checkbox"/> Surgery</p> <p><input type="checkbox"/> "There is nothing you can do".</p> <p><input type="checkbox"/> I never talked to my doctor about my joint pain.</p> <p><input type="checkbox"/> Other: _____</p>	
<p>11. What do you expect your joint pain to be like <u>12 months</u> from now? (please check one)</p>	<p><input type="checkbox"/> The same</p> <p><input type="checkbox"/> Get better</p> <p><input type="checkbox"/> Get worse</p>
<p>12. Do you think that your joint pain is related to aging? (please check one)</p>	<p><input type="checkbox"/> Not at all</p> <p><input type="checkbox"/> Slightly</p> <p><input type="checkbox"/> Moderately</p> <p><input type="checkbox"/> A lot</p>
<p>13. Do you think your joint pain is related to an illness or disease? (check one)</p>	<p><input type="checkbox"/> Not at all</p> <p><input type="checkbox"/> Slightly</p> <p><input type="checkbox"/> Moderately</p> <p><input type="checkbox"/> A lot</p>
<p>14. Do you think your joint pain is related to an injury? (check one)</p>	<p><input type="checkbox"/> Not at all</p> <p><input type="checkbox"/> Slightly</p> <p><input type="checkbox"/> Moderately</p> <p><input type="checkbox"/> A lot</p>
<p>15. Do you believe that your joint pain is likely to cause serious physical problems (for example, difficulty walking) in the next 12 months? (check one)</p>	<p><input type="checkbox"/> Not at all</p> <p><input type="checkbox"/> Slightly</p> <p><input type="checkbox"/> Moderately</p> <p><input type="checkbox"/> A lot</p>

16. Do you believe that your joint pain is likely to seriously affect your day to day functioning (for example, difficulty doing chores or daily activities) in the next 12 months? (check one)	<input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot
For questions 17 to 32 you will be given a statement referring to how you view your pain. Please check one of the four options for each question, indicating how much you agree or disagree with the statement.	
17. No one's been able to tell me exactly why I'm in pain. (please check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
18. I used to think my joint pain was curable but now I'm not so sure. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
19. There are times when I am pain-free. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
20. My joint pain is confusing me. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
21. My joint pain is here to stay (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
22. I am continuously in pain. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
23. If I am in pain, it is my own fault (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

Continued from previous page.

<p>For questions 17 to 32 you will be given a statement referring to how you view your pain. Please check one of the four options for each question, indicating how much you agree or disagree with the statement.</p>	
<p>24. I don't know enough about my pain. (check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>
<p>25. My joint pain is a temporary problem in my life. (please check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>
<p>26. It seems like I wake up with joint pain and I go to sleep with joint pain. (check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>
<p>27. I am the cause of my pain (check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>
<p>28. There is a cure for my joint pain. (check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>
<p>29. I blame myself if I am in pain. (check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>
<p>30. I can't figure out why I'm in pain. (check one)</p>	<p><input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree</p>

30. I can't figure out why I'm in pain. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
31. Some day I'll be 100% joint pain free again. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
32. My pain varies in intensity but is always with me. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
This next question refers to how you view joint pain in people in general, not specifically your joint pain. Please check one of the four options for each question, indicating how much you agree or disagree with the statement.	
33. Joint pain is a normal part of aging? (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
34. Below is a list of things that people often do in response to their pain. Please read this list carefully and indicate how often you do <u>each</u> of these things when you have <u>joint pain</u>.	
Ask physician (medical doctor) for a prescription for medicine (please check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Buy and take prescription medicine (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Take non-prescription medicine (over-the counter) (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

Call and get advice from physician /nurse. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Visit a medical office/clinic (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Go to emergency room (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Schedule medical doctor's appointment for another day (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Follow existing orders from physician (please check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Get someone else to call the physician/nurse for me (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Buy something at store for it (brace, etc.) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Read up about the problem (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

Continued from previous page

34. Below is a list of things that people often do in response to their pain. Please read this carefully and indicate how often you do each of these things when you have joint pain.

Talk with a family member, relative or friend for advice (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Stay in bed all or part of day (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Cut down on activities in other ways (besides staying in bed) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Adjust a device (for example, leg brace) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Do minor first aid (check one) _____ (describe)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Change diet or fluid intake (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

Continued from previous page

34. Below is a list of things that people often do in response to their pain. Please read this carefully and indicate how often you do each of these things when you have joint pain.

