Ageing and Vision Impairment:

Activity, Independence and Life Satisfaction

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Abstract

Vision impairment profoundly affects older people, yet we do not know specifically which areas of daily living are most affected by vision impairment. Nor do we know how daily levels of activity and independence differ for this population compared to others their age. Understanding these differences can enhance goal-setting practices and improve rehabilitation services for older individuals with impaired vision. This study examined activity, independence and life satisfaction of older adults living in the Manawatu region of the North Island of New Zealand, using an adapted model of the World Health Organization's International Classification of Functioning, Disability and Health. The adapted model introduced subjective dimensions of functioning including satisfaction with activity, independence and life. This study was conducted with registered members of the Royal New Zealand Foundation of the Blind and with a random selection of registered voters in the region. Results indicated that both age and vision impairment had significant main effects on activity and independence. An interaction of age and vision had effect on the number of recently relinquished activities participants reported, social comparisons of activity and independence, and on satisfaction with independence and with life. An examination of age cohorts assisted in an improved understanding of daily functioning for this population. Unique findings were that social comparison of activity and satisfaction with social support contributed more to overall life satisfaction than did activity and independence levels. Unexpectedly, the oldest age cohort of those with impaired vision reported a higher level of overall life satisfaction than did their sighted peers in the oldest age cohort or younger cohorts with impaired vision. Results of this study will enable a better

understanding of daily life for older people, and the differences which can be attributed to vision impairment. Older people and those that provide rehabilitation services to them can use this information to set more realistic and appropriate goals for rehabilitation. The results of this study will also allow those involved in personnel preparation programmes to develop curricula to improve new practitioners' understanding of typical daily life of older people with and without impaired vision.

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Dedication

To my parents Ed and Justine Good – my first and finest teachers.

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List of Tables and Figures

Notes on the Text

- The choice of language used in this thesis has been explained in Appendix A, an extended glossary of terms.

- Some of the analyses have been presented in text form for easier access to those using electronic formats for speech access. Tables have been presented in appendices.

- Any deviations from the American Psychological Association (APA) style are purposeful and for ease of visual access.

Abbreviations

ABC	Association of Blind Citizens of New Zealand, Inc.
ACVREP	Academy for Certification of Vision Rehabilitation and Education Professionals
ADA	Americans with Disabilities Act
ADL	Activities of daily living
AER	Association for Education and Rehabilitation of the Blind and Visually Impaired
ANOVA	Analysis of variance
APA	American Psychological Association
AQOL	Australian Quality of Life Measure
ARMD	Age-related macular degeneration
BADL	Basic activities of daily living
COPD	Chronic obstructive pulmonary disease
COPM	Canadian Occupational Performance Measure
CVRT	Certified vision rehabilitation therapist
DPA	DPA-NZ, The National Assembly of People with Disabilities
FAI	Frenchay Activities Index
FIMBA	Functional Independence Measure for Blind Adults
HFA	Health Funding Authority
IADL	Instrumental activities of daily living
ICF	International Classification of Functioning, Disability and Health
ICIDH	International Classification of Impairments, Disabilities and Handicaps
IWRP	Individual Written Rehabilitation Plan
M	Mean (arithmetic average)

MCBTC	Michigan Commission for the Blind Training Center
MUHEC	Massey University Human Ethics Committee
MSD	Ministry of Social Development
NCHS	National Center for Health Statistics
O&M	Orientation and mobility
PANAS	Positive and Negative Affect Scale
QOL	Quality of life
RNZFB	Royal New Zealand Foundation of the Blind Formerly known as the Royal New Zealand Foundation *for* the Blind
RT	Rehabilitation teacher or rehabilitation teaching
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences
SSQ	Social Support Questionnaire
SWLS	Satisfaction with Life Scale
V.I.	Vision impairment, vision impaired
VFQ	Visual Function Questionnaire
WHO	World Health Organization

Outline of Thesis

This thesis is presented in five chapters. Chapter One provides a broad overview of the topic under research, ageing and vision impairment. Also presented in the first chapter are the research problem and an introduction to the classification framework to be adapted for use in this study, the International Classification of Functioning, Disability and Health (ICF).

Chapter Two provides an in-depth review of literature related to ageing, activity, independence, life satisfaction and vision impairment, resulting in a revised model for investigating the research questions, and the hypotheses to be tested. In the revised model of the ICF developed for this study, subjective dimensions of functioning are identified as important factors to consider when exploring the effect of impaired vision on older people.

Chapter Three is an explanation of the methods used to test the hypotheses and explore the research questions. The design of the study, the measures used and the statistical methods used in this study are described.

Chapter Four is a presentation of the results of the statistical analyses of the survey data. Descriptive details about the participants and comparisons of demographic details of those with impaired vision and those with sight are provided as well as descriptions of demographic characteristics within the three age cohorts. Analyses are presented to explore each of the research questions and their associated hypotheses.

Chapter Five is a discussion of the findings in relation to the literature, previous studies and the adapted ICF model used in this study. Conclusions are drawn about how this information can inform research and assist educators and practitioners as they deliver rehabilitation services to older people with impaired vision.

Chapter One: Introduction and Overview

1.1 Introduction

This thesis examines the impact of vision impairment on older people in the Manawatu region of New Zealand. Underlying this research is the question of whether older people with impaired vision have levels of daily activity and independence that differ from those of their sighted, age-related peers. There is no doubt that losing one's vision can result in a reduction of independence, the ability to participate in activities, and in many cases, one's satisfaction with life. There is a question, however, about how these losses fit into the general context of ageing. A well-known theory of ageing, disengagement theory, argues that as people age they disengage from society and reduce activity levels. This, in turn, is said to reduce levels of life satisfaction until adaptations to reduced activity can be made (Cummings & Henry, 1961; Matcha, 1997). This suggests that there are many reasons why people slow down and change activity as they age. Changes occurring due to impaired vision may not be so different from changes occurring due to other age-related factors. Do older people with impaired vision differ greatly from the general ageing population who also experience a reduction in activity, independence and participation in activities which once brought great satisfaction?

It will be useful to understand how older people with impaired vision differ from their sighted, age-related peers in terms of activity, independence and life satisfaction. For those who provide services to older adults with impaired vision, it is important to understand, specifically, how vision impairment has affected their clients' lives, and to identify the particular activities of daily living that pose unique difficulties for individuals. Perhaps it is even more important to understand which limitations in

activities of daily living create dissatisfaction for those affected by vision impairment. Understanding the differences that matter most in the lives of older people living with vision impairment may help educators and service providers to target interventions and instruction for daily living skills, that will help people maintain or return to meaningful activity. Similarities in activity, independence and life satisfaction for those with impaired vision and those with sight can be identified to enable those that provide rehabilitation services to understand the impact of both ageing and vision impairment on daily life. It is important to identify if it is ageing, vision impairment, or a combination of the two that contribute to diminished activity, independence, or life satisfaction seen in this population (older people with impaired vision), so that appropriate interventions can be planned. This has become increasingly important as the population of older adults with impaired vision increases in New Zealand and around the world.

1.2 An Ageing Population

The population in New Zealand, as in the rest of the developed and developing world, is ageing (Matcha, 1997). The percentage of the population who are aged 65+ will double to over one million, or 25% of the population, by the year 2026 (Heenan, 1993). In New Zealand, the 65+ age group has increased by 17% in the past 10 years (Statistics New Zealand, 2005). The oldest old, those aged 85+, are the fastest growing age group (Head, Babcock, Goodrich & Boyless, 2000; Health Funding Authority, 1998). Statistics New Zealand (2005) recently released evidence that the population of those aged 90+ has increased by two-thirds in the last 10 years. With an ageing population comes an increased incidence and prevalence of vision impairment (Head et al., 2000).

1.3 Ageing and Vision

In the 1996/97 census, 74,000 New Zealanders from a population of just fewer than four million reported that they had difficulty seeing newsprint and/or faces from across a room, even when wearing corrective lenses, to the extent that they required some assistance in daily living (Health Funding Authority, 1998). Over 55% of that population were aged 65+. According to the New Zealand Health Funding Authority (HFA) (1998), approximately 9.2% of all those living in private homes aged 65+ reported some form of vision impairment. Similar figures were reported in a U.S. study by the Lighthouse Research Institute (1995). The prevalence of vision impairment increases considerably with age. For example, U.S. data indicated that approximately 9.5% of all those aged 65-74, 16% of those aged 75-84, and 26% of those aged 85+ experience significant vision impairment (Rosenbloom, 2000).

The majority of those with impaired vision are older (i.e. aged 65+), as are the vast majority of those experiencing the onset of a significant vision impairment, according to the Royal New Zealand Foundation of the Blind (RNZFB) (2004). Much of new vision impairment results from age-related changes in visual function. Age-related vision changes can include both normal and pathological changes in the eye, related to the ageing process (Brennan & Silverstone, 2000).

Normal age-related changes in the eye and subsequent decreases in visual functioning include: reduced visual acuity, loss of accommodation, increased need for light, difficulty with glare, difficulty with adaptation to light and dark, reduced contrast sensitivity, reduced colour perception and depth perception, and increased presence of floaters and dry eyes (Orr, 1998; Orr & Rogers, 2002). Most of us will experience such

changes. Some of these changes are correctable with increased illumination, eyeglasses, sunglasses, use of contrast, patience (in adapting to light or dark), minor environmental adaptations such as repositioning a television to avoid glare, or using a humidifier or eye drops to reduce dry eyes (Orr & Rogers). These changes in the eyes are generally normal and may, but do not always, result in significant vision impairment. Most significant vision impairment is the result of pathological changes in the eye.

1.3.1 Ageing and significant vision impairment

Significant vision impairment may result in severe limitations in visual function and consequent limitations in daily activity and independence. Significant vision impairment is prevalent in the older population. In fact, all leading causes of significant vision impairment are age-related (Orr, 1992). Age-related macular degeneration (ARMD), diabetic retinopathy, cataracts and glaucoma are the most common causes of vision impairment in those aged 65+, and, as a result, are the most common causes of vision impairment among all with impaired vision according to the Royal New Zealand Foundation for the Blind (RNZFB) (1992). Other, less common causes of significant vision impairment in older people include optic nerve atrophy, retinitis pigmentosa, hemianopsia caused by stroke, eye conditions that occurred at earlier stages in life and combinations of eye conditions. Regardless of the cause, vision impairment is feared more than all other impairments, and almost as much as illnesses such as cancers, AIDS, and Alzheimer's disease (Morris, Fletcher & Scott, 2002).

1.3.2 The meaning of vision impairment for older people

Blindness and significant vision impairment are greatly feared and often misunderstood. Stereotypes and myths of blindness contribute to beliefs that vision impairment leaves one vulnerable, inactive and a burden (Potter, 1999). People with impaired vision are believed to function differently from sighted people, and have been observed to function differently across a whole range of behaviours, as summarised by Smith (1996):

> The onset of blindness or visual impairment has an enormous impact on every aspect of an individual's life, both personally and vocationally. In general, it affects the ability to perform the activities of daily life, travel independently and obtain and utilize information, all of which are crucial skills needed for success both on the job and in one's personal life (Smith, 1996, p. ix.).

Yet older people with impaired vision may not differ from their sighted peers as greatly as younger vision impaired people differ from theirs, because multiple or other losses associated with ageing generally limit functioning for many as people age. Father Thomas J. Carroll, perhaps the best-known leader in the field of vision rehabilitation, established a model of modern day rehabilitation that is still respected today. As Carroll explained decades ago, vision impairment creates a social and functional difference between people, yet with older people this difference may not be so marked.

> Obviously, blindness has a different meaning for a person who has already undergone many or all the losses of old age than it does for the child, the young or middle-aged adult. The old person brings a very different attitude to his blindness; if not resigned to physical difficulties and deprivations, at least he is accustomed to them. Society does not expect so much from him, his age group is not expected and does not expect itself to compete; there is no disgrace involved in being blind. In fact, some persons in the

> geriatric group not only take their blindness for granted but even seem to take a certain pride, almost as if it were a badge of distinction (Carroll, 1961, p. 272).

These observations, of reduced expectations of older people with impaired vision, although logical, have not been tested. It is, therefore, important to assess the differences between older people in general and those with impaired vision, in terms of daily functioning. This is important so that 1) people can have a better understanding of what to expect of themselves and others as they age, 2) people may have more realistic expectations of rehabilitation and its outcomes, 3) daily living skills that are uniquely problematic to older people with impaired vision can be identified and targeted for rehabilitation and other interventions. Deriving an accurate description of the unique effects of vision impairment for older people and the meaning that older people attach to their daily functioning, are aims of this research. In order to explore the effects of vision impairment on older people, the World Health Organization's (WHO) model of health and functioning, developed over recent decades, has been utilised.

1.4 Development of the International Classification of Functioning (ICF)

The World Health Organization models of disablement and functioning have been used in this study to conceptualise the impact of vision impairment on older persons. The model used in this study, based on the WHO models, refers to impairment, activity limitation, and participation restriction and conceptualises them in terms of what is considered normal for a person based on age, gender, culture, or other social factors. The 1980 model, the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) (1980), was the predecessor to the ICIDH-2, adopted in 2001 and was renamed the International Classification of Functioning, Disability and Health (ICF).

The WHO models of disablement and functioning, as they developed over the years, distinguished impairment from functional limitations and participation restrictions. These models were established to create a standard to describe and measure components of health and disability. The ICIDH classification system (1980) was accepted around the world and provided a common language for research, intervention, education and policy development. The ICIDH distinguished impairment, disability and handicap as related, but independent concepts, and suggested a unidirectional, linear relationship between the elements. The consequences of disease were impairments, which may result in disabilities. Impairments and disabilities, according to this model, may result in handicaps, which are social disadvantages in relation to one's peers (Thomas & Thomas, 1999). This model of disablement and definitions of its components are provided in Figure 1.1 and Table 1.1.

Figure 1.1 ICIDH consequences of disease model representing a linear relationship among components (WHO, 1980).

Table 1.1 Definitions used in the WHO model of the ICIDH (WHO, 1980)

Impairment	Any loss or abnormality of a psychological, physiological, or anatomical structure or function (p. 47)
Disability	Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being (p. 143)
Handicap	Any disadvantage for a given individual, resulting from impairment or a disability, that limits or prevents the fulfilment of a role that is normal (depending on age, sex and social and cultural factors) for that individual (p. 183)

This model of disablement (ICIDH) was revised over a 20-year period, and in 2001 the ICIDH-2 was endorsed as a classification system, incorporating a broader view of

disability. It moved the ICIDH from a linear, consequences-of-disease model, to one of multidirectional, interactive components of health. The revised version used more neutral terms to include all people, not just those with impairments, and included environmental factors and the concept of participation. The revised model can be used to evaluate problems under the umbrella term "disability" (impairment, activity limitations, barriers to participation) as well as non-problematic aspects of normative functioning (WHO, 2001). Further revisions resulted in the renaming of the model to the ICF in 2001. This model of components of health and their definitions are provided in Figure 1.2 and Table 1.2.

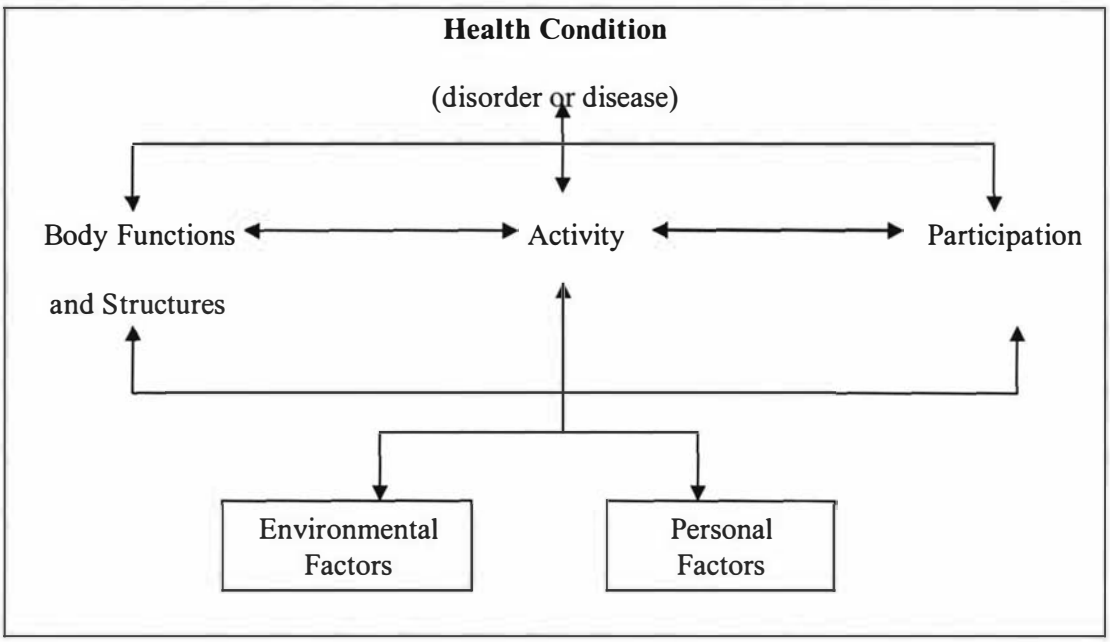


Figure 1.2 ICIDH-2/ICF model representing multidirectional relationships among components (WHO, 2001).