Use Ice (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Use Heat (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Exercise (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Use relaxation or meditation techniques (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Rub sore joint myself (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Get a massage from someone else (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

Continued from previous page

34. Below is a list of things that people often do in response to their pain. Please read this carefully and indicate how often you do each of these things when you have joint pain.

Other Action:
(please check one)

(describe)

- ☐ Never
- ☐ Sometimes
- ☐ Often
- ☐ Always

Do nothing
(check one)

- ☐ Never
- ☐ Sometimes
- ☐ Often
- ☐ Always

If you checked one of the last three options, what are your reasons for doing nothing?

(you may check more than one)

- ☐ No chance to do anything
- ☐ Nothing I do would help it
- ☐ Not serious enough
- ☐ Pain stopped by itself
- ☐ Other _____

(DESCRIBE)

The following questions will focus on more general beliefs and health issues.

35. How would you rate your own health in relation to other individuals your age?
(check one)

- ☐ I am a lot more healthy than most others my age
- ☐ I am slightly more healthy than most others my age
- ☐ I am of the same health as most others my age
- ☐ I am slightly less healthy than most others my age
- ☐ I am a lot less healthy than most others my age

40. During the past year did you ever want to see a doctor but did not because:
(you may check more than one option)

☐ You could not get an appointment or the doctor was not available?

☐ You were concerned about the cost?

☐ You thought the problem was just due to your age?

☐ You did not have a way to travel to the doctor?

☐ Other reason: _____
(describe)

Not applicable (e.g. I always go to the doctor when I need to)

Finally, we would like to ask a few questions about yourself to help interpret the results.

41. Birth Date:	Year _____ Month _____
42. Sex: (check one)	<input type="checkbox"/> Male <input type="checkbox"/> Female
43. Education Level: (check the highest grade level achieved)	<input type="checkbox"/> Grade 3 or less <input type="checkbox"/> Grade 4-6 <input type="checkbox"/> Grade 7-9 <input type="checkbox"/> Grade 10-12 <input type="checkbox"/> Technical school/college <input type="checkbox"/> University <input type="checkbox"/> Other: _____ (describe)
44. Current Occupation or Last Occupation Prior to Retirement:	_____ (describe)
45. Current Employment Status: (please check the one which fits best)	<input type="checkbox"/> Employed full time <input type="checkbox"/> Employed part time <input type="checkbox"/> Retired <input type="checkbox"/> Disability leave <input type="checkbox"/> Volunteer work <input type="checkbox"/> Full time homemaker

46. Living Arrangement: (please check one)	<input type="checkbox"/> House <input type="checkbox"/> Apartment <input type="checkbox"/> Senior's apartment complex <input type="checkbox"/> Condominium <input type="checkbox"/> Room in house <input type="checkbox"/> Duplex/quadplex <input type="checkbox"/> Senior's care home <input type="checkbox"/> With family (child)
47. Marital Status (check one)	<input type="checkbox"/> Single <input type="checkbox"/> Married/common-in-law <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Divorce/widowed <u>and</u> remarried/common-law
48. Family Income: (please check one of the income ranges which best describes your family income)	<input type="checkbox"/> Under 10,000 <input type="checkbox"/> 10,000 – 19,000 <input type="checkbox"/> 20,000 – 49,000 <input type="checkbox"/> 50,000 – 69,000 <input type="checkbox"/> 70,000 and over

**Is there anything else you would like to tell us about your experience of joint pain?
If so, please use this space for that purpose.**

Also, any comments you wish to make that you think may help us in future attempts to understand senior' joint pain will be appreciated, either here or on a separate letter.

Your contribution to this effort is very greatly appreciated. If you would like a summary of results, please print your name and address on a separate piece of paper (NOT on this questionnaire). We will see that you get it.

Appendix D: Revised Questionnaire⁸

⁸ In the following questionnaire, the font size and presentation of the questions has been modified to meet the Graduate Studies criteria. However, the order of the questions has not been modified.