Table 1.2 Definitions used in the WHO model of the ICIDH-2/ICF (WHO, 2001)

Body functions	Physiological functions of body systems
Body structures	Anatomical parts of the body such as organs, limbs and their components
Impairments	Problems in body function or structure such as a significant deviation or loss
Activity	The execution of a task or action by an individual
Activity limitations	Difficulties an individual may have in executing activities
Participation	Involvement in a life situation
Participation restrictions	Problems an individual may experience in involvement in life situations
Environmental factors	The physical, social and attitudinal environments in which people live and conduct their lives
Personal factors	The particular background of an individual's life and living composed of features of the individual that are not part of a health condition or health states. These factors include gender, race, age, fitness, habits, coping style, etc. These factors are recognised in the model but not classified by the ICIDH
Disability	Now used as an umbrella term for impairments, activity limitations or participation restrictions
Functioning	An umbrella term encompassing all body functions, activities and participation (WHO, 2001, p. 3)

This classification system is especially appropriate for the present research with both impaired and non-impaired populations, as its focus is on measurement of health and functioning, not just problem or deficit identification. The ICF integrates the two opposing models of disability: medical and social. Traditionally, medical models have focused on care of individuals, adjustment, and behaviour change (WHO, 2001, p. 20). Social models have focused on social action and removal of environmental barriers. The ICF provides a broader, biological, individual, environmental, and social perspective of disability and functioning. The model depicts the complex and multiple interactions among all of these components. This model has its own unique

nomenclature which must be known to fully understand it. The relevant terms are described in the following section as they are used in the present study.

1.5 Definition of Terms

1.5.1 Impairment

In the present study the focus was on impairment of vision. Vision impairment refers to abnormalities or insufficiencies of the eye and its structure and is usually measured in terms of acuity or field of view. Average acuity is described as 6/6 (or 20/20, the imperial measure using feet instead of meters) meaning one can see at the distance of six meters what the average eye can see at six meters. An acuity measure of 6/24means that what a person can see at 6 meters is what the average person could see at 24 meters (La Grow, 1992). An average field of vision is 180 degrees. Participants in this study were identified as having impaired vision if they were eligible for registration with the RNZFB. Registration criteria are visual acuity not exceeding 6/24 in the better eye with corrective lenses, or field of vision generally not greater than 20 degrees in the widest diameter (RNZFB, 2004). Participants in this study who were identified as "sighted" may have experienced some impairment of vision, but not to the degree that they were eligible for services from the RNZFB. Although the terms vision impaired and sighted are technically imprecise, they have been used throughout the study as defined here.

1.5.2 Activity and participation

Activity and participation are classified by the ICF in terms of capacity (what one can do in a standard environment), as well as performance (what one actually does in their usual environment) (WHO, 2001, p. 2). This distinction was important in this research, as the goal was to establish reported performance norms and ranges of activity and

independence for the older population in general, and for the subgroup of older people with impaired vision in particular, in order to make comparisons between the two groups. Subsequently, the interest for this study was in reported normative performance, or what people report they actually do, as opposed to reported capacity; or what people report they *can* do.

In this study, activity and participation were measured by reported frequency of involvement in daily activities, and independence level with which one performs typical activities of daily living. Activities and participation investigated in this study included general tasks in self-care, domestic activities, communication, recreation, community activities, mobility and work. All of these daily activities take place within an individual's unique environment.

1.5.3 Contextual factors

Contextual factors within the ICF model include environmental factors and personal factors. Environmental factors include an individual's social environment, such as practical and social supports, and other relationships including family, friends, and neighbours. Environmental factors also include social structures such as services, community support systems, church, transport and societal attitudes (WHO, 2001, p. 17). In the present study, environmental factors under investigation included living arrangement, size of community, and social, practical and agency supports. Personal factors included gender, age, vision and other impairments, income and education.

1.5.4 Subjective dimensions of functioning

Although not part of the ICF classification, subjective dimensions of daily functioning were measured in this study. Included were one's rating of life satisfaction, social comparison (perceived level of activity and independence in comparison to one's peers), satisfaction with frequency of activity and independence in the performance of daily activities, and satisfaction with social support. These aspects were explored in order to understand not only the reported functional differences between those with impaired vision and those with sight, but to pinpoint which of these aspects of activity and independence mattered most to people with impaired vision, and to their sighted peers, in terms of satisfaction.

1.6 Development of the ICF Concepts and their Use in this Study

The ICF has been used as a conceptual model in research involving hearing impairment (Stephens, Vetter & Lewis, 2003); lower back pain (Waddell, 2002); hand and wrist movement (Barbier, Penta & Thonnard, 2003); communication disorders (Brush, Threats & Calkins, 2003); mental health impairments (Kennedy, 2003); rheumatology (Stucki & Sigl 2003); osteoarthritis (Weigl et al., 2003); stroke (Fairfax, 2002); neuro-rehabilitation (Rentsch et al., 2003); brain injury (Bilbao et al., 2003), and deaf blindness (Moller, 2003). To date, ICF literature is primarily a development of the concepts, advantages and disadvantages of the model, and little has been done in terms of model testing. As a classification system, the ICF provides a basis for adapted models for examining various populations, including those who are ageing and those with specific impairments such as vision impairments.

This study will examine the self-reported functional effects of vision impairment on older adults by comparing groups with impaired vision and those with sight using an adapted ICF model. By determining if the groups differ, and how much they differ, and specifically where they differ, we may better understand the impact of vision impairment on older people. The following is a more in-depth examination of the elements of the ICF model used to examine this impact.

1.6.1 Body structures, functions and impairment

One definition of ageing is of change over time (Bowen & Atwood, 2004). "The basic process of ageing is that in every tissue, cells are dying and not being replaced. This means a general shrinking of substance and function" (Gluckman & Tagg, 1995, p. 26). Ageing has also been defined as including processes of biology and psychology within a social context influenced by expectations and beliefs within one's culture and community (Matcha, 1997). As we age, we can expect changes to our appearance and our function. Our body systems change: cardiovascular, respiratory, digestive, excretory, central nervous, immune, reproductive, skeletal, autonomic, nervous and sensory systems all alter (Whitbourne, 1996). These changes are expected and common.

Other problems are more appropriately classified as disease rather than as normal age-related change. These include arthritis, cardiovascular disease, diabetes and significant vision impairment. As prevalent as some of these problems are, they are not inherent in the normal ageing process (Whitbourne, 1996). Significant vision impairment, although often accepted as a "normal" part of ageing, is not normal, but part of a disease process and creates a unique set of challenges and disruptions to daily life (Brennan &

Silverstone, 2000). Significant vision impairment meets the definition of impairment as used in the ICF model. In this study, although some impairment of vision is expected in both groups, those classified as having impaired vision meet the registration criteria for the RNZFB.

1.6.2 Activity, independence and participation

The ICF classification system combines activities and participation in a single list that includes general tasks and demands; communication; mobility; self care; domestic life; interpersonal interactions and relationships, and community, social and civic life. There is much ambiguity between activity and participation within the WHO models and other models arising from the WHO classification systems (Haley & Kooyoomjian, 2003). One definition of participation is proposed by Perenboom and Chorus (2003) as "fulfilment of personal goals and social roles by being in control of one's life, even if someone else performs tasks for you" (p.578). In light of the widespread ambiguity between activity and participation, these two components were defined more specifically for this study. Frequency of participation in activities such as voluntary work, church activity, shopping, outings, etc. can be equated with participation, as defined in the ICF. The level of independence with which one performs such activities can be equated with activity limitation, as defined in the ICF. Activity and independence are often discussed simultaneously in this study and together are often referred to as functioning.

Significant vision impairment is presumed to result in a loss of function, which, in turn, can affect virtually every activity of daily living. Thomas Carroll (1961), in his classic book, *Blindness: What it is, what it does, and how to live with it,* identified 20 losses associated with the onset of a significant vision impairment. The loss of skills in

techniques of daily living is named as one of these 20 losses. "The loss of techniques of daily living is a major loss – because of its multiplication of a thousand little inconveniences and nuisances" (Carroll, p. 43). The loss of skills in daily living forces dependence, and it is this dependence, and loss of adult roles, and the embarrassment this creates, that results in the pain of being different (Carroll, 1961). (Note that Carroll is using the term "blindness" to include all with significant vision impairment, including those who have some useful vision.) Carroll explains that the losses forced on a person experiencing vision impairment are many. Each loss is severe enough but together they make up the "multiple handicap which is blindness" (p.13).

According to Crews and Frey (1993), the compounding effects of ageing and vision impairment have profound implications upon an older person's life. Vision impairment and other effects of ageing can impair an older person's ability to perform tasks and establish relationships that are natural to most. Vision impairment can compromise the traditional roles that provide an older person with a sense of identity and self-esteem. It is logical to presume that these losses can affect one's satisfaction with life.

After one has experienced the onset of significant vision impairment, new or adapted skills are often required to meet daily needs. Tasks such as preparing and eating food, accessing mail and other print material, letter and list writing, medication management and housework all require a new approach. Often an older, newly vision impaired person will need to reorganise his or her household and life patterns so that daily tasks can continue to be accomplished. Necessary and favourite activities may continue, yet require an older person to access and learn to use new technology, support, adaptive equipment and adapted techniques (Orr, 1992).

Interventions by rehabilitation teachers, mobility instructors and low vision optometrists can be of great help, as can time to adapt and compensate for lost vision. With time and assistance, according to Carroll, this life with vision impairment can be good, yet different (Carroll, 1961). Activity limitations may certainly arise as a result of impaired vision, yet it is possible that adaptation, compensation and new skills may allow an older person to be as active and independent as their sighted peers, and perhaps to achieve similar levels of life satisfaction. Much of this ability to function is dependent upon the environment in which one lives and the personal attributes of an individual.

1.6.3 Contextual factors

Each individual functions in the context of personal attributes and one's environment and community. Functioning is often determined by how well the environment is matched to the needs and the abilities of the individual. The ICF classification system has provided a framework for researchers to investigate the relationships between personal and environmental factors, and disability. Environmental domains listed in the ICF include products and technology, natural environment and built changes to environment, support and relationships, attitudes, and services, systems and policies. The ICF's development of the concept of the environment's impact on disability is a dramatic shift. No longer is disability thought to be a static feature of individuals, but rather an outcome of the interaction between individuals and environments (Schneidert, Hurst, Miller & Ustun, 2003). Assessing environmental factors has not been a focus of the present research, which primarily investigates and compares normative levels of activity, independence, and life satisfaction between two groups differentiated by impairment, however, social support networks, practical support, living situation, size of community in which one lives, and agency support will be measured to gain an

understanding of the context in which older people in this particular community live and of how these factors may be related to activity, independence and life satisfaction.

Personal factors such as age, gender, education and income are identified but not currently classified by the ICF and will be measured to some extent in this research, mostly for the purpose of comparison and control. Age, as a personal variable under study, is a focus of the present study and its relationship with activity, independence and life satisfaction will be explored.

1.6.4 Subjective dimensions of functioning

Other factors, not included in the ICF classification model, have been measured in the present study. Life satisfaction, satisfaction with independence, activity, and social supports, as well as social comparisons of functioning were measured in order to gain an understanding of what matters most to people in terms of satisfaction with their daily functioning.

Life satisfaction has been determined to be the most appropriate aspect of quality of life to investigate in the present study as it is a cognitive rather than an affective measure and is likely to indicate less transient states (Andrews & Withey, 1976). Andrews and Withey found that affective measures related to transitory mood and emotion. They found that life satisfaction measures were more highly correlated with health, relationships, activity, living standards and characteristics of one's community and environment, which are the focus of this present study. "Life satisfaction generally refers to a personal assessment of one's condition, compared to a reference standard, or to one's aspirations" (Garcia & McCarthy, 1995, p. 22). The present study examines

norms, ranges and normative referenced data, and utilises theories of social comparison, therefore, life satisfaction measures are most appropriate to this study (Good, 2001a).

Life satisfaction is, in part, determined by comparisons made with standards, such as how we perceive others around us, or how we remember ourselves to have been in the past. The present study aims to determine if impairment is associated with differences in functioning, if these differences are more perceived than actual, and if activity and independence, or perceptions of activity and independence in comparison to one's peers, are related to life satisfaction.

In summary, the ICF model and its adaptation for use in this study allows for an investigation into the relationships among impairment, functioning, subjective dimensions of functioning and contextual variables.

1.7 Measuring Components of Impairment, Activity, Independence and Life Satisfaction

Traditional practice in assessing and defining vision impairment involves examining the degree of variance from the norm in terms of clinical measures of acuity and field. More recently, more holistic assessment of visual function has been the focus of rehabilitation practitioners. Ponchillia and Ponchillia (1996) explain the importance of taking into account many other factors which can affect function, other than diminished acuity and fields of vision. The ability to adapt, accommodate, fixate, track and scan, motor co-ordination, and depth and space perception can all influence visual function and its impact on functional independence and activity. Yet these clinical measures do not necessarily predict daily function. Therefore, measurements of daily function, in terms of activity and independence, are also important.

Daily function is often assessed in terms of problem identification and determinations of whether an individual can or can not perform an activity, rather than in identifying one's function along a continuum or within a range of normative functioning, mostly because normative ranges of daily functioning have not been documented for many populations. Although, with experience, we develop ideas of norms and ranges of normative functioning for groups such as children and working age adults, seldom do we have the experience to inform our understanding of normative functioning for those aged 65+ with or without significant vision impairment.

In order to measure the effect of vision impairment on older people, normative ranges of functioning within the older population in general must be determined and comparisons made between the population of older people with impaired vision and their sighted peers. Until this information is available, daily functioning may be assessed outside of the context of age. With lack of established norms, little understanding exists of what could realistically be achieved or expected by someone in this age group, in terms of rehabilitation.

Clinical measurements and criteria-based checklists of function are central to assessing needs for rehabilitation interventions. Activities of daily living (ADL) are often divided into categories of basic activities of daily living (BADL) and instrumental activities of daily living (IADL). BADL checklists often comprise eating, transferring in and out of bed, getting to the toilet, dressing and bathing. IADL measures assess more complex functions that become compromised at an earlier, less serious stage than BADL impairments. IADL, such as the ability to use the phone, or the ability to organise a shopping list combine cognitive aspects with physical aspects of functioning. IADL

limitations are much more common and more appropriate to assess when working with people living in their own homes who wish to retain independence. The most significant rehabilitation outcomes are usually observed in the IADL rather than BADL domains in the vision rehabilitation field (Rogers, Menchetti & Lai, 2000).

Assessment processes for ADL skills are crucial to the professional's understanding of the consumer's view of the skills needed for optimum independent functioning (Orr, 1998). The most crucial uses of assessments involve decisions about individuals: screening, placement, programme planning and evaluation of progress. Inappropriate assessment results in wasted time and money, inappropriate classification and labelling, and inappropriate programmes (Salvia & Ysseldyke, 1978). Assessments vary according to agency structure, staffing and the setting available for teaching. The results of a study regarding professional utilisation of ADL assessment instruments indicated that the majority of practitioners who assess ADL skills use assessment tools that are generated by their agency rather than ones validated by research (Rucker, Wehman & Kregel, 1996). This highlights a need for research and standardisation of assessment measures targeted to this population, to enhance rehabilitation practice and to reduce the time and energy spent in replication of effort in terms of developing assessment tools. Ultimately, good assessment may assist in improving life satisfaction for older people with impaired vision.

Activity and independence can be measured through self-reporting, as can life satisfaction (Kempen, Steverink, Ormel & Deeg, 1996; Klein, Klein, Lee & Cruickshanks, 1999). It is important to explore not only levels of activity and

independence, but to also determine if deficits in IADL skills result in diminished participation, satisfaction with activity, independence and life satisfaction.

Daily functioning can be assessed in terms of criteria referencing, in which one's skills are assessed against a predetermined list of performance criteria. This can be considered an absolute comparison of whether someone can perform an activity. Functioning can also be assessed in terms of normative referencing, in which one is assessed in relation to others, a relative comparison. Norm referencing is not concerned with whether one can perform a task, but how one performs in comparison to peers. Norm referencing has not been incorporated to any great extent into research or practice relating to older people with impaired vision, and their daily activity, independence and life satisfaction. This will be undertaken in this study.

Older persons with impaired vision may not function as differently from their peers as often supposed by both themselves and rehabilitation practitioners, so it is important to determine how their sighted peers function to determine if a difference that matters does exist. Normative ranges can be identified in the context of what is considered normal for age, gender and culture. Identifying such normative ranges could enable more effective rehabilitation practices. The ICF model, as used in this study, assesses activity, independence and life satisfaction in the context of cultural, gender and age-related norms.

1.8 Research Problem and Research Questions

Vision impairment is presumed to profoundly affect older people, yet it is not clear how their daily function specifically differs from that of the general older population in terms

of activity, independence and life satisfaction. It is not known which daily activities pose unique or more extensive difficulties for older adults with impaired vision in relation to their sighted peers. Nor is it known which activity limitations are most dissatisfying for this population. This study aims to address these areas of uncertainty.

Further, this study may assist in eliminating myths and prevailing thoughts about significant vision impairment, by identifying the specific areas of activity, independence and satisfaction associated with impaired vision. In addition, this study may identify links among impairment, activity, independence, and satisfaction in daily living and may determine which factors most distinguish older people with impaired vision from their sighted peers.

Factoring the effects of ageing on activity and independence levels has not been widely practiced, although with experience, rehabilitation practitioners will do this (Welsh, 1980). Guidelines and established norms and ranges of levels of activity and independence among older people could facilitate this process.

Despite the widespread practice of individualisation of rehabilitation programmes, rehabilitation practice has often involved the assumption that teaching similar skills of adaptive daily living will alleviate functional deficits for all with impaired vision (Stuen, 1999). The underlying assumptions are that in teaching specific skills to all with impaired vision, regardless of age, differences in function can be alleviated and deviation from norms of function reduced. It has been widely assumed within the field of rehabilitation teaching that there are significant differences in levels of functioning (activity and independence) between those who are older with impaired vision and their

sighted peers. These assumptions have been tested (Branch, Horowitz & Carr, 1989; Crews & Campbell, 2001; D'Argent-Molina, Hays & Breart, 1996; Davis, Lovie-Kitchin & Thompson, 1995; Heyl & Wahl, 2001; Wahl, Schilling, Oswald & Heyl, 1999), but seldom has an examination of age cohorts as a control been included in such studies. The three typical age cohorts, often called the young-old (65-74), middle-old (75-84), and old-old (85+), are differentiated in this study, to control for age and to create a picture of what life may be like for specific cohorts in one regional community in New Zealand. Each community is uniquely affected by socio-political nuances for each cohort, as well as possible specific and unique attributes of people in those age categories (Crews & Campbell; Koopman-Boyden 1993; Orr, 1998; Statistics New Zealand, 2004).

There is evidence that older people with impaired vision do not differ from their peers in terms of BADL skills such as toileting, bathing, dressing and eating (Branch et al., 1989). Difficulties posed by vision are more often found within the narrower band of IADL skills (Reuben, Mui, Damesyn, Moore & Greendale, 1999; West, et al., 1997). These are the areas traditionally targeted within rehabilitation: personal management, communication, food preparation, home management and leisure activities (Ponchillia & Ponchillia, 1996). When and if specific areas within independent functioning are determined to be different for the population of those who are older with impaired vision in comparison to their sighted peers, the following question may then be addressed: Are these functional areas not only different but problematic for older people with impaired vision? This information may be useful in designing programmes and setting goals for rehabilitation for older individuals with impaired vision.

The specific research questions posed are: 1) Do older people with impaired vision who live in private households in the Manawatu region of New Zealand function differently from their age-related sighted peers in terms of activity and independence? 2) If there are differences in activity and independence between those with impaired vision and their age-related sighted peers, in which particular domains of daily living are these differences? 3) Are there differences in satisfaction with or in social comparisons of activity and independence between those with impaired vision and their age-related sighted peers? 4) Is there a difference in satisfaction with life between the groups with impaired vision and their age-related sighted peers? 5) To what extent do activity and independence, and other variables under study (i.e. impairment, subjective dimensions of functioning, contextual factors), contribute to life satisfaction for this group of research participants?

1.9 Significance of the Study

Rehabilitation is "a process which seeks to limit the disability (activity limitation) and eliminate the handicap (participation restrictions) resulting from (a) an impairment, or (b) an interaction between the impairment and the environment" (La Grow, 1992, p. 29). T. J. Moore (1995) states that, traditionally, rehabilitation has had a "restorative focus, enabling a person to regain or learn skills and access resources to reassume their former social role" (p. 7). T.J. Moore goes on to describe rehabilitation services as "active, time-limited intervention with a specific focus on restoration or change in a person's circumstances" (1995, p. 7). Therefore, one complexity of establishing goals for rehabilitation for those who are older is that of determining what one's roles are in the midst of retirement, loss of spouse, changes in involvement in community groups, and other changes associated with ageing. How does one "act one's age" at 85?

(Cavanaugh, 1997). Information about reported levels of activity and independence of older people generally, and specifically of the subgroup of those with impaired vision, can help us to pinpoint differences in performance of activities of daily living, which can better inform expectations and the goal-setting process for rehabilitation. Service providers can assist those who are experiencing new vision loss to set appropriate, realistic goals for independence and activity in light of and in reference to norms and ranges of peer performance. Knowledge of specific domains of ADL that create the most difference between the two groups can assist in the development of rehabilitation programmes which target the areas of difference and areas of most difficulty and importance.

Current practices in rehabilitation service delivery for older people with impaired vision are usually to focus on improving skills in daily living. Dodds, Bailey, Pearson and Yates (1991) state that "depression and anxiety so often observed in newly visually impaired people are the direct consequences of perceiving that they are no longer able to carry out even simple daily tasks without considerable difficulty" (p. 307). In order to alleviate these difficulties, programmes of rehabilitation and skill acquisition can be undertaken. Interventions by rehabilitation specialists can include instruction in orientation and mobility, low vision, communication, recreation, vocational activity and adjustment counselling. The professional discipline devoted to teaching adaptive techniques for activities of daily living is rehabilitation teaching (RT), and the professionals who provide this service are known as certified vision rehabilitation therapists (CVRT). Various terms are utilised by the RNZFB for its professional service providers including adaptive daily living instructors and communications

instructors.[1] The present research arose out of a need identified by the author, as a practicing rehabilitation teacher, to better tailor individual ADL programmes to the increasing number of older people requesting such services from the RNZFB and similar agencies throughout the world (Good, 2001a). A rehabilitation teacher's role is to "instruct persons with visual impairments to utilize adaptive skills to help them to cope with the demands of everyday life, primarily in the areas of communication, personal management, home management, leisure time, movement in familiar environments, and low vision" (Ponchillia & Ponchillia, 1996, p. 376). Other job roles include assessing and adapting environments and working to overcome barriers experienced by people with disabilities through public information and education.

Generally, agencies and practitioners, such as rehabilitation teachers, use agency-generated assessment forms and individual written rehabilitation plans (IWRP) forms to establish goals for rehabilitation across the range of ages. Vision rehabilitation programmes were originally designed for the war-wounded young men of the 1940s (Ponchillia & Ponchillia, 1996). This may still be reflected within the content of assessment and teaching tools and plans of vision rehabilitation agencies. Assessment tools and forms may need to be updated to accommodate the needs of our increasing population of older people with impaired vision. Normative levels of functioning for this age group, with and without impaired vision, may inform the development of such tools.

1 The professional title of Rehabilitation Teacher has recently been changed by the Association for the Rehabilitation of the Blind and Visually Impaired (AER) and the Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP), the certifying body for vision professionals, as Certified Vision Rehabilitation Therapist (CVRT) as of 2004. Various terms, including rehabilitation teacher, are considered acceptable in New Zealand for these professionals.

Professionals, often young, fit people with little day-to-day contact with older people other than their clients, may have little experience or understanding of the limits, capabilities, and levels of independence typical of older people. Furthermore, no clear guidelines, standards or norms currently exist to inform this process for the client or the professional. This omission is especially worrisome because older people account for nearly two-thirds of all newly visually impaired people in New Zealand and other developed countries, and are expected to account for a greater percentage in the future (Good & La Grow, 2000).

Norms and ranges of activity and independence in daily living in older populations are not routinely observed nor documented. Further difficulties in the practice of rehabilitation for older people are that "young people avoid thinking about ageing – it is unpleasant, unfamiliar, and fraught with negative images and connotations. Until we reach retirement, we seldom really give a thought to what ageing means. We think of growing old, and the unpleasant connotations means we push the idea aside" (Gluckman & Tagg, 1995 p. 14). Even those who are educated and experienced in working with older people may inadvertently express fears of ageing in the manner in which they work with older clients (Gluckman & Tagg).

Ansello (1988) warns that educators and service providers in gerontology and disability are relatively unprepared to meet the needs raised by the ageing disabled population. Reasons for this could be the recent increase in older people with disabilities, funding priorities that focus on children and people of working age, a focus on successful or usual ageing within the gerontology field, limited interagency cooperation and "perhaps

a reluctance to deal with such 'unpleasant' matters as impairments, disabilities and handicaps" (Ansello, p. 366).

Just as Orr (1991) and Rogers and Long (1991) have pointed out the need for education on vision loss in gerontology programmes, education on gerontology issues must be infused into vision programmes with an aim to improve rehabilitation services. There is evidence of the need for gerontology education within the personnel preparation of vision professionals in New Zealand documented in an RNZFB report by J. Moore (2003): "I suggest that unintentional discriminatory behaviour as well as poor preparation for rehabilitation work might lead to elder clients receiving a lower standard of rehabilitation than is offered to people of other age groups" (J. Moore, 2003, p. 1).

Ainlay (1988) has also noted prejudices within service systems for older adults with impaired vision, which may be a result of myths and misunderstanding of ageing in general, and of ageing and vision impairment specifically:

> Professionals in the business of 'rehabilitating' those who lose sight sometimes tend to confirm rather than contradict the assessment of incompetence already supplied by family and friends (cf. Scott, 1969). A number of persons complained that they were treated like 'little children'. Others complained that service providers allowed them very little input in determining what services would be made available to them. These attitudes of service providers probably have several bases. They may still possess some typical misconceptions of blindness. They certainly share societal attitudes regarding the general dependency of older persons. In addition, older persons are not a priority for most agencies serving persons who are blind (Scott, 1969), and hence experience may not have contradicted stereotypical presuppositions about inabilities of the elderly (Ainlay, 1988, p. 90).

Older people are often underserved within vision programmes (Stuen, 1999). Orr (1998) explains that only a small percentage of older people with impaired vision seeks and receives rehabilitation services. She reported that five to seven years often pass between the onset of significant vision impairment and when older people request specialised vision services. Only a fraction of eligible persons receive specialised rehabilitation services that could enable them to maintain active and independent lives. A significant problem is that "only a limited number of professionals in the vision rehabilitation field have had expertise (or even an interest) in aging" (Orr & Rogers, 2001, p. 671).

> Often older individuals with visual impairments are generally unaware of the services that are available or of their potential to live more independently. They need to learn about these possibilities in addition to receiving help to overcome any stereotypic views they may hold on either blindness or aging. Some older individuals may reject assistance because of fear, loss of self-esteem, or feelings of loneliness, uselessness, anger, depression, or denial (Rogers, Schmitt & Scholl, 1997, p. 152-153).

With evidence of levels of activity, independence, and life satisfaction that we can expect of others and ourselves as we age, we can better understand ageing, and the impact of vision impairment. A clearer understanding of appropriate goals for rehabilitation and informed expectations may reduce the fear of ageing and vision loss that may influence life satisfaction and service delivery in the rehabilitation process.

People experiencing the onset of vision impairment may find comfort in knowing that peers experience similar difficulties. This can help revise expectations people may have of themselves. As "June" states in Gluckman and Tagg (1995, p. 22), "I smile to myself when I realise my contemporaries are having the same instant recall hesitations as I do!

... it is often encouraging to find that others – no matter what their I.Q. level - also have the same hesitations". Buunk (1995), and Buunk and Gibbons (1997) cite understanding peer performance as important in relation to physical ageing. Those with impaired vision also need more opportunity for such an understanding of how they perform in relation to their peers. For example, Good and La Grow (2000) found that individuals changed expectations of self and of their rehabilitation programmes when they received information about their peers' activity and independence levels. The significance of the present study is that its findings will help us to understand: 1) what to expect of ourselves and others as we age; 2) how daily life differs for those with impaired vision; and 3) what areas we may want to emphasise in rehabilitation to improve life satisfaction.

Strauss (1966) explored the topic of social comparisons made by vision impaired people, and concluded that older, vision impaired people tend not to make social comparisons because they are too isolated to be able to make such comparisons. Social comparisons may actually improve a sense of well-being, as has been determined by Festinger (1954). Strauss's research was based on social comparison theory developed by Festinger, which basically postulated that people compare themselves to others in many ways, including daily functioning, in order to judge their own life situation. More recently, social comparison has been investigated in older populations (Frieswijk, Buunk, Steverink & Slaets, 2004a, 2004b; Heidrich & Ryff, 1993; Suls, Marco & Tobin, 1991) and among disabled persons (Ybema & Buunk, 1995). General conclusions are that when older people or disabled people compare themselves to age-related peers favourably, life satisfaction is enhanced. If unfavourable comparisons are made, life satisfaction is diminished. Recommendations have been made that

practitioners could assist older people in choosing targets for social comparison that may enhance life satisfaction (Frieswijk et al., 2004b). This educational component of rehabilitation could become an important component of vision rehabilitation social services.

Because of our increasing older population and resulting increase in age-related impairments and disabilities, including vision impairment, social services for older adults may become the fastest growing segment of the economy (Cavannaugh, 1997). Those providing these services need to understand ageing and differences in the ageing process for those with vision impairments, so they can provide appropriate help. The present study may help us to understand norms of independence and activity for an older population, and help to target problem areas for subgroups.

"Sociocultural time" (Cavannaugh, 1997, p.3) is a concept in which society sets expectations regarding behaviour. In examining the three age cohorts of older people in the Manawatu region of New Zealand, we may gain an understanding of how the expectations, perceptions and realities of functioning differ for groups of older people with and without vision impairments. There are many myths about ageing and about vision impairment, blindness and disability. The roles we play are determined by social expectations. Evidence could validate or nullify social roles and expectations we have come to expect from older people in general, and from the subgroup of older people with impaired vision.

With appropriate IADL measures, norms and ranges of independent daily functioning within the older population can be determined, and differences between groups with and

without impaired vision can be identified. Once differences are identified, many questions will arise regarding degrees of difference of life satisfaction between the two groups, correlation of life satisfaction with degree of active and independent functioning, and correlation of independent and active functioning with satisfaction in specific domains of daily living. In other words, links among impairment, activity, independence, contextual factors and subjective dimensions of functioning can be further explored.

1.10 Main Claim

Vision impairment, like other factors associated with ageing, can result in diminished independence, participation in valued activity, social opportunities and life satisfaction. What may be unique to those that experience vision impairment at an older age are mistaken ideas about what blindness or vision impairment must be like, and/or misinformed ideas of what to expect from oneself and/or rehabilitation. Individuals may have no ideas about how to benchmark their levels of activity or independence in comparison to peers in order to formulate realistic expectations of self and of rehabilitation outcomes.

This study seeks to clearly identify differences in reported everyday functioning between older people with sight and older people with impaired vision. Factors such as gender, age, impairment, daily functioning, social support and subjective dimensions of functioning will also be examined to determine the major contributing factors to life satisfaction for older people in this study. With appropriate measures, differences in daily functioning between these populations could be determined to help rehabilitation service providers as well as disabled older people understand what is normative in terms

activity and independence for this population. This may assist with appropriate goal setting for individualised independent living skills rehabilitation programmes and make programmes more appropriate for older clients. An appropriate rehabilitation process is likely to improve life satisfaction.

The following chapter, Chapter Two, provides an in-depth review of literature related to ageing, activity, independence, life satisfaction and vision impairment. This review results in a revised model of the ICF for investigating the research questions and hypotheses of this study.

Chapter Two: Reviewing the Literature and Revising the ICF Model

2.1 Introduction

This chapter offers a comprehensive review of recent and seminal studies that provide the background and justification for the present study, which explores activity, independence and life satisfaction of older people living in the Manawatu region of New Zealand and the differences that may be attributed to the presence of vision impairment. The gaps and trends identified in this literature review have shaped the research questions and guided the design most appropriate for this study.