JOINT PAIN IN ADULTS OVER 60: BELIEFS AND BEHAVIOURS

This survey is part of a study on seniors' experience of pain in their joints and their thoughts about this pain. Your participation in this research is important because learning more about seniors' experiences with joint pain will help to provide better treatment of joint pain in the future. Joint pain includes pain in one's fingers, hands, wrists, elbows, shoulders, neck, jaw, upper back, lower back, hips, knees, ankles, and feet.

This questionnaire takes most people 30-60 minutes to complete. All information provided will be kept confidential. We would appreciate it if you would fill out this questionnaire but filling it out is completely voluntary. If you do not wish to take part in the study simply do not answer any of the questions.

If you do wish to be part of the study, please answer all of the questions unless the instructions tell you not to. Take as much time as you need. If you wish to comment on any questions or qualify your answers, please feel free to use the space in the margins. Your comments will be read and taken into account.

Thank you for your participation!

Lara Robinson, M.A., doctoral student
Carl von Baeyer, Ph.D., supervisor
Department of Psychology
University of Saskatchewan
Saskatoon, SK S7N 5A5
Phone: 966-6671

Please fill in the date you completed this questionnaire: _____

Joint Pain includes pain in one's fingers, hands, wrists, elbows, shoulders, neck, jaw, upper back, lower back, hips, knees, ankles, and feet.

1. Have you experienced pain or aches in your joints (for example your finger joints, hips, legs) in the last month? (Please check one)
- ☐ No _____> IF "No", GO TO QUESTION 21 ON PAGE 9
- _____ ☐ Yes

- >2. Check each location you have had joint pain at least 3 times in the last month. (check all that apply)
- ☐ Finger/hand
- ☐ Wrist
- ☐ Elbow
- ☐ Shoulder
- ☐ Neck
- ☐ Jaw
- ☐ Upper Back
- ☐ Lower Back
- ☐ Hip
- ☐ Knee
- ☐ Ankle
- ☐ Foot
- ☐ Other Joint, specify _____

- | | |
|--|--|
| <p>3. How long ago did you first experience your joint pain (the kind which bothers you the most). (please check one)</p> | <p><input type="checkbox"/> Less than 7 months</p> <p><input type="checkbox"/> 7 - 12 months ago</p> <p><input type="checkbox"/> 1 - 2 years ago</p> <p><input type="checkbox"/> 3 - 5 years ago</p> <p><input type="checkbox"/> 6 - 10 years ago</p> <p><input type="checkbox"/> 11 - 15 years ago</p> <p><input type="checkbox"/> More than 15 years ago</p> |
| <p>4. How much do you believe that treatments given by a physician (medical doctor) can help lessen your joint pain? (check one)</p> | <p><input type="checkbox"/> Not at all</p> <p><input type="checkbox"/> Slightly</p> <p><input type="checkbox"/> Moderately</p> <p><input type="checkbox"/> A lot</p> |

The following questions will focus on your experience of joint pain.
If you have more than one type of joint pain please focus on the type which bothers you the most.

5. We would like to know how much your pain typically hurt or ached.
Please answer each section using the following scales for rating your joint pain.
This scale goes from 0 to 10, with 0 = no pain and 10 = pain as bad as it could be.
- a) **JOINT PAIN RIGHT NOW:** Please indicate on the scale how much your joint pain hurts right now.
- (circle a number to show how much your pain hurts now)
- NO PAIN 0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD
AS IT COULD BE
- b) **WORST JOINT PAIN:** In the last month what was the WORST your joint pain hurt?
- (circle a number to show how much your pain hurts when its at its worst)
- NO PAIN 0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD
AS IT COULD BE
- c) **LEAST JOINT PAIN:** In the last month what was the LEAST your joint pain hurt?
- (circle a number to show how much your pain hurts when its at its least)
- NO PAIN 0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD
AS IT COULD BE
- d) **AVERAGE JOINT PAIN:** When you had pain in the last month, how much did your joint pain typically hurt (your AVERAGE level of pain)?
- (circle a number to show how much your pain hurt on average)
- NO PAIN 0 1 2 3 4 5 6 7 8 9 10 PAIN AS BAD
AS IT COULD BE