This review examines studies that have compared functioning of older people with impaired vision to those with sight, provides a brief introduction to normative ageing, and reviews studies on vision impairment and its impact on older people, specifically in relation to activity, independence, and life satisfaction. Studies that consider contextual factors that may influence life satisfaction for older people with impaired vision are also reviewed. A further purpose of this chapter is to present the independent and dependent variables, in an adapted model of the ICF, suitable for exploring the research questions and testing the hypotheses posed in this study.

This chapter is divided into nine sections. Within each section, studies are reviewed in chronological order to demonstrate the development and introduction of variables under study within the fields of vision impairment and ageing. Following this introduction, the second section reviews studies that compare function of older people with impaired vision to their sighted, age-related peers. Studies that control for age are highlighted. Following this is an introduction to studies of normative ageing and its relation to

activity and independence. The next section reviews studies of vision impairment and its relation to activity and independence. Studies relating to how type, duration and severity of vision impairment may influence activity and independence are reviewed in the fifth section. The sixth section is a review of studies that consider other factors that may contribute to overall life satisfaction of older people with impaired vision. Here, research related to contextual factors, including the environment, are critiqued. The seventh section is a review of studies related to subjective dimensions of functioning for this older population highlighting life satisfaction. A revised model of functioning is then offered along with a summary of the reviewed literature. The final section defines the research questions and hypotheses.

From the numerous studies related to vision impairment in general, the scope of the studies critiqued was narrowed to those targeting the subset of older people within the population of those with impaired vision. The scope extended beyond traditional studies in vision impairment and blindness to include material from occupational therapy, and to the broader disciplines of human development, gerontology and psychology. Unpublished works, if determined to be valid and valuable, were also reviewed. Focus was on data-based studies with large numbers of participants. The interest for this study was not necessarily what older individuals can do (competence) but what they actually do (performance). The selected literature reflects this focus. The aim of the present study is to identify the *unique* (the impact of vision impairment on older people) by examining the *common* (the typical ranges of activity and independence within the older population in general).

This chapter critically reviews early and contemporary research regarding ageing, vision

impairment, activity limitation, life satisfaction, and their interaction. Early studies generally concluded that vision loss had a profound impact on activity, independence and life satisfaction. Recent studies have investigated peer norms and have contributed to the shaping of the present study.

2.2 Comparing Older People with Impaired Vision with their Sighted Peers

The twelve studies reviewed here were identified in a comprehensive search for studies that identified disability arising from vision impairment by comparing older populations with impaired vision with older sighted populations. One study is from the 1970s (Kaarlela, 1978), while the remainder are more recent. These provide valuable insight into the definition of disability as it relates to norms in age, gender and culture. This review also highlights the changing nature of research in the field of vision impairment and blindness over recent decades.

Kaarlela (1978) surveyed the characteristics, activities and needs of 80 people with impaired vision, who lived in private households, aged 65+. Comparisons were made to the general population of older people using data from a U.S. Vital and Health Statistics report. Kaarlela's findings showed that those with impaired vision had more concurrent impairments, had lower incomes, were older, were more likely to be women, and were more likely to be widowed and living alone than their sighted peers. Nevertheless, the participants with impaired vision compared themselves favourably to their sighted peers. Kaarlela suggested that this population could benefit from specialised rehabilitation services, but seldom did this group request services, or mention them as being particularly helpful. It is important to recognise that rehabilitation services for older people with impaired vision are likely to have improved since the time of

Kaarlela's study. Although the study described the activity of the 80 participants with impaired vision, comparisons of activity and independence with the sighted population was not an aim of that study. The comparison of demographic characteristics of the two populations, however, provided a useful basis for further research in the field.

In 1989, Branch et al. interviewed groups of people aged 66+ ($N = 496$); some with self-reported declining vision within the past five years ($n = 207$), and the rest with self-reported constant excellent or good vision. The aim was to identify relative disadvantages for those with recent vision loss. Few demographic differences were found between the two groups, except the group with declining vision was older. Little difference was found between the two groups in BADL (bathing, dressing, eating, transferring, grooming, and walking across a room). Differences in IADL, however, were found. Participants with declining vision were more likely than peers with constant good or excellent vision to need assistance with grocery shopping, and paying bills. Those with declining vision were less likely to climb stairs, do heavy housework and walk half a mile. The group with declining vision reported compromised physical function, unmet needs in terms of IADL such as housekeeping and food preparation, and diminished social and emotional function. When controls for age and gender were used, the group with declining vision was found to be no more likely to use formal social or health services than their sighted peers.

Branch et al. (1989) concluded that morale was significantly lower for the participants with declining vision as measured by the Philadelphia Geriatric Morale Scale. The authors proposed that subjective perceptions of vision loss compromised the well-being and functioning of older adults. They also concluded that vision impairment was

viewed as more disabling and was more feared than other health impairments. It is important to note that all those with vision impairments in this study (Branch et al.) lost vision within the five years prior to their interview. This relatively recent onset of vision impairment could have affected the results of the study, as it is likely that participants had not yet received comprehensive rehabilitation services, nor had they had the time to adapt to the recent loss of vision. Note that Orr (1998) estimated that older people are often living with impaired vision for five to seven years before seeking rehabilitation services. The authors speculated that because vision loss is so feared, poorer functioning associated with vision decline may have more debilitating impacts on emotional well-being than other age-related conditions, resulting in similar functional changes. Although the authors clearly indicated that vision impairment contributed to functional dependency and the need for daily assistance, it is not clear how vision was related to function in comparison to other impairments or in light of concurrent impairments. Further, no assessment of function within young-old, middle-old and old-old age cohorts was available from this study. An investigation into a more comprehensive list of IADL would have been useful within this research as well.

In comparison to the study by Branch et al., a later study identified a lower risk for depression and loss of morale in a population of older people with impaired vision. Ringering and Amaral (1990) found, in a comparison study of adults, some with impaired vision and others with sight, aged 60+, that differences in depression and morale, subjective health and worry between the two groups disappeared when age was used as a covariate.

Ringering and Amaral (1990) compared 40 people aged 60+ with no problems with memory or hearing, who had lost vision within two years prior to the study, to a control group of 30 people with no vision impairments, who were recruited from a local senior centre. No differences were found between the groups on measures of social support, mental health or coping strategies. The findings, that those who had lost vision within the past two years exhibited no greater emotional distress than their sighted peers, surprised the researchers. These researchers suggested that the control group members may have had health conditions and impairments that created the same levels of emotional distress as that created by vision loss. Those with impaired vision in this study did, however, report significantly greater negative change in recent years in comparison to their sighted peers. Extreme negative changes in daily activities of financial responsibilities, leisure activity, the ability to get around in the community, the ability to shop, and the amount and kind of social activity were all found within the group with impaired vision. Although this study did not identify significantly different levels of distress in people who experienced vision loss in comparison to sighted peers, it did illustrate the complexity of the phenomenon of losing vision. Participant numbers were low ($N = 70$) and so results must be interpreted carefully.

In later studies, more specific information about severity of vision impairment was considered. A basic description of clinical measures of acuity follows for ease of interpreting the reviews of studies that follow.

> The standard for normal vision is referred to as 6/6 (20/20 where feet are used instead of meters). That is, the smallest line of print on a chart that can be clearly discerned by an individual at 6 meters is the same one that persons with normal vision can see at 6 meters. The acuity measure of 6/60 means that the

> smallest line discernible at 6 meters is the same one that persons with normal vision can see at 60 meters (La Grow, 1992, p. 18).

Most of the reviewed studies refer to the imperial measure, using feet instead of meters. For ease of interpreting the reviewed studies, the imperial measure will be used throughout this review of literature.

Salive et al. (1994) compared those with severe vision impairment (20/200 or worse) to those with moderate vision impairment (20/60-20/200) to those with minor vision impairment (20/40 - 20/60) to those with no impairment of vision (20/40 or better). For some analyses the last two categories were combined. In this study 5,143 older people (aged 70+) participated and 1,696 of them had impaired vision. Results indicated that more severe functional vision impairment, as measured by distance visual acuity, was related to poorer mobility, ADL skills and physical performance (balance, walking and rising from a chair). The authors found that 39% of those with severe impairment, 22% with moderate impairment and 12% of those with minor impairment had BADL limitations, in comparison to 7% of those with no impairment of vision, after controlling for age, gender, ethnicity, living situation, income, diabetes and stroke. Mobility limitations were reported by 70% of those with severe impairment, 53% of those with moderate impairment and 44% of those with minor impairment, compared to only 29% of those with no impairment of vision. Only BADL (bathing, walking, dressing, eating, transferring from bed to chair, toileting), however, were measured. The use of more comprehensive measurements of IADL skills could have provided useful information about severity of vision impairment and its association with more complex daily activities.

The influence of vision impairment on daily functioning and well-being has been investigated in the several studies reviewed that used comparison samples of older adults who reported no other health impairments. In contrast, Verbrugge and Patrick (1995) examined the impact of other chronic health impairments for comparison. In this study, the researchers analysed the association of seven chronic conditions on adults aged 18+ with activity limitation, physician visits and hospital stays. Data were taken from the 1983-1985 U.S. National Health Interview Surveys and Vital Statistics. Arthritis, vision impairment, hearing impairment, heart disease, chronic obstructive pulmonary disease (COPD), diabetes and cancers were the health impairments under study. In the age group 65+, vision impairment ranked as the condition with the greatest negative impact on activity. Vision impairment ranked second, after hypertension, as the leading physician diagnosis during office visits. Cataracts ranked 10^{th} for men and 4^{th} for women as the reason for short hospital stays.

Davis et al. (1995) introduced measures of life satisfaction and social support in a comparison study of those with impaired vision to those with no vision impairments. Participants included 30 older people with ARMD and visual acuities of 20/50 or worse, to 30 age- and gender-matched people with no ocular pathology and average vision. They found that the group with impaired vision had significantly lower scores on measures of life satisfaction and daily hassles, and that they performed fewer daily activities than the control group, after controlling for age and gender. There were, however, no significant differences in the self-reported functional capacity between the two groups. The measure used was the Self-Care Assessment Schedule, which measures frequency of daily activities.

These authors (Davis et al., 1995) also used the Social Support Scale, which measures quality of one's support network. These researchers found the perceived quality of social support was significantly lower for those with impaired vision, and "insufficient to mediate the effects of stress and hence led to the group's poorer overall satisfaction with life" (p. 22). In support of this, data has shown that vision impairment was related to depression and anxiety when there was lack of access to good quality social support (Oppegard et al., 1984).

Many of the studies reviewed so far used controls for gender and age. One of a few using multivariate analysis and control for health impairments as well, was a study of 1,210 women aged 75+ (376 had impaired vision), conducted by D'Argent-Molina et al. (1996). They found that women with visual acuities of 20/50 or less, especially those with difficulty with contrast sensitivity, were more likely to have IADL disabilities than those without vision impairment. They found that vision impairment made a unique contribution to poorer IADL functioning in comparison to peers. Although careful controls for age were utilised, unique characteristics of age cohorts were not identified within this study.

Some studies focused on sensory impairment, specifically comparing effects of vision and hearing impairments. Keller, Morton, Thomas and Potter (1999) conducted a study with 576 participants investigating the impact of sensory impairments on daily functioning for older people aged 55+. They found the effect of vision impairment on ADL scores to be independent of mental status and the existence of other health impairments. ADL scores were lower for those with vision impairments (20/70 or worse) than for those with hearing impairments. All those who had sensory

impairments had lower scores than those without sensory impairments. Regression analysis showed vision impairment to be a predictor of lower IADL and BADL activity. Controls for gender, hearing impairment, mental status and 13 health impairments were used. Other studies have also demonstrated vision impairment had a stronger negative impact on ADL functioning than hearing impairment (Burmedi, Becker, Heyl, Wahl & Himmelsback, 2002a). Reuben, Mui, Damesyn, Moore and Greendale (1999) found this to be the case in relation to IADL; Marsiske, Klumb and Baltes (1997) reported similar results in relation to BADL, social and leisure participation; and Clark, Bond and Sanchez (1999) found this in relation to physical and recreational activities. Carabellese et al. (1993), however, found that older people with hearing impairments were less independent than those with vision impairments.

In the late 1990s, environmental factors were introduced as variables to be examined, as well as daily functioning, age, gender, impairments and well-being. Wahl, Schilling, et al. (1999) published data from a five-year longitudinal study that compared functioning of people with impaired vision to that of sighted and mobility impaired groups: 126 sighted and 84 people with impaired vision, aged 50+, participated. Of those with no impairment of vision, 42 had impaired mobility and 42 did not. Vision impairment was defined as 20/70 acuity or worse. The group with impaired vision had lower ADL/IADL scores, but similar emotional adaptation scores in comparison to those who were mobility impaired. Both of these groups produced lower scores than the unimpaired group. A 23-item ADL/IADL measure was used. A regression analysis indicated that vision impairment significantly predicted lower ADL/IADL scores after controlling for age, gender, living situation, health status, and measures of subjective well-being and future orientation.

In this study by Wahl, Schilling et al. (1999), person-environmental fit was considered as a dependent variable, an independent variable, and a process variable. Results showed that an inappropriate home environment reduced daily functioning in the home for those who had impaired vision, but functioning was not influenced by home environment for those who were sighted. Those with vision impairments in this study were found to actively compensate for vision impairment in daily activities, but not in all domains of daily living. Sighted older people did not demonstrate pronounced compensatory processes in daily activities. Daily functioning was found to be a predictor variable for outdoor activities, especially when compensatory measures were taken.

A normative ageing study, conducted in New Zealand by Langlois, Norton, Campbell and Leveille (1999) identified impairments and activity limitations in 569 Auckland women living in private households, aged 65+. This allowed comparison of effects of vision impairment to effects of other impairments, particularly on ADL. Vision reported by the participants as anything other than good (adequate, minimal, or blind in both eyes) was classified by the researchers as impaired. While vision impairment was found to be an important contributor to activity limitation, multiple health conditions were found to be the most important factors contributing to activity limitations in these older women. Comparisons of function to an unimpaired group were not made.

In a later study conducted by Heyl and Wahl (2001) a non-impaired control group was utilised. This six-year longitudinal study used data from 28 older people with impaired vision and a control group of 26 older people with no severe health impairments. Over time, ADL and IADL functioning remained stable for both groups, but those with

impaired vision had a significantly lower level of functioning. In the use of outdoor resources, the group with impaired vision had significantly lower scores than the sighted group, and the vision impaired group's use of outdoor resources declined over time. Leisure activities also were less frequent and declined over time for the group with impaired vision, while the sighted group's leisure activity was more frequent and remained stable. Findings also indicated that general life satisfaction was lower for the group with impaired vision and that future orientation declined for them, although the two groups began with the same score. Sample sizes were small in this study, and the control group was not a typical group of older people, but those with no significant impairments, so results must be interpreted carefully. The ADL/IADL measure consisted of only six items. Nevertheless, the findings are clear: being older and having impaired vision, combined with ageing, over a six-year time span, resulted in more daily difficulties than for those without vision impairments or any other severe chronic impairments.

In 2001, the ICIDH was used for research in this area of vision and ageing. Crews and Campbell (2001) used the ICIDH model to present an analysis of data from the 1994 Second Supplement on Aging in those aged 70+ with and without vision impairments. More than 8,700 people aged 70+ were in their sample. Participants were classified as having impaired vision if they were blind in one eye, blind in both eyes, or had any other trouble seeing. This is a very broad definition of vision impairment. Crews and Campbell's study investigated 15 items related to activities of daily living: six BADL items and nine IADL items. Participants with impaired vision were two to three times as likely to have difficulties with independence in daily activities as their sighted peers. In measures of frequency of activity, however, differences between the groups of those

with impaired vision and sighted older people were not as large as expected. In fact, in activity participation measures, people with vision impairments were similar to those without such impairments. Those with vision impairments did report, however, a greater desire for more social activities than did their sighted peers. In this study, participants with vision impairment were much more likely to be living with other health impairments. It can not be clearly distinguished if it was vision impairment or concurrent impairments that created limitations for older people, nor is it known if the age groups were comparable, (it does not appear that young old, middle-old, and old-old cohorts were used) and so findings must be interpreted carefully.

In summary, these twelve studies, which compare ADL functioning of populations with impaired vision to functioning of their sighted peers, generally concluded that the presence of a vision impairment is associated with lower functioning. In those studies utilising multivariate analyses, evidence has been produced that vision impairment remains a unique predictor of functioning even after controlling for factors such as age, gender and other health impairments. Other studies support these findings; vision status has more of an influence on daily functioning than any of the other age-related health impairments explored. Other health conditions explored include cognitive impairments, hearing impairments, heart disease, osteoporosis, arthritis, hypertension; diabetes and stroke (Furner, Rudberg & Cassel, 1995; Rudberg, Furner, Dunn & Cassel, 1993). Carabellese et al. (1993), however, concluded that, although vision impairment was found to have a stronger effect on mood, hearing impairment had a stronger negative effect on independence. Over time, studies have moved from a comparison of demographics to a comparison of functioning. Eventually aspects of well-being, such as life satisfaction, have been introduced as a variable under study. Most recently, the

ICIDH emerged as a model to aid in the conceptual development of studies of comparison of populations with impaired vision and sighted populations. Having compared functioning levels of these two populations, a further examination of studies looking at each population is warranted, beginning with the older population in general.

2.3 Normative Ageing

2.3.1 Ageing and health conditions/impairments

Common conditions that disable older people have been identified in numerous studies. For example, Blake (1981, 1984) used data from the U.S. National Center for Health Statistics to identify the primary conditions that disable older Americans as being arthritis, hypertension, hearing impairment, heart disease, vision impairment and stroke. Similarly, the New Zealand Positive Ageing Strategy developed by the Ministry of Social Development (MSD) (2001, p. 31) lists chronic diseases that become more common in older New Zealanders as cardiovascular disease (coronary heart disease and stroke), cancers, arthritis, osteoporosis leading to fractures, dementia and conditions resulting in vision and hearing impairments. Crews and Campbell (2001), in their comparative analysis of older people with impaired vision and of sighted older people aged 70-74 and 85+, found that those with impaired vision (n = 3,653,000) were two and a half times more likely to have had a stroke, as stroke is one cause of serious vision impairment. The group with impaired vision was twice as likely to report having osteoporosis and depression, and they also reported being frequently confused, disoriented or forgetful. Other health impairments more common among those with vision impairments were hypertension, heart disease, arthritis and diabetes. These impairments are likely to have a significant effect on activity, independence and life

satisfaction. Accordingly, the next section is a review of studies specifically related to activity and independence for older people in general.

2.3.2 *Ageing and activity and independence*

In one of just a few studies looking at normative ageing and daily independence or activity, a 1985 doctoral dissertation by Guralnik examined functional activity in a sample of older Californians. Guralnik found that levels of activity remained high for people aged 65-79, after which a marked decline is observed. Predictors of higher function were found for those who were younger, male, non-black, wealthier, married, non-smokers, more physically active, of normal weight, positive, energetic, busy, involved in groups, and in the normal blood pressure range. The conclusions of this research related to determinants for successful or healthy ageing. In contrast to this, most of the other studies reviewed here relate to ranges of health and activity typical for an ageing population, which include "successful" as well as "typical" older people.

Other large studies of ageing populations examined impairments and related declines in activity and independence. Luker and Perkins (1987) reported that very few older people were restricted in their range of activities of daily living. When age cohorts were examined, in terms of the young-old (65-74) as compared to the oldest-old (85+), however, the older group was restricted in independence in greater numbers.

Standards for independence were later developed by Granger, Mann, Outenbacher, Tomita and Fielder (1994), who reported a simple percentage of people who need help with ADL as 4.1% for those aged 70-74, 7.6% for those aged 75-85 and 19.1% for those aged 85+.

This concept of standardisation of function was developed further by Bendsten, Bjurulf, Trell, Lindstrom and Larsson (1995) who used the Stanford Health Assessment Questionnaire in a Swedish population to develop standards of activity. According to the official 1985 statistics from Sweden used in this research, on average, 30-year- old healthy persons had no functional disability, 50-year-olds can expect a 5-10% decrease in function, and 70-year-olds can expect a 10-30% functional disability when compared with 30-year-olds. Studies such as this which predict percentages of disability relative to age, imply that some functional norm exists for 100% functioning, and that norms change with age. Such concepts require more robust validation for use as evidence of age-related declines in functioning.

Although the relationship between levels of activity and levels of satisfaction with life has not been extensively researched, mixed results can be found. A thesis by Kim (1997) found that in non-disabled older people, levels of daily activity such as recreation were not related to life satisfaction. Data from this study were drawn from the MacArthur Study of Successful Aging, a longitudinal normative ageing project. In contrast to Kim's results, an earlier study found a strong relationship between older people's satisfaction with life and their involvement and activity and friendship ties in those aged 50+ (Goudy & Goudeau, 1981).

As we have moved into the 21st century, the New Zealand Positive Ageing Strategy (MSD, 2001) emphasised that for all New Zealanders, regular activity brings many benefits, and that social aspects of activity can be just as important as physical exercise. Most adults in New Zealand are considered to be active, and those aged 65-74 are among the most likely to be active and involved. Although the proportion of those who

are sedentary increases with age, older people are still active, and approximately 66% of those aged 65-74 spend 2.5 hours in weekly leisure-time physical activity. For those aged 75, 50% spend 2.5 hours per week in physical activity. Walking and gardening are the most frequent activities mentioned for older New Zealanders (MSD, October 2001, p. 108).

Thus far in this review there is consistent evidence that despite increased impairment with age, most older people remain active and independent until about age 80 or 85, when rapid declines can occur. Nevertheless, literature in the field of ageing reflects conflict regarding what characterises ageing. One perspective is that the majority of older people age with some diminished functioning, but little loss of satisfaction, happiness, independence and meaningful activity. Carroll (1961), Festinger (1954) and Cummings (1961), for example, imply that older people can have actually improved satisfaction with their functioning due to lowered expectations of themselves as they age. The other perspective is that ageing is characterised by profound and significant loss (Orr, 1991). Under investigation in the next segment of this review is the implication of significant vision impairment and associated functional consequences in older people.

2.4 Activity and independence in older people who have impaired vision

Activity and independence are influenced by both age and vision impairment, and it is likely that this has a marked effect on life satisfaction. The functional effects of vision impairment on many aspects of daily life for older people may be most comprehensively accounted for in data from the National Center for Health Statistics (NCHS). These data were analysed by Havlik (1986), who clearly demonstrated that

vision impairment across all ages is strongly linked with difficulty in performing daily activities. These data were obtained from the Supplement on Aging (SOA), implemented by the U.S. census bureau. The research involved interviews with 5,982 people aged 65+, who lived in private homes, with 473 having vision impairments. The purpose of this NCHS study was to estimate the prevalence of sensory impairment and associated health conditions and limitations in ADL, hence it was descriptive, rather than comparative. Vision impairments were defined as blindness in one or both eyes, or any other trouble seeing. Selected ADL were examined and in their preliminary report, results were limited to the following: getting outside, getting in and out of bed or chair, and walking. Three age cohorts (65-74, 75-84, and 85+) were used in this study to assist in interpretation of the data. For each of the three activities, percentages of people reporting difficulty increased with each age category. Having a vision impairment was associated with greater frequency of activity limitation for the three selected activities. Also increasing in association with vision impairment was frequency of other health conditions. The preliminary finding from this study set the stage for further investigation into the three age groups, and into the links of vision impairment to other impairments and to activity limitations.

Burack-Weiss (1990) found in her doctoral study that older men and women with impaired vision gave up activities of daily living such as shopping, taking a bus and doing laundry. We do know, however, that older people in general become less active and independent with age (Bendsten et al., 1995; Granger, Mann, Outenbacher, Tamita & Fielder, 1994; Guralnik, 1985; Luker & Perkins, 1987; Statistics New Zealand, 2004). What is not clear in the study by Burack-Weiss is if relinquishing of activities was specifically vision related, or if older people without vision impairment were also

relinquishing these activities. The 86 participants ranged in age from 60-99 years. Participants were recruited from a New York City low vision clinic and their degree of vision ranged from near-normal to profound impairment. This study looked at five domains of daily living: BADL, social and recreational activity, understanding of vision loss, independence and maintenance of self-esteem. Burack-Weiss considered participants' age of and time since onset of significant vision impairment. A significant finding was that dependence in ADL and relinquishing social and recreational activity were related to vision impairment more frequently than to the other health impairments under study. Loss of vision was viewed as more distressing than the development of other health impairments, or losses, including bereavements. Age, however, did not seem to influence independence in ADL. In fact, the oldest participants in this study had better independence scores than did younger ones. Burack-Weiss concluded that vision impairment has more subjective importance than is evident in objective measures of ADL performance, except for the domains of social and recreational activity.

Environmental barriers to participation began to be investigated in studies related to vision impairment in older people in the 1990s. Rodda & Zambrzycki (1994) presented data of activity/participation levels of older, sensory impaired Canadians in leisure activities outside of the home, using Canadian Health and Activity Limitations Survey Data from 1990. These data intended to focus on those with sensory impairments, including vision, and authors noted that specific data on the targeted population were not available. Consequently, data related to participation by those aged 65+ with unspecified impairments, including vision, were examined. Participation levels for older, impaired Canadians, for example, demonstrated that 4% took courses, 16 % visited national parks, 10% went to museums, 21% attended sports events, 52%

attended religious activities, 84% shopped and 89% visited friends. Rodda and Zambrzycki identified environmental barriers to participation to those with vision impairments. These generally pertained to poverty and ageism, and more specifically, to lack of technical aids and appliances, poor housing adaptations, lack of community services, lack of access to transportation, and lack of access to leisure and recreation activities and resources (p.9).

Specific factors relating to age of and time since onset of vision impairment in relation to daily activity were included in a study conducted by Tobin in 1995. This study included a sample of 103 people with impaired vision with a mean age of 76. All participants were registered within the U.K. as "blind", meaning they had a visual acuity of not more 10/200 after correction. Tobin produced an index of daily tasks and a difficulty rating for each task (1-5) for groups of older adults with impaired vision. He also compared those with congenital vision impairments to those who had acquired vision impairments. Results generally showed that tasks requiring precision or involving danger received higher difficulty ratings. The five most difficult tasks, as rated by the older subjects were as follows: sewing and knitting, gardening, home maintenance, housework and cooking. Those who lost vision later in life (after age 20) showed relatively higher difficulty ratings for 16 of the 21 tasks. Tobin surmises that this is because people who have lived for a long time with their vision impairment are more confident and practised in adaptive daily living skills. One of the hypotheses tested in Tobin's study was that older people with impaired vision perceived their ability to perform everyday tasks as decreasing with age. The author concluded that increasing age, not blindness, was associated with an increase in difficulty in performing these daily activities. There is no indication, however, whether older people

in general, and without vision impairments, would find the same tasks similarly and increasingly difficult.

In order to explore other factors that influence specific activities, levels of independence and degree of related satisfaction, Long, Crews and Mancil (2000) developed ideas investigated earlier by Burack-Weiss (1990) and Tobin (1995). Long et al. designed a functional independence outcome measure specifically for populations with impaired vision. They included 146 U.S. veterans in their initial study. The Functional Independence Measure for Blind Adults (FIMBA) measured frequency, ease and satisfaction with performance of 32 personal and social activities in veterans (mostly older men). Self-reported data were collected before and after participants took part in residential rehabilitation programmes. Performance inventories were also developed for the areas of low vision, orientation and mobility, manual skills and living skills. Measures of psychosocial functioning were also utilised. Results provide great insight into veterans' expectations and perceived gains from rehabilitation services.

Details of the study also provide good insight into specific daily and social activities that remain difficult for vision impaired people, even after rehabilitation (i.e. "feeling a part of your family", "providing emotional support for others", and "maintaining a positive outlook"). Daily and social activities with the lowest percentage of increase in frequency of performance were "feeling a part of your family", "performing grooming activities", and "inserting a key in a door". The daily and social activities that appear to remain least satisfying even after rehabilitation are "feeling a part of your family", "providing emotional support", and "feeling comfortable expressing feelings and emotions" (Long et al., 2000, p. 300). The frequency with which ten ADL were

performed did not change for participants. These included washing dishes, eating out at restaurants, putting groceries away, inserting plugs into electrical outlets, inserting keys in door locks, changing batteries, travelling outside home and yard, performing grooming tasks, shopping, and going up and down kerbs (p. 301). Although this study was mostly related to outcomes of rehabilitation services, the nature of the identified tasks that remain difficult even after rehabilitation is particularly relevant to the present study. The study, by Long et al., did not intend to focus on older participants, although most were "older" men. It appears that controls for age were not utilised in this study, nor were any control groups, with no vision impairment examined.

A very recent study investigated the impact of concurrent impairments on daily activity for older people with vision impairments. Travis, Boerner, Reinhardt and Horowitz (2004) examined functional disability in older adults with vision impairments using a sample of 155 vision impaired adults aged 65+. The aim of the study was to predict functional disability in daily living due to vision impairments in comparison to functional difficulties due to other health problems for this population. All IADL were found to be more likely to be difficult to perform due to vision impairments while most basic ADL were more likely to be difficult to perform due to other health conditions (except for taking care of appearance and eating). A mean of 5.3 daily tasks was reported to be difficult due to lack of vision compared to a mean of 0.9 daily tasks reported to be difficult due to other health conditions. The tasks most often reported to be difficult due to vision impairment were clothing management, eating, handling money, use of a telephone, cheque writing and medication management.

In this study (Travis et al., 2004) the researchers also explored the relationship between depression and functional tasks of daily living and found that depression was not associated with variance in difficulty of performing tasks. Travis et al. made important contributions to the understanding of vision impairment and concurrent impairments and their impact on daily functioning in older people. What was not highlighted by this research, however, was how other health impairments affect the daily functioning of those with no vision impairments. The following section addresses more specific details about those older people who live with vision impairment and how cause, severity and time since onset may influence emotional reaction to loss, life satisfaction and daily activity.

2.5 Significant Vision Impairment in Older People

As mentioned in the introduction, the leading causes of vision impairment in older people are ARMD, glaucoma, cataracts and diabetic retinopathy. Some studies have indicated that the cause of impairment can be correlated with one's reaction to the loss. For example, Upton, Bush and Taylor (1998) undertook a study on the impact of vision loss on 80 older male veterans with diabetes in comparison to those whose vision loss was caused by other aetiologies such as ARMD, glaucoma and trauma. Results indicated that diabetes and recent loss of vision were more strongly correlated with problems with adjustment and with daily functioning. The degree of vision impairment was not a strong stressor variable. Thus, it may have been the aetiology of the loss, or factors associated with the loss, that had more meaning to individuals than the impact the loss had on daily functioning.

Later, Keeffe, McCarty, Hassell and Gilbert (1999) incorporated in their study the degree of vision impairment, as well as cause of impairment in relation to activity and participation, and measures of emotional reaction to vision loss. Their study involved the development and testing of a measure to describe and measure disadvantages caused by impaired vision. Ninety-five Australians with impaired vision were involved, with vision acuities of 20/200 or worse after correction. Most participants were women, and most reported ARMD as the cause of their vision impairment. Although the age range was 18-91, the mean age was 67 years. Questions relating to "handicap" were derived from a pool of vision-related quality of life questionnaires. For this study, handicap was defined as "limitation on activity experienced by an individual relative to their own needs, or those of peers or society" (p. 184). The major concerns of those older people with impaired vision who helped to develop the measure were ability to drive and emotional problems associated with diagnosis of an eye condition. Also measured were domains of personal and household care, social and consumer interactions, mobility and leisure or work.

Major findings from this study by Keeffe et al. (1999) were that those with better vision reported less difficulty with all measured activities. Nevertheless, degree of vision impairment was not related to degree of emotional reaction to vision loss. Degree of vision impairment was related to difficulty with daily activity domains of leisure and work, mobility, social and consumer interactions and household and personal care. Type of vision impairment was considered as well. Those with ARMD reported greater difficulty in social and consumer interactions whereas those with glaucoma and retinopathies had greater emotional reactions to vision loss. Cause of vision impairment, even when controlled for age, was found to be significant in predicting

mobility difficulties. Keeffe et al. concluded that vision does have a role in the nature and degree of activity and participation, but other factors also can create difficulties for those with vision impairments and these, too, must be explored. Other studies have also found that degree of vision impairment was not associated with life satisfaction (Kleinschmidt et. al, 1995).

Severity of vision impairment has been the focus of numerous studies in relation to activity and independence for older people. Standard clinical measures of vision include acuity and degree of field. Estimates of the prevalence of vision impairment in older people vary greatly, according to the definitions used for vision impairment. Vision impairment is determined, based on an established difference from the norm.

Eligibility for services from the RNZFB requires acuity of 6/24 (20/70) or less in the better eye with correction or field restriction of 20 degrees or less, with normal fields being about 180 degrees. In the U.S., legal blindness is defined as having an acuity of 20.200 (6/60) or less in the better eye with correction, or field restriction to 20 degrees or less. A broader category of severe vision impairment is often defined in terms of functional norms, as an inability to read regular newspaper print, even with corrective lenses. The New Zealand census regarded vision impairment in functional terms, i.e. inability to read newsprint with glasses, or clearly see the face of someone across the room (Statistics New Zealand, 2001a). No matter how estimates are made, it is clear that incidence of significant vision impairment increases with age, as many causes of vision loss are age-related (Branch et al., 1989; Havlik, 1986; Rosenbloom, 2000).