6. In the last <u>12 months</u> , how often have you been to a general practitioner or family physician (medical doctor) SPECIFICALLY ABOUT YOUR JOINT PAIN? (please check one)	<input type="checkbox"/> No visits (0) <input type="checkbox"/> 1 visit <input type="checkbox"/> 2 - 4 visits <input type="checkbox"/> 5 - 7 visits <input type="checkbox"/> 8 - 10 visits <input type="checkbox"/> 11 or more visits
7. In the last <u>12 months</u> , have you been to see a medical specialist for your joint pain? (check one) <input type="checkbox"/> No <input type="checkbox"/> Yes > If you answered YES, what types of specialists have you seen: (1) _____ approximately how many times did you see him/her _____. (2) _____ approximately how many times did you see him/her _____. (3) _____ approximately how many times did you see him/her _____.	
8. Has a doctor suggested what caused your joint pain? (check one) <input type="checkbox"/> No <input type="checkbox"/> Yes > If "Yes" what cause was suggested? _____ _____	
9. Do you think your age is part of the cause of your joint pain? (check one)	<input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot
10. Has your physician told you that your pain can be relieved or cured? (check one)	<input type="checkbox"/> No <input type="checkbox"/> Yes
11. Has your physician told you that your pain can be managed? (check one)	<input type="checkbox"/> No <input type="checkbox"/> Yes

<p>12. What method of treatment has been suggested <u>BY YOUR DOCTOR</u>? (You may check more than one answer)</p>	<p> <input type="checkbox"/> Rest <input type="checkbox"/> Use ice <input type="checkbox"/> Use heat <input type="checkbox"/> Exercise <input type="checkbox"/> Massage <input type="checkbox"/> Change diet <input type="checkbox"/> Over-the-counter medication what type: _____ <input type="checkbox"/> Prescription medication what type: _____ <input type="checkbox"/> Surgery <input type="checkbox"/> "There is nothing you can do" <input type="checkbox"/> I never talked to my doctor about my joint pain <input type="checkbox"/> Other: _____ </p>
<p>13. Do you think that your joint pain is related to aging? (check one)</p>	<p> <input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot </p>
<p>14. Do you think your joint pain is caused by an illness? (check one)</p>	<p> <input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot </p>
<p>15. Do you think your joint pain is related to an injury? (check one)</p>	<p> <input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot </p>
<p>16. Do you believe that your joint pain is likely to cause serious physical problems (for example, difficulty walking) in the next 12 months?</p>	<p> <input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot </p>
<p>17. Do you believe that your joint pain is likely to seriously affect your day-to-day functioning (for example, difficulty doing chores or daily activities) in the next 12 months?</p>	<p> <input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot </p>

18. Do you think that getting older has made your joint pain worse? (check one)	<input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> A lot
19. Below is a list of things that people often do in response to their pain. Please read this list carefully and indicate how often you do <u>each</u> of these things when you have joint pain. (based on Rakowski 's health care behavior checklist, 1988)	
Phone and get advice from physician/nurse. (please check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Get someone else to phone and get advice from the physician/nurse for me. (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Schedule an appointment with your own physician (medical doctor) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Visit a drop-in medical office/clinic (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Ask physician (medical doctor) for a prescription for medicine (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Buy and take prescription medicine (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

Continued from previous page	
19. Below is a list of things that people often do in response to their pain. Please read this list carefully and indicate how often you do each of these things when you have joint pain. (based on Rakowski 's health care behavior checklist, 1988)	
Take non-prescription medicine (over-the-counter) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Buy something at store for it (brace, etc. - not including medications) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Follow existing orders from physician (medical doctor) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Go to emergency room (please check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Read up about the problem (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Talk with a family member, relative or friend (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Get advice from a family member, relative or friend (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

Continued from previous page	
19. Below is a list of things that people often do in response to their pain. Please read this list carefully and indicate how often you do each of these things when you have joint pain. (based on Rakowski 's health care behavior checklist, 1988)	
Stay in bed all or part of day (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Cut down on activities in other ways (besides staying in bed) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Adjust a device (for example, leg brace) (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Use Ice (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Use Heat (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Exercise (please check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Use relaxation or meditation techniques (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

Continued from previous page	
19. Below is a list of things that people often do in response to their pain. Please read this list carefully and indicate how often you do each of these things when you have joint pain. (based on Rakowski 's health care behavior checklist, 1988)	
Rub sore joint myself (circle one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Get a massage from someone else (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Change diet or fluid intake (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Other Action: (check one) _____ (describe)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
Do nothing (check one)	<input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
<p>If you checked <i>Sometimes</i>, <i>Often</i>, or <i>Always</i>, what are your reasons for doing nothing?(You may check more than one)</p> <p> <input type="checkbox"/> No chance to do anything <input type="checkbox"/> Nothing I do would help it <input type="checkbox"/> Not serious enough <input type="checkbox"/> Pain stopped by itself <input type="checkbox"/> Other: _____ <div style="text-align: right;">(DESCRIBE)</div> </p>	

20. We've asked you about things you've done to help your pain that involve medical doctors and things you do on your own. Now we would like to know if there are any other things you have done to cope with your joint pain.

Please check any of the options below that you have done to deal with your JOINT PAIN in the last 12 months.

- ☐ do yoga
- ☐ do fasting
- ☐ gone to a reflexologist
- ☐ gone to an acupuncturist
- ☐ gone to a naturopath
- ☐ gone to a chiropractor
- ☐ gone to a homeopath
- ☐ gone to an iridologist
- ☐ gone to a health food store
- ☐ had accupressure treatment
- ☐ used herbal remedies
- ☐ used home remedies
- ☐ used immune therapy
- ☐ used spiritual or faith healing
- ☐ used sauna
- ☐ used megavitamins
- ☐ gone to a psychologist
- ☐ Other remedies not stated above: _____

The following questions will focus on more general beliefs and health issues.

21. How would you rate your own health in relation to other individuals your age? (check one).	<input type="checkbox"/> I am a lot more healthy than most others my age <input type="checkbox"/> I am slightly more healthy than most others my age <input type="checkbox"/> I am of the same health as most others my age <input type="checkbox"/> I am slightly less healthy than most others my age <input type="checkbox"/> I am a lot less healthy than most others my age
--	--

Many individuals feel or look younger or older than they actually are. The next 6 questions are to do with how you view yourself compared to your actual age (chronological age). Some of these questions may seem similar to each other because we are trying to decide how best to understand people's beliefs about themselves. (From Kastenbaum et al., 1972, "Ages of Me" Interview Schedule.)

<p>22. Most of the time I feel ... (Please check the option which best completes this sentence)</p>	<p><input type="checkbox"/> Quite a bit older than most people my age</p> <p><input type="checkbox"/> A little older than most people my age</p> <p><input type="checkbox"/> Neither older nor younger than most people my age</p> <p><input type="checkbox"/> A little younger than most people my age</p> <p><input type="checkbox"/> Quite a bit younger than most people my age</p>
<p>23. Most of the time I look ... (Please check the option which best completes this sentence)</p>	<p><input type="checkbox"/> Quite a bit older than most people my age</p> <p><input type="checkbox"/> A little older than most people my age</p> <p><input type="checkbox"/> Neither older nor younger than most people my age</p> <p><input type="checkbox"/> A little younger than most people my age</p> <p><input type="checkbox"/> Quite a bit younger than most people my age</p>
<p>24. My interests and activities are most like those of ... (Please check the option which best completes this sentence)</p>	<p><input type="checkbox"/> People who are quite a bit older than myself</p> <p><input type="checkbox"/> People who are a little older than myself</p> <p><input type="checkbox"/> People who are neither older nor younger than myself</p> <p><input type="checkbox"/> People who are a little younger than myself</p> <p><input type="checkbox"/> People who are quite a bit younger than myself</p>