Brenner, Curbow, Javitt, Legro and Summer (1993) found links between severity of vision impairment and decreased physical and mental functioning in 1,021 older adults. Participants were all receiving ophthalmological treatment at the time of the survey and were aged 50+. Vision was measured with the Snellen acuity chart, and this acuity was translated into a binocular acuity measure. Visual function was assessed in interview questions related to reading, recognising people, seeing steps and seeing cracks in the footpath. These researchers also found that improvements in visual functions accompanied improvements in quality of life (QOL), community participation, ADL, mental health and life satisfaction, especially in those with cataracts. This was primarily a study on the effect of improved vision on QOL, but the links between severity of impairment and functioning are relevant to this review.

Elfervig (1997) introduced the variable of life satisfaction in relation to severity of vision impairment in a study with 80 adults with impaired vision aged 65+. Elfervig examined functional independence and life satisfaction for those with ARMD. Those eligible for the study had visual acuities of no better than 20/200. The Instrumental Activities of Daily Living Scale was used to assess eight categories of daily functioning (telephoning, shopping, food preparation, housekeeping, laundry, transportation use and managing money). The Life Satisfaction Index-A was used to measure satisfaction with life. This is an 18-item life satisfaction scale, administered by the researcher in a face-to-face interview, with dichotomous responses (satisfied, dissatisfied). Results indicate that severity of vision impairment was related to both functional independence and life satisfaction, even when controlled for age and gender. The greater the severity of vision impairment, the less satisfied they were with life. The greater the severity of vision impairment, the more limitations older adults had in activities of daily living,

"specifically shopping, laundry and handling finances." (p. v). Duration of vision impairment was not related to functional independence nor to satisfaction with life for this group, nor was the type of onset of vision loss (gradual or sudden), related to functional independence. The relationship between functional independence and life satisfaction was not tested in this study.

Recent onset of significant vision loss has been indicated to have profound negative effects on psychosocial functioning of older adults (Kleinschmidt, 1999). Kleinschmidt used both quantitative and qualitative methods to study differences in response to vision loss among older people. Although this study involved only 12 participants, a useful finding is that initial reactions to vision loss were nearly universally negative. Only after time did positive affect emerge as predominant for the 12 participants who were rated as "successfully adjusted" to vision loss. Prior life experiences, internal and external resources were identified as factors correlated with good adjustment to vision loss. Kleinschmidt's study was not of normative adjustment but of exemplary adjustment. The sampling procedures used were not random, but selected by the author based on subjective researcher judgment of the participant having adjusted well, and the participants were homogeneous in terms of socio-economic status and gender (10 of 12 were women). A comparison of this group of well-adjusted adults to those viewed as adjusting "poorly" or "adequately" to vision loss would, perhaps, reveal additional useful information. In contradiction to Kleinschmidt's findings, and the results of the other studies reviewed in this section, other studies have found no link between type of vision impairment, age at onset of significant vision impairment or time since onset to social support or quality of social support in the older population (Hersen et al., 1995; Reinhardt & Blieszner, 2000).

In summary, over recent decades research has emerged investigating activity, independence, some measures of QOL and life satisfaction, and the impact of other health impairments as well as type, severity and duration of vision impairment for older people. Some studies have found that the differences in activity or participation measures between the groups of people with impaired vision and sighted older people were not as large as expected. In fact, Crews and Campbell (2001) found that people with vision impairments were similar to those without such impairments on measures of activity participation. Those with vision impairments did report, however, a greater desire for more social activities than did their sighted peers. The authors concluded that the area required further investigation. In contrast to these findings, it has been found that decreased participation in social and recreational activities and dependence in activities of daily living were more frequently due to vision impairment than to other health impairments (Burack-Weiss, 1999). Other factors warrant further investigation to explore the impact of impairment on activity, independence and life satisfaction, including contextual factors such as personal and environmental variables.

2.6 Ageing and Vision Impairment in Context: The Environment

One's environment can make the difference between good or poor adjustment to vision loss according to historical and recent person-environment fit models of adjustment, such as the Minnesota Model of Work Adjustment (Hesketh & Dawes, 1991). Adaptation has been measured by the goodness of fit between individuals and their environments (Lerner & Busch-Rossnagel, 1981). Thus, environmental factors such as living situation, size of community, social support, practical support and rehabilitation services are important variables to consider in exploring the impact of vision impairment on activity, independence and life satisfaction of older people.

2.6.1 Living situation, marital status and social support

There are few studies specifically related to ageing, vision impairment and living situation, but Horowitz, Leonard and Reinhardt (2000) found "significant effect of living arrangement on adaptation and life satisfaction, which revealed that overall those who lived alone were less adapted and less satisfied with life" (p.334).

Both groups (those who lived alone and those who lived with others), however, demonstrated improvements in adaptation after participation in an adaptive skills training programme. This study involved 312 participants with visual acuities of 20/200 or worse or less than 20 degrees of field, aged 55+ living in rural communities (25,000 or under). Over half (55%) of the participants lived alone.

It is often assumed that when an older person with impaired vision is married, emotional support will be greater than for one who lives alone, but some researchers have shown evidence that this link does not exist (Morgan, Patrick & Charlton, 1984). Nor is there evidence that marital status predicts social support network size or social support satisfaction for older people with impaired vision (Barron, Foxall, Van Dollen, Jones & Shull, 1994).

Regardless of whether social support comes from a spouse or others one may live with, social support theorists generally agree that social support has direct and indirect influence on various aspects of daily living and that good social support can ameliorate many life difficulties, including vision loss (Horowitz, Reinhardt, Boerner & Travis, 2003). The importance of support from friends, family, church and other social contacts has been well established for many populations. There is a vast collection of clinical

research on social support and friendship ties for children, adolescents and young adults with impaired vision (Hersen et al., 1995). Yet there is little research available regarding social support for the population of older people with impaired vision. The studies that are available vary in their conclusions about the impact of social support on this population. Some have found no relationship between vision impairment and social support, or between social support and daily function. Other studies link vision impairment and poor social support or relationships. Several aspects of social support have been investigated in recent years, and the components of social support emphasised in this review are social support network size, quality of social support and sources of social support.

In the first several studies reviewed here, social support was viewed as a dependent variable, linked to the presence of or adaptation to vision impairment. Carabellese et al. (1993) studied 1,191 older Italian people between the ages of 70-75 who lived in private households and had hearing and/or vision impairments. Vision impairment was defined as an approximate acuity of less than 20/50 with correction. Significant findings were primarily linked to measures of "quality of life", and Carabellese et al. defined QOL as having components of affect, cognition, physical and social domains. Vision impairment was found to be linked with a risk of poor QOL as measured by social relationships based on the SELF scale, a 54-item scale designed for people aged 60+. Hearing impairment did not have this association.

Davis et al. (1995) conducted a study comparing 30 older people with ARMD with visual acuities of 20/50 or less to 30 age- and gender-matched people with no ocular pathology and normal vision. The mean age of the participants was 81. Using the

Social Support Scale, which measures quality of one's support network, Davis et al. found that perceived quality of social support was significantly lower for the group with impaired vision. Davis et al. postulated that this perceived poor quality of social support may reflect distancing or disengagement by families.

Reinhardt (1996) examined the importance of friendship and family support to the adaptation to vision impairment for 241 people aged 65+ who had age-related vision impairment and who lived in private homes and who had received rehabilitation services. Vision impairment was described as having "some degree of vision impairment that is not correctable" (p. 270). Social support network size and frequency of contact were measured, as well as the perceived quality of this support. The majority of those sampled had both a close friend and a close family member. Males were more likely than females to name their spouse as their closest family member. Males were more likely to not have a close friend. Those who maintained good quality friendships as well as family relationships had better life satisfaction, less depression and better adaptation to vision impairment.

The following studies viewed social support as a predictor for depression, well-being and daily functioning. McIlvane and Reinhardt (2001) demonstrated the complex interaction of social support and its various sources, with vision impairment in older people. Of the 241 participants, those with a perception of receiving social support of good quality from friends and those with a perception of receiving social support of good quantity from family demonstrated better adaptation to vision impairment. Gender differences were revealed as well: for men, good support from family, or from both family and friends, was linked with fewer symptoms of depression. For women,

experiencing fewer symptoms of depression was associated with good support from both family and friends. Overall, McIlvane and Reinhardt found that in relation to well-being, quality supports are most important for older people with impaired vision, in comparison to the quantity of sources of support, except for the positive impact of a greater quantity of support on adaptation to vision impairment. Similar results were also reported by Reinhardt (2001).

In a study that used health impairments, rehabilitation and quality of social support to predict depression in older people with impaired vision, Horowitz et al. (2003) linked poor quality social supports in those with ARMD to increased depressive symptoms and decreased daily function. Ninety-five participants, aged 65+, who sought rehabilitation services were interviewed twice over two years. Social support indicators included marital status, emotional bondedness, family understanding of vision impairment, stability of friendships, use of rehabilitation services and symptoms of depression. Horowitz et al. claimed that the social support factors measured, which put older people with impaired vision at high risk for depression, were being single, having fewer close relationships with family, and having friendships that waned after the onset of the person's vision loss. They also demonstrated that over a two-year time period, stable friendships and use of rehabilitation services contributed to a reduction in depression among those experiencing new vision loss.

Other studies measuring quantity (as opposed to quality) of support networks found no difference in social support between research participants with impaired vision and sighted participants (Ringering & Amaral, 1990). Contrary to expected outcomes, social network size and frequency of contact did not predict success in low vision

rehabilitation in a study by Robbins and McMurray (1988). As social support has been the most commonly studied mediator of stress (Davis et al., 1995), and social support may be an important factor in adjustment to vision impairment, and in satisfaction with rehabilitation, it is clear that social support should be examined in the present study.

In summary, there is evidence, although also some evidence to the contrary, that poor social support has been a predictor for diminished independence, activity, and life satisfaction for older populations with impaired vision. Often poor social support is linked to depression, which is then cited as a predictor for lower levels of functioning and life satisfaction in older people with impaired vision (Vaughan & Hobson, 1990). Social support has been cited as being so crucial to this population that it alone, and not function or impairment, can be identified as the primary reason for institutionalisation for older people with impaired vision (Silverstone & Horowitz, 1987).

Hersen et al. (1995) linked loss of social support with perceived ability to reciprocate in very practical ways:

> There is an inevitable diminution of social support by older vision impaired people, since many of these individuals perceive that they can no longer fully reciprocate in most social situations (such as taking turns driving to social functions and remaining actively involved in recreational activities (Hersen et al., 1995, p. 525).

Another aspect of support under investigation is the more practical aspect of instrumental support.

2.6.2 Practical or instrumental support

Practical support, or instrumental support, includes direct physical assistance, help with chores or household tasks and providing transportation (Rowe & Kahn, 1998, p. 47). Wallsten, Tweed, Blazer and George (1999) found that in a community sample of older people with varying levels of disability, actual levels of instrumental support were only weakly linked with depressive symptoms, but subjective appraisals of this support were more strongly associated. Wallsten et al.'s study was based on a large population database that included people who had impaired vision. Their study used data from the Piedmont Health Survey of the Elderly, with a sample of 5,223 people aged 65+ living in private homes. It appears that one's perception of one's network's helpfulness has a stronger association with reduced depressive symptoms than the actual amount of help provided.

Similar to the findings by Wallsten et al. (1999), Reinhardt (2001) found that frequent instrumental family support was positively correlated with life satisfaction for older people with impaired vision. In this study of 570 people aged 63-99 with impaired vision who lived in private households, participants were defined having impaired vision if they were eligible for vision rehabilitation services. Measures of affective, as well as of instrumental support, received and provided, were taken. Participants reported that they provided more affective support than they received, and that they received more instrumental support than they gave. Further exploration of the relationships among activity, independence, support and satisfaction is one of the aims of the present study.

2.7 Subjective Dimensions of Functioning

Many of the studies reviewed here have highlighted the importance of subjective dimensions of functioning for older adults. As explained in Chapter One, subjective dimensions of functioning of those with impaired vision and of those with sight are of interest in the present study. Satisfaction with social support, satisfaction with independence, perceived level of activity and independence in comparison to one's peers, and overall life satisfaction were measured in order to understand not only the functional differences between those with impaired vision and those with sight, but to understand if the more objective measures of reported functioning accurately match how people perceive their functioning in relation to that of their peers. Exploring subjective dimensions of functioning is crucial to gain an understanding of which areas of daily functioning matter most to people.

2.7.1 Satisfaction with independence

Only one study was identified which addressed satisfaction with independence in older, adults with impaired vision. The Functional Independence Measure for Blind Adults (FIMBA) developed by Long et al. (2000) included measures of satisfaction with performance of specific tasks of daily living. The aim was to identify changed independence and activity outcomes for individuals after undergoing rehabilitation. Long et al. found an increase in satisfaction with performance in all 23 daily living activities measured after participants completed a rehabilitation programme. They also found satisfaction with performance was strongly positively associated with reported ease of performance.

2.7.2 Life satisfaction

Research has demonstrated clear links between impaired vision and depression, communication breakdown, psychological dysfunction, decreased well-being and quality of life, mood and social relationships in those who are older (Belsky, 1999; Carabellese et al., 1993: Crews & Campbell, 2001; D'Argent-Molina et al., 1996; Heine & Browning, 2002; Horowitz et al., 2000, Horowitz, 2003; Stuen, 1990; Swagerty, 1995; Williams, Brody, Thomas, Kaplan & Brown, 1998). There is, however, a need for further research and standardised instruments to assess the association between measures of well-being and function for this population of older adults with impaired vision (Babcock, Goodrich, Head & Boyless, 2000). Little has been done to investigate the links between vision impairment, activity and independence, and life satisfaction (Burmedi et al., 2002a; Burmedi, Becker, Heyl, Wahl & Himmelsback, 2002b). Life satisfaction is one aspect of QOL that fits well with the interests of the present study as it is related to cognitive comparisons to peers. The nine studies reviewed here have utilised measures of life satisfaction in this population.

Thus far, studies have been reviewed that have examined some aspects of life satisfaction for this population. Brenner et al. (1993) found an association between improved visual function after cataract surgery and increased life satisfaction. Kleinschmidt et al. (1995) focussed on depression in this population but also explored the effect of severity of vision impairment on life satisfaction. Kleinschmidt et al. found no significant differences in life satisfaction between those with minor vision impairments and those with more significant vision impairments using the Life Satisfaction in the Elderly Scale. Participants included 80 people, with a mean age of 77, and visual acuities of less than 20/50 due to ARMD.

Davis et al. (1995) noted that older participants with impaired vision reported lower life satisfaction scores than their sighted peers. Davis et al. attributed this to lack of social support. In a later study investigating social supports, Reinhardt (1996) used a regression analysis to predict satisfaction with life in older people with impaired vision. After controlling for social supports, socio-economic status and functioning levels, significant vision impairment was found to be a predictor of low life satisfaction, as measured by the Life Satisfaction Index-A. Life satisfaction, in this study, was positively correlated with good friendships, good family support, and relatively high functional independence in ADL.

Contrary to findings by Kleinschmidt et al. two years earlier, Elfervig (1997) found that the greater the severity of vision impairment, the lower the overall score with life satisfaction, but duration of vision impairment was not associated with life satisfaction. Further, Elfervig reported that older people with impaired vision who were married reported a better satisfaction with life than did participants with impaired vision who were not married. Elfervig also reported that older participants with impaired vision with concurrent health impairments reported a lower satisfaction with life score than those who only had a vision impairment.

Horowitz et al. (2000) found an association between better life satisfaction and living with others rather than alone. Also in relation to social support, Reinhardt (2001) and McIlvane and Reinhardt (2001) linked better life satisfaction in older adults with impaired vision with emotional support from friends, instrumental support from family, and providing reciprocal emotional support to family. Heyl and Wahl (2001) found that

older people with impaired vision reported a lower score on overall life satisfaction in a study comparing them to their sighted peers.

Several studies have found that life satisfaction actually improved with age in those aged 65+ (Hamarat, Thompson, Steele, Matheny & Simons, 2002; Hileras, Jorn, Herlitz & Winblad, 2001). Moreover, Diener (1984) found life satisfaction to generally improve after about age 40. These researchers link this improvement in life satisfaction to personality, resilience and improved coping mechanisms that come along with accumulated life experience.

In summary, subjective dimensions of functioning have been identified as important to include in an investigation of impairment, activity and independence, personal and contextual components of a theoretical model of health and functioning. Satisfaction with activity, independence, social supports and with life in general, as well as social comparison of activity and independence to one's peers, have been identified as the dimensions of interest to the present study.