25.	I <u>feel</u> as though I were about age ... (Please write a specific age to complete the sentence)	_____
		(write down a specific age)
26.	I <u>look</u> as though I were about age ... (Please write a specific age to complete the sentence)	_____
		(write down a specific age)
27.	I <u>do most things</u> as though I were about age ... (Please write a specific age to complete the sentence)	_____
		(write down a specific age)
28.	Do you have a regular physician (family doctor)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
29.	In the <u>last 12 months</u>, approximately how often have you visited your regular physician's office (family doctor's office) for any reason? (check one)	<input type="checkbox"/> Zero visits <input type="checkbox"/> 1 visit <input type="checkbox"/> 2 - 4 visits <input type="checkbox"/> 5 - 7 visits <input type="checkbox"/> 8 - 10 visits <input type="checkbox"/> 11 or more visits
30.	Do you have any of the following medical problems. (check the ones you have; you may check as many as needed)	<input type="checkbox"/> Arthritis <input type="checkbox"/> Cancer, type: _____ <input type="checkbox"/> Depression <input type="checkbox"/> Diabetes <input type="checkbox"/> Hearing loss <input type="checkbox"/> Heart condition <input type="checkbox"/> High blood pressure <input type="checkbox"/> Stroke <input type="checkbox"/> Ulcers <input type="checkbox"/> Vision loss <input type="checkbox"/> Chronic pain, type: _____ <input type="checkbox"/> Other: _____ <input type="checkbox"/> No Medical Problem(s)

<p>31. During the past year did you ever want to see a doctor but did not because: (you may check <u>more than one</u> option) (Based on Branch & Nemeth, 1985.)</p> <p> <input type="checkbox"/> You could not get an appointment or the doctor was not available? <input type="checkbox"/> You were concerned about the cost? <input type="checkbox"/> You thought the problem was just due to your age? <input type="checkbox"/> You did not have a way to travel to the doctor? <input type="checkbox"/> Other reason: _____ <input type="checkbox"/> Not applicable (e.g. I always go to the doctor when I need to.) </p>	
<p>For questions 32 to 48 you will be given a statement referring to how you view your pain. Please check one of the four options for each question, indicating how much you agree or disagree with the statement. (Based on the Pain Beliefs & Perceptions Inventory, Williams et al. , 1994.)</p>	
<p>32. No one's been able to tell me exactly why I'm in pain (joint pain). (please check one)</p>	<p> <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree </p>
<p>33. I used to think my joint pain was curable but now I'm not so sure. (check one)</p>	<p> <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree </p>
<p>34. There are times when I am joint pain-free. (check one)</p>	<p> <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree </p>
<p>35. My joint pain is confusing to me. (check one)</p>	<p> <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree </p>
<p>36. My joint pain is here to stay. (check one)</p>	<p> <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree </p>

Continued from previous page

For questions 32 to 48 you will be given a statement referring to how you view your pain. Please check one of the four options for each question, indicating how much you agree or disagree with the statement. (Based on the Pain Beliefs & Perceptions Inventory, Williams et al. , 1994.)

37. I am continuously in pain (joint pain). (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
38. If I am in pain it is my own fault (joint pain). (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
39. I don't know enough about my joint pain. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
40. My joint pain is a temporary problem in my life. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
41. It seems like I wake up with joint pain and I go to sleep with joint pain. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
42. I am the cause of my joint pain. (please check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
43. There is a cure for my joint pain. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

Continued from previous page

For questions 32 to 48 you will be given a statement referring to how you view your pain. Please check one of the four options for each question, indicating how much you agree or disagree with the statement. (Based on the Pain Beliefs & Perceptions Inventory, Williams et al. , 1994.)

44. I blame myself if I am in pain (joint pain). (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
45. I can't figure out why I'm in pain (joint pain). (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
46. Some day I'll be 100% joint pain free again. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
47. My joint pain varies in intensity but is always with me. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
48. I believe joint pain is a normal part of aging for most people. (check one)	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

Finally, we would like to ask a few questions about yourself.

49. Birth Date:	Year _____ Month _____
50. Sex: (check one)	<input type="checkbox"/> Male <input type="checkbox"/> Female