2.8 Summary of Literature Review and Proposed Model of Functioning for Use in this Study

A comprehensive review of the literature reveals that there is a plethora of data and research related to ageing, vision impairment, daily functioning, life satisfaction and social support. Researchers have conducted studies to investigate the relationships among these variables.

Much of the research has accounted for the effects of vision impairment but not the overall increase in all impairments in older age cohorts. Yet to be explored thoroughly

are typical levels of activity, independence, and life satisfaction for people aged 65+ with a careful examination of age cohorts. By identifying the norms and ranges of these variables, differences may be identified in functioning and well-being between the larger group of older people within a community, and a subgroup of those who have experienced vision impairment.

The complexity of the interaction of impairment, age, activity, independence and life satisfaction can be examined with a classification system and model such as the WHO's ICF.

By surveying a representative sample of older people within a community, and a purposive sampling of those the same age who are eligible for registration with the RNZFB, we can determine typical levels of functioning for this group and identify the differences in functioning between those who have impaired vision and those who have no vision impairment. These data can be used to determine which functional areas of daily living create the most significant differences between the two groups, and where dissatisfaction with independence is the result for those with impaired vision.

Elements missing from the ICIDH, ICIDH-2 and the ICF models are the subjective aspects of health and functioning (Klein-de Vrankrijker, 2003 p. 564; Ueda. & Okawa, 2003). Therefore, another variation of this model is introduced for the purposes of this study, which includes one's satisfaction with life, activity, independence and social support, as well as comparison of functioning in relation to one's peers. This information may be crucial in gaining an understanding of the impact of vision impairment on older people, in the context of their age, culture and living environment.

This, in turn, could assist in appropriate assessment of need and provision of rehabilitation services.

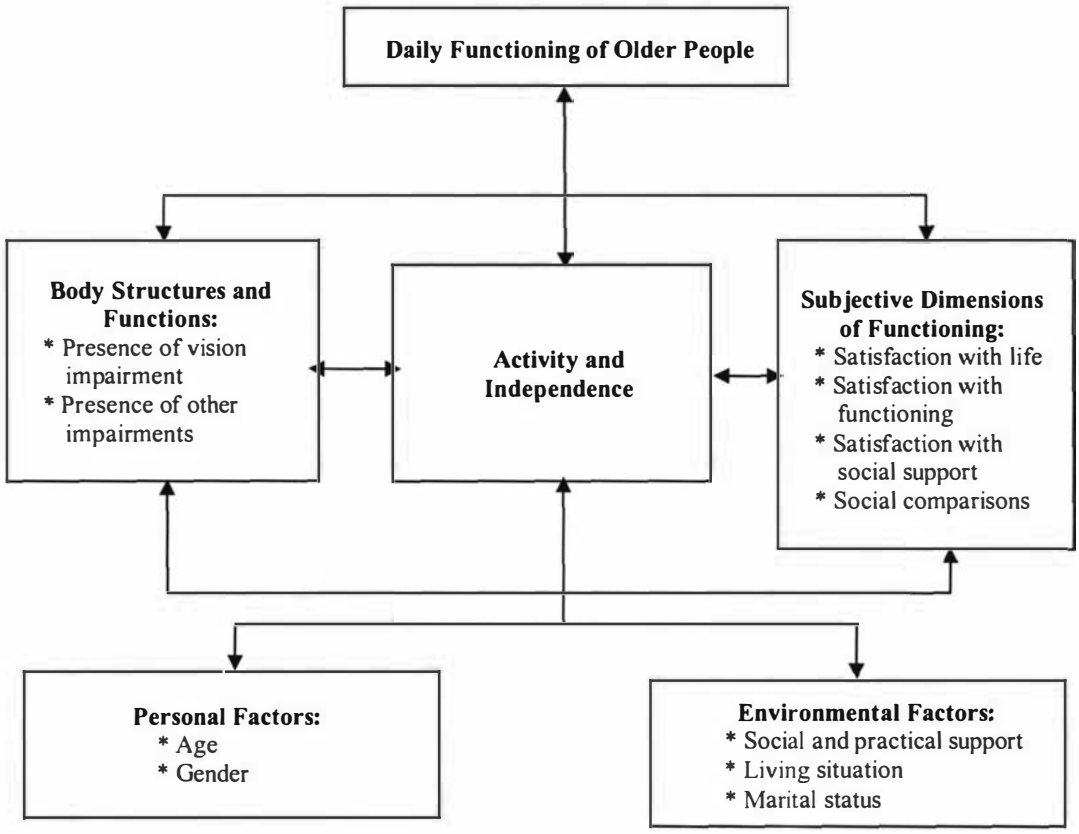


Figure 2.1 The adapted model of the ICF to be used in this study which incorporates subjective dimensions of functioning.

The theoretical underpinning of this model and the theory to be tested by this study are that the components investigated interact in complex ways and that impairment, age, activity and independence, as well as subjective factors, such as satisfaction with support systems, and perceived functioning in relation to one's peers have important impacts upon individuals in terms of their overall satisfaction with life.

The proposed adapted model of the ICF provides an appropriate conceptual framework for evaluating the interrelationships of its components. This framework does not represent an ordered sequence of a disability process. Disability can not be neatly

summarised into such stages or categories. But the proposed model can be used to describe the elements which are relevant to health and functioning in a common language which has been adopted throughout the world. This model can assist in exploring the complexity of disability and the unique and personal experiences of older individuals.

Originally the ICIDH proposed a sequential or causal relationship between impairment, disability and handicap. The ICF, the successor of the ICIDH, acknowledged that relationships between components of health may be multidirectional. The model used in this study is adapted to allow for the investigation of the multidimensional relationships that appear to exist among impairment, activity and independence, subjective dimensions of functioning and contextual factors. The proposed model provides a conceptual basis for the development of empirical methods for evaluating the interaction of the various components of functioning. By applying this conceptual framework, instruments have been developed and tested to measure these components.

The concept of disability is defined by the WHO in terms of what is usual for age, gender and culture. To date, however, little research has been done to discover norms and ranges of everyday activity and independence, levels of support needed or received, and how these variables relate to overall life satisfaction for those aged 65+, with and without vision impairments. The proposed model is used to investigate the following research questions and their related hypotheses.

2.9 Research Questions and Hypotheses

This study will investigate the following questions and hypotheses that have been derived from the review of literature:

Research Question One

Do older people with impaired vision who live in private households in the Manawatu region of New Zealand function differently from their age-related sighted peers in terms of activity and independence?

Hypothesis 1a) The group with impaired vision will be less active and independent in daily living than their age-related sighted peers. Hypothesis 1b) The older age cohorts will be less active and independent in daily living than the younger age cohort. Hypotheses 1c) There will be an interaction of age and vision status on activity and independence such that the older age cohorts of those with impaired vision will demonstrate fewer differences in activity and independence, in comparison to their sighted peers, than will be observed in the younger age cohort.

Research Question Two

If there are differences in activity and independence between those with impaired vision and their age-related sighted peers, in which particular domains of daily living are these differences?

Hypothesis 2a) Domains that are vision dependent such as communication activities, leisure activities and money handling will be performed less frequently and with less independence by those with impaired vision than by their age-related sighted peers. Hypothesis 2b) The older age cohorts will be less active and independent than the younger age cohort in the more physical domains of daily living such as outdoor work and mobility activities. Hypothesis 2c) There will be an interaction of age and vision

status on activity and independence such that the older age cohorts will show differences in fewer domains of activity and independence and smaller differences in the total number of activities recently relinquished for those with impaired vision in comparison to their sighted age-related peers, than will be observed in the younger age cohort.

Research Question Three

Are there differences in satisfaction with or in social comparisons of activity and independence between those with impaired vision and their age-related sighted peers?

Hypothesis 3a) Those with impaired vision will be less satisfied with their activity and independence than will their age-related sighted peers. Hypothesis 3b) The older age cohorts will have higher levels of satisfaction with functioning than will the younger age cohort, due to reduced expectations (as discussed in review of literature related to ageing and activity). Hypothesis 3c) Those with impaired vision will compare themselves less favourably to their peers than will those with sight, in terms of activity and independence.

Research Question Four

Is there a difference in satisfaction with life between those with impaired vision and their age-related sighted peers?

Hypothesis 4a) Life satisfaction levels will be lower for those with impaired vision than for their age-related sighted peers. Hypothesis 4b) There will be an interaction of age

and vision status on life satisfaction such that those with impaired vision in the older age cohorts will demonstrate smaller differences in satisfaction with life in comparison to their age-related sighted peers, than will be demonstrated in the younger age cohort. This is related to reduced expectations, as discussed earlier.

Research Question Five

To what extent do activity and independence, and other variables, including age, vision status, social support and social comparison contribute to life satisfaction for this group of research participants?

Hypothesis 5a) Activity and independence will contribute to life satisfaction. Hypothesis 5b) Other variables under study, including age, vision status, social support and social comparison, will also contribute to life satisfaction. Hypothesis 5c) There will be interaction effects for factors such as age, social support and social comparison, which will predict satisfaction with life in different ways for those with impaired vision and for those with sight.

The following chapter, Chapter Three, provides an explanation of the methods used to explore these research questions and to test the hypotheses.

Chapter Three: Methodology and Design

3.1 Design

This cross-sectional study was designed to compare older people with impaired vision and those with sight, who live in private households, in the areas of impairment, activity, independence and life satisfaction. A survey targeted the entire population of members of the RNZFB aged 65+ and living in private dwellings in the Manawatu region and a sample of age-related peers drawn from the electoral voter registration roll in the Manawatu region. Survey materials and information were accessed from a number of sources, with some designed for the purpose of this research. The study utilised a comparison of means across groups [*t*-tests and analyses of variance (ANOVA)], correlation and multiple regression analyses. Non-parametric measures were used, where appropriate, in some analyses. Study variables and measurement instruments are listed in Table 3.2.

3.2 Pilot Study

Initially, a pilot study was conducted to time and trial the survey process, in particular, the independence inventory, which had been designed by the researcher. The pilot study was approved by the Massey University Human Ethics Committee (MUHEC). Thirty participants assisted with this study. Fifteen had an identified vision impairment and 15 did not.

3.2.1 Pilot study participants

A total of 15 members of the RNZFB participated in the pilot study. The first two participants were referred to the researcher, with their permission, by RNZFB staff. A

snowball method was then used for the recruitment of the rest of the 15 participants. Each RNZFB participant met with the researcher and completed the survey with assistance as required. A copy of the pilot survey material is provided in Appendix B. Palmerston North Age Concern and Senior Citizen's Centre provided initial referrals for sighted participants and then a snowballing method was used to recruit the rest of the 15 sighted participants who took part in the pilot study. Thirteen of the sighted participants opted for face-to-face assistance for completing the survey and two chose to independently complete the survey. Visits to participants' homes took an average of 2.5 hours, although the survey took approximately 40 minutes to complete.

3.2.2 Pilot study measures

The measures used in the pilot study included a) demographic questions regarding age, living situation, social and practical support, income, health, and impairment; b) questions regarding vision and visual functioning; c) an 89-item independence inventory; d) a single-item QOL question (WHO, 1996); e) a 17-item adapted version of the Frenchay Activities Index (FAI) (Holbrook & Skilbeck, 1983); f) the 20-item Positive and Negative Affect Scale (PANAS) (Watson, Clark & Tellegen, 1988); g) questions related to social comparisons and h) the 9-item Canadian Occupational Performance Measure (COPM) (Law et al., 1998), an importance rating scale regarding activities of daily living.

3.2.3 Pilot study procedures

The pilot questionnaire was developed from 1999-2000 with measures drawn from literature, tools used in psychology, occupational therapy and vision rehabilitation practice, ideas generated from a preliminary study on peer sampling and goal setting for

rehabilitation for older people conducted in the Manawatu region by the researcher (Good & La Grow, 2000), and through consultation with the RNZFB and older people known to the researcher. Once the questionnaire was developed and agreement established for recruitment assistance from the RNZFB and Age Concern, approval was granted by the MUHEC for the first stage of the doctoral project. The pilot survey was administered in June 2000 and results analysed and reported at the International Conference of the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER), Denver Colorado, July 2000 (Good, 2000a; 2000b; 2000c; see Appendix C).

The findings from this pilot study were disseminated to the participants in their requested formats (Braille, large print, regular print, cassette recording or computer disk). A copy of this report is provided in Appendix D. Throughout the pilot study feedback from participants shaped the development of the survey and validated the relevance of the project. Participants also indicated that the process was enjoyable and the survey, although long, was not too cumbersome, even for those who had impaired vision.

For the pilot project it took more time to recruit sighted participants than those who had impaired vision. Once recruited, it was more difficult to schedule time to meet the sighted participants in their homes for completion of the questionnaire. As a result twice as many sighted people as those with impaired vision were invited to participate in the main study. It was also clear that this older population was hesitant to respond to questions regarding emotion or affect and so the affect scale was removed from the next phase of the project. As QOL differences were not dramatic between the groups in the pilot, using the single-

item global measure, the researcher decided to further investigate one aspect of QOL, life satisfaction, for the main study. This was deemed appropriate because satisfaction with life is a more cognitive than affective measure and is related to social comparison which is of concern in this study (Andrews & Withey, 1976).

Responses to pilot study questions assisted in developing questions and options for responses to questions about disability, practical support, social support, activities relinquished, reasons for relinquishing activities and visual function. The pilot resulted in significant changes to the survey and the coding key for the main study.

The Independence Inventory comprised 12 different domains of daily activities most likely to be performed by older people living in their homes, and considered particularities of life in the Manawatu region of New Zealand. Also considered were activities likely to be affected by vision impairment or other limitations related to ageing. Satisfaction with independence levels within the 12 domains was also incorporated into the measure for the main study, as it was important not only to assess independence levels, but to determine if levels of independence are considered problematic for older people, with and without vision impairments. The 12 domains of daily living were: basic activities of daily living (BADL), personal management, caring for others, home management, kitchen management, outdoor and other home responsibilities, clothing management, communication, quiet recreation, active recreation, community activities and money handling. These twelve domains of daily independence reflect domains of instruction in occupational therapy and in vision rehabilitation teaching.

3.3 Main study

3.3.1 Participants

Overall there was a 50 % response rate to the survey and 560 usable surveys were completed. The entire population of registered members of the RNZFB aged 65+ living in private households in the Manawatu region ($N = 312$) was sent the questionnaire and 137 individuals completed and returned it; 135 were usable (43 % response rate). Thirty-seven surveys sent to RNZFB members were returned by the post office (deceased, address unknown, or no explanation). Written explanations for non-response from this group included: invited participants had moved into a rest home ($n = 10$), had moved away from the region ($n = 10$), or were unwell and had moved into family care ($n = 10$). Six invited participants indicated that they were not interested in participating.

Of those 800 selected randomly from the electoral roll, aged 65+, living in private households in the Manawatu region, 434 completed and returned the survey, and 425 were usable (54 % response rate). Sixty-two surveys sent to addresses from the electoral roll were returned (deceased, address unknown or no explanation). Further written explanations for non-response from this group included: invited participants had moved out of the area ($n = 13$), had moved into a rest home or hospital ($n = 3$), were too unwell to participate ($n = 10$), were ineligible to participate because they were 64 years old ($n = 5$), or were deceased ($n = 1$). Twenty-two invited participants indicated that they were not interested in participating.

Three participants with impaired vision opted for telephone assistance. Ten sighted and 50 of the group of those with impaired vision elected to complete the survey with personal assistance from the researcher or the researcher's assistant.

On February 1, 2002, three weeks after the original survey posting, those from the electoral roll who had not yet returned the survey were sent a reminder notice. (see Appendix E). All invited RNZFB members were sent the thank you/reminder notice, as the researcher did not have access to information about who had returned surveys, to protect the anonymity and confidentiality of RNZFB members. Those invited to participate were also asked to indicate by telephone why they chose not to participate, if they took that option. This resulted in a further explanation for non-response rate: Not yet aged 65 (n = 2), too busy (n = 4), not interested (n = 16), deceased (n = 4), too unwell and in family care (n = 9), moved into a rest home (n = 12), and moved out of the region (n = 2).

Criteria for inclusion

Older people (aged 65+) living in private households in the community (non-institutional) participated in this study. The cut-off age of 65 was selected as census and demographic information from New Zealand, U.S. and other developed countries use this as the demarcation for older adults. In New Zealand, it is also commonly considered to be the age at which one usually retires and the age at which one becomes eligible for retirement benefits. Participants were also selected on the basis of living in the community, as one important component of this research is to determine independence and activity levels consistently found in those remaining in their homes. The Manawatu region was defined

by the researcher with the assistance of the New Zealand Post as the region for all postal codes between 5301 and 5600. This was a necessary exercise because the region is not formally defined by any government body, or by the RNZFB in its service structure. The region defined for the purposes of this study comprises rural, semi-rural, suburban and small city areas, and is the geographical area generally considered to be the "Manawatu Region" although not formally defined by any council bodies.