51. Education Level: (check the highest grade level achieved, please check <u>only one</u>)	<input type="checkbox"/> Grade 3 or less <input type="checkbox"/> Grade 4-6 <input type="checkbox"/> Grade 7-9 <input type="checkbox"/> Grade 10-12 <input type="checkbox"/> Technical school/college <input type="checkbox"/> Some university classes <input type="checkbox"/> Graduated from university <input type="checkbox"/> Other: _____ (describe)
52. Current Occupation or Last Occupation Prior to Retirement:	_____ (describe)
53. Current Employment Status: (please check <u>all options</u> that apply)	<input type="checkbox"/> Employed full time <input type="checkbox"/> Employed part time <input type="checkbox"/> Retired <input type="checkbox"/> Disability leave <input type="checkbox"/> Volunteer work <input type="checkbox"/> Full time homemaker
54. Living Arrangement: (please check one)	<input type="checkbox"/> House <input type="checkbox"/> Apartment <input type="checkbox"/> Seniors' apartment complex <input type="checkbox"/> Condominium <input type="checkbox"/> Room in house <input type="checkbox"/> Duplex/quadplex <input type="checkbox"/> Senior's care home <input type="checkbox"/> With family
55. Present Marital Status: (check all that apply)	<input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Common-law <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed
56. Personal Income: (please circle one of the income ranges which best describes your income)	<input type="checkbox"/> Under 10,000 <input type="checkbox"/> 10,000 -19,000 <input type="checkbox"/> 20,000 - 49,000 <input type="checkbox"/> 50,000 - 69,000 <input type="checkbox"/> 70,000 and over

Confirmation of number of medical visits

As part of this study, we would like to confirm the number of times in the last 12 months you visited your regular doctor's office/clinic (the one you see most often). We would like permission to contact your doctor's office/clinic for this information. **No other information would be obtained**, simply the number of visits you have made to him or her or any other medical doctor at the same clinic in the last 12 months.

Participation in this portion of the study is also voluntary. Even if you choose not to participate in this section, your previous participation will still be used. This page will be detached from the rest of the questionnaire as soon as the information has been recorded, so there will be no way to associate your name with the other information. All information you provide will be kept confidential within the research team.

Please indicate below whether you agree or disagree to having your regular doctor contacted.

- ☐ **YES**, I agree to allow Lara Robinson, or her research assistant, to contact my doctor's office/clinic and for my doctor's office/clinic to tell the number of times I have visited the office/clinic in the last 12 months. I understand that no other information about me will be obtained at that time. (Note: if you have more than one regular doctor put down the name of the doctor that you see most often)

Your Name: _____

Signature: _____

Doctor's Name: _____

Doctor's Phone #: _____

Doctor's Address: _____

- ☐ **NO**, I do not agree to allow Lara Robinson, or her research assistant, to contact my doctor and for my doctor to tell the number of times I have been to see him or her in the last 12 months. However, she may use the rest of the information in the questionnaire to help her in her study.

Also, any comments you wish to make that you think may help us in future attempts to understand seniors' joint pain will be appreciated, either in the space provided or in a separate letter.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

239

Appendix E: Stage 3 Composite Calculations

Appendix E: Stage 3 Composite Calculations

1. Health Service Utilisation Behaviour (HSUB) Variable

Step one: Relevant sections from question 19 added together to create "Question 19". Included: Phone and get advice, Visit a drop-in clinic, Ask physician for a prescription, Buy and take prescription, Follow existing orders.

Step two: Z-scores calculated for Question 6 and "Question 19".

Step three: Above z-scores added together to create HSUB variable

2. Self Care Behaviour (SCB)

Relevant sections from question 19 added together to create the SCB variable. Included: Take non-prescription medicine, Buy something at store, Read up about the problem, Cut down activities, Adjust device, Use ice, Use heat, Exercise, Use relaxation or meditation, Rub sore joint myself, Get a massage, Change diet or fluid intake.

3. Age Attribution

Questions 9, 13 and 18 added together to create the Age Attribution variable.

4. Age Perception

Step one: Z-scores calculated for Questions 25, 26, 27.

Step two: Above z-scores added together to create the Age Perception variable.

5. Past Pain Duration - single question: #3.

6. Comparative Health Status - single question: #21.

7. Effectiveness of Treatment - single question: #4.

8. Pain is a Normal Part of Ageing - single question: #48

9. Perceived Pain Intensity - single question: #5d.

Appendix E: Stage 3 Composite Calculations
Continued

10. Perceived Pain Consequences

Questions 16 and 17 added together to create the Perceived Pain variable.

11. Illness Attribution - single question: #14.

12. Injury Attribution - single question: #15.

13. Regular MD - single question: #28.

14. MD Feedback

Step one: Z-scores were calculated for questions 11 and 12.

Step two: The above z-scores were added together to create the MD Feedback variable.