The entire population of registered members of the RNZFB in the Manawatu region, aged 65+ and living in private dwellings were invited to participate. In light of pilot study results and in anticipation of a lower response rate from registered voters than from registered members of the RNZFB, twice the number of invitations was sent to people from the electoral roll than from the RNZFB registry.

Recruitment and pre-survey publicity

In October 2001, during the RNZFB "Blind Week", an annual fundraising campaign, the *Manawatu Evening Standard* and *The Massey University News* published articles about the researcher and the upcoming survey. One national and one local radio station interviewed the researcher and broadcast portions of the interview and details of the upcoming survey. Finally, the Radio Reading Service, a news and magazine reading service targeted specifically to those with impaired vision, announced details about the survey in January, 2002, during the time of data collection. This publicity was sought to increase awareness within the community about the existence, validity and value of the research, and in an effort to produce high response rates and to minimise non-response bias.

There were two parts to the recruitment of participants: a) The RNZFB agreed to assist in the recruitment of participants with impaired vision aged 65+ in the Manawatu region. This agency produced mailing labels and an RNZFB staff member eliminated mailing labels that were clearly addressed to nursing homes, lodges or hospitals. A RNZFB staff member then affixed the remaining mailing labels ($N = 312$) to the survey packet. Each label also contained the RNZFB member's preferred format for receiving information; Braille, large print, regular print or cassette. In the identified preferred format, a survey packet was sent to each member of the RNZFB in the region. Included was an invitation to participate, an information sheet, the survey and a durable bookmark designed to assist with completing the survey, which provided contact details for the researchers and information about obtaining research results. The potential participants were invited to complete the survey and return it in the postage-paid envelope or to contact the researcher for telephone or personal assistance. In accordance with practices that protect the privacy of registered members of this organisation, the researcher did not have direct access to potential participants. Completing and returning the survey and phoning the researcher to request personal or telephone assistance implied consent, as was explained in the information sheet.

b) Manawatu community residents (non-institutionalised) aged 65+ were accessed through the electoral roll. Voter registration is mandatory in New Zealand and it is therefore estimated that the electoral rolls consist of approximately 95% of all eligible voters over the age of 65 (Healey & Hoek, 2000, p. 2). There were 30,426 registered voters aged 65+ listed in the combined Maori and non-Maori registry for the Manawatu region, as of December 2001. The researcher eliminated those who clearly had addresses at nursing

homes, lodges or hospitals. From this list, 800 were randomly selected with the use of an Excel programme. These Manawatu residents were posted an invitation to participate, an information sheet and the survey. The participants were invited to return the survey directly to the researcher using the post-paid envelope. The return of the completed survey was taken as agreement to participate. Alternatively, they could telephone the researcher to request telephone or personal assistance with the survey.

Follow-up thank you/reminder postcards were sent to those from the electoral roll who had not responded after three weeks (n = 400), and to each RNZFB member who had originally been invited (it was not possible to keep a record of who had returned surveys from the RNZFB group for privacy reasons).

Ethical issues related to protection of participants

Research with those who are older, and/or disabled, as all other research, must comply with basic ethical standards. Research with older and/or disabled, or other vulnerable populations needs to be handled with added care regarding the dignity, welfare and protection of participants (Good, 2001b). All effort was made within this study to ensure a high quality of informed consent, confidentiality, truthfulness, social sensitivity and minimisation of harm (Massey University, 1988). Because this older, disabled population may be vulnerable and experiencing changes in social circumstances brought about by disability this research has emphasised responsible distribution of information, confidentiality, care to avoid collusion between researchers, family and the older person, and thoughtful intervention (Good, 2001b, p. 167). Particular care was taken to guard

against the risk of dual role conflict. It was important to clearly state that the researcher was not connected with any services an individual received or may receive in the future. Research participants were informed that they could choose to participate or refuse to participate with no fear of disappointing or angering those upon whom they depend for their physical, financial or emotional needs. They were assured that they were under no risk of reduced, eliminated or compromised service if they complained or declined to participate in this study (Good, 2001b). It was also important to the researcher to think through the possible impact on the lives of those who were older and disabled, not just as individuals, but as health and disability service consumers, individuals subject to policy changes and service delivery changes. It was important for this researcher to examine any stereotypes, negative and positive, of these populations in order to avoid research techniques which could embed stereotypes or reinforce policies or practices that could oppress older, disabled people. The researcher strived to ensure that the project was supported by this community, that there was partnership within the process and reciprocity between researcher and researched. Stories were valued and preserved as a resource and when appropriate the researcher was a resource for the older, disabled community (Wicks, 1996). The pilot and main project phases of this research were each approved by MUHEC and were undertaken within the guidelines of the American Psychosocial Association (APA).

3.3.2 Measurement and instrumentation

A description of the instruments and questions used in the survey materials in the main study follows. A copy of the materials used in the main study can be found in Appendix E. The main project's survey consisted of five major sections: demographic questions; support

questions; activity and independence questions; life satisfaction; social comparison and quality of life questions; and finally, vision-specific questions for participants with impaired vision.

Demographic information

The brief demographic questionnaire (part one of the survey) asked for details regarding date of birth, gender, ethnic identity, size of community in which one lived, living situation (living alone, with spouse, etc.), marital status, former occupation, income, education, and impairment/health status. Questions were adapted from the New Zealand Census of Population and Dwellings (Statistics New Zealand, 1996, 2001b) and from revisions of the pilot study. Coding was categorical.

Practical (instrumental) and social support

Part two of the survey asked questions related to practical and social support. Participants were asked to name agencies which provided support to them, hours of rehabilitation received and sources of both practical and social support.

Social Support Questionnaire (SSQ)

Included in the segment was the Social Support Questionnaire (SSQ) (Sarason, Sarason, Shearin & Pierce, 1987). This assesses network size and perceived social support. The measure comprises six items. In part A, respondents list people upon whom they rely for support in a particular circumstance and in part B they rate their satisfaction with the support they currently receive from those listed in part A. Scores for part A were summed and divided by six for an overall score of size of social support networks. For part B,

scores for satisfaction, measured by a six item Likert scale, are added and divided by six for a total score of satisfaction with support. This measure has previously reported validity and reliability coefficient alphas for parts one and two ranging from .90 to .93 (Siegert, Patten & Walky, 1987). In this study, alphas of .95 (part A) and .97 (part B) were obtained.

Social support question from the Australian Quality of Life Measure (AQUOL)

A one-item question about relationships with others was used to measure degree of loneliness. This was from the Australian Quality of Life Measure (AQOL) (Richardson & Hawthorne, 1998). This question had four response options, 1 = I have plenty of friends and am never lonely; 2 = Although I have friends, I am occasionally lonely; 3 = I have some friends but am often lonely; 4 = I am socially isolated and feel lonely.

Activity and independence

Independence in daily living inventory

Included in the third segment of the survey was the Independence Inventory developed by the researcher and piloted in 2001 (approved by MUHEC for both the pilot and the main study). Each individual item ($N = 97$) derived a score as follows:

3 = performs the activity without assistance

2 = performs the activity with some assistance

1 = performs the activity with lots of assistance

0 = does not perform the activity, has another person perform the activity for them, or the question did not apply.

Twelve subscale scores were obtained for various activities of daily living domains by computing the average response provided for items within that domain, and a total independence score was derived by a sum of the average of each domain, divided by 12, the total number of domains within the inventory. An alpha of .96 was obtained for the overall independence inventory. The subscale domains and alphas are listed in Table 3.1.

Table 3.1 Independence subscales and alphas

Domain	Alpha
1. Basic activities of daily living	.89
2. Personal management	.67
3. Caring for others	.61
4. Home management	.94
5. Kitchen management	.98
6. Outdoor and other home responsibilities	.92
7. Clothing care	.91
8. Communication	.75
9. Quiet recreation	.81
10. Active recreation	.49
11. Community activities	.69
12. Handling money	.93

Frenchay Activities Index

The Frenchay Activities Index (FAI) (Holbrook & Skilbeck, 1983), a self-report questionnaire, is used to assess instrumental activity, leisure, and vocational activity in one's home and extended to activities within the community. The FAI was designed for use with older people who have had strokes and is intended to give an objective measure of actual activities undertaken in the recent past. Validity, reliability and sensitivity have been well established for this measure (Bond, Harris, Smith & Clark, 1992; Bond, Clark, Smith & Harris, 1995; Holbrook & Skilbeck, 1983; Hsieh & Hsueh, 1999). Hsieh and Hsueh reported a Cronbach's alpha of .90. For the present study, an alpha of .85 was obtained. The FAI was selected based on an extensive review of 26 possible instruments (Good, 1999; see Appendix O). This measure was selected because it is uniquely suited to older people, focusing on the instrumental activities of daily living that are generally required in order to function independently in one's home. The measure investigated performance, not capacity, which is important in comparing activity levels of older adults with impaired vision to those of their age-related peers. Item and total scale scores are determined by summing frequency of activity. For the purposes of this research the 15-item scale has been adapted for use in New Zealand into a 21-item scale. Some items were added and some items that were combined in the original FAI were separated for use with a population of those with impaired vision. The alterations to the FAI included the addition of using the telephone, reading mail, and using a typewriter or computer. In the original FAI, outings and car rides were combined. For this study the two items were separated, because in many Manawatu communities outings can take place without need of a car. Originally car maintenance and household maintenance were combined. These two items were separated for this study, as was driving and using public transport. This version of the

FAI takes five minutes to complete. Scores are computed by summing the values of how frequently one has performed activities within the past four weeks:

1 = never perform the activity

2 = perform the activity less frequently than one day per week

3 = perform the activity one to three days per week

4 = perform the activity four to six days per week

5 = perform the activity every day of the week

Possible scores total ranged from 21-105 points. Subscales were also calculated (domestic activity, work/leisure, and social activity) (Carod-Artal, Gonzalez-Gutierrez, Herrero, Horan & De Seijas, 2002, p.209).

Also in this section of the survey, participants were asked if they had recently relinquished activities, and if so, what activities and why. Response categories established with the pilot study included: going out at night; bathing; driving; cooking; walking outside; gardening; sewing, knitting and crafts; travel; sport, golf and bowls; independent shopping; dancing; social activities; sexual activities; visual entertainment; reading, and other activity. Response categories for possible reasons for relinquishing activities included physical difficulties, lack of companion, lack of confidence, poor vision, poor hearing, poor health, lack of transport, not interested in doing this any longer, too busy and other reason.

Life satisfaction and quality of life

Part Four of the survey was related to quality of life and life satisfaction as well as social comparisons, satisfaction with activity, independence and memory. Open-ended questions

were asked to determine what contributed to or detracted from quality of life. Standardised assessment measures were selected after an extensive review of quality of life measures appropriate for use with an older population (Good, 2001a; see Appendix O).

Satisfaction With Life Scale

Included in this section was the Satisfaction With Life Scale (SWLS) (Diener, Emmons, Larsen & Griffin, 1985), a five-item scale. This subjective well-being measure has reported internal consistencies of 0.85 and test-retest coefficients of 0.84. The SWLS has been validated using other independent life satisfaction measures including the Philadelphia Geriatric Morale Scale (Headey, Kelley & Wearing, 1993; Pavot & Diener, 1993). Diener et al. obtained a Crombach's alpha score of .87 for the SWLS. In this study, an alpha of .84 was obtained. Scores can range from 5-35 with higher scores indicating a higher reported level of life satisfaction.

Life 3

This is a one-item question designed to gauge global life satisfaction. It is ideal as a quick screening tool. Respondents are asked to rate on a seven-point scale (1 = delighted, to 7 = terrible) on the question "How do you feel about your life as a whole?". Reports indicate fair to good correlations with other scales measuring satisfaction in specific domains such as leisure, friendship and health. Responses to this scale are strongly influenced by mood and affect (Andrews & Withey, 1976; Headey, Veenhoven & Wearing, 1991; Headey et al., 1993). This question was used to examine the construct validity of the Satisfaction With Life Scale.

World Health Organization Quality of Life measure

A one-item question rating one's QOL from the WHOQOL-BREF (WHO, 1993) was used. The five response options ranged from 1 = very poor to 5 = very good. This question was used to examine the construct validity of the Satisfaction With Life Scale.

Global Memory Scale

The Global Memory Scale has been modified, and is comprised of three questions relating to memory (Crook & Larrabee, 1990). Participants were asked to rate their memory in comparison to how it used to be, in relation to others their age, and their preference for a different quality of memory. This information is useful in detecting Alzheimer's disease, which may explain some differences in daily functioning. Because cognitive functioning has been determined to be a strong predictor of IADL functioning (Putzke, 1999), this measure was included to be used as a possible control. This measure was included at the request of the RNZFB to help identify the role of memory in activities of daily living.

Vision questionnaire

The fifth and final segment of the survey was related to vision loss, its degree, duration, onset and impact. This section was to be completed only by those who reported difficulty seeing. Some questions were revised and modelled from the Visual Function Questionnaire (VFQ) (Mangione et al., 2001). Questions were used to determine age of onset of significant vision impairment, time since onset of significant vision impairment, cause of vision impairment, clinical measure of vision, visual function, stability of condition and effect of vision on life satisfaction, degree of activity and independence.

Table 3.2 Dependent and independent variables under study

Variable	Measure
Dependent variables	
Activity	Frenchay Activities Index
Independence	Independence Inventory
Life satisfaction	Satisfaction with Life Scale, Life 3
Independent variables	
1. Age	Sociodemographic form
2. Impairments/health conditions	Sociodemographic form
3. Gender	Sociodemographic form
4. Ethnicity	Sociodemographic form
5. Size of community in which one lives	Sociodemographic form
6. Living situation (living alone, with spouse, etc.)	Sociodemographic form
7. Marital status	Sociodemographic form
8. Presence of vision impairment	Sociodemographic form
9. Time since onset of vision impairment	Vision questionnaire
10. Age of onset of vision impairment	Vision questionnaire
11. Degree of vision impairment	Vision questionnaire
12. Social comparison	Comparison questionnaire
Variables used as both independent and dependent	
Social support	Social Support Questionnaire
Practical support	Support questionnaire

Comments

A comments page at the end of the survey was provided where participants were invited to make any further comments on activity, independence, life satisfaction or any other aspect of the survey.

3.3.3 Procedures

Surveys were posted to participants on 7 January 2002 and returned by 28 February 2002. Face-to-face ($n = 60$) and telephone assistance was provided to participants, upon their request, between 11 January and 20 March 2002.

Alternative formatting

The principle of providing information to people with disabilities in appropriate and preferred formats was crucial to uphold in this project, designed to empower those who are older and experiencing disabilities, particularly vision impairment. It was determined that every possible phase of the research process would be made accessible, in each individual's preferred format, and this was completed successfully. Pilot study consent forms, information sheets and summaries were distributed to research participants in the requested formats, which included large print, regular print and cassette. Invitations to participate in the main study and information sheets were sent in the designated requested format that each RNZFB member gave to that agency; this included Braille, cassette, large print and regular print. The only format requested for the surveys was large print. With the pilot survey, all but two participants ($n = 28$) requested personal assistance from the researcher to complete the survey forms. Participants were also offered the option of telephone or personal assistance to complete forms and 50 of the 135 participants with impaired vision,

and 10 of the sighted participants in the main study requested this. A durable, brightly contrasting bookmark was also provided with each survey, designed to assist with the visual task of completing the survey. Survey materials were produced according to guidelines for producing materials in large print (Washington State Department of General Administration-ADA, 2001). The survey was produced in 16-point bold type, Times New Roman typeface. Print was produced with upper and lower cases, with adequate space between letters. The survey was printed in bold black on contrasting and glare reducing pale yellow and green papers. The durable bookmark was printed in bold black on highly contrasting durable orange paper.

Extra spacing was allowed between the lines of text and extra-wide margins were allowed to increase readability and to allow for the survey to be flattened open to be read on closed-circuit televisions or with a magnifier and clipboard. Paper with matte finish was used, which reduces glare.

Survey materials

The survey consisted of five parts: demographic questionnaire, practical and social support questionnaire, activity and independence questionnaire, satisfaction questionnaire, and vision questionnaire. Survey packets were then sent to both groups. Included was an invitation to participate, an information sheet, a 39-page survey, and a durable bookmark designed to assist with filling in the survey form. This bookmark provided details for how to contact the researcher to obtain survey results. As surveys were returned, records were

kept, based on the coded surveys, as to which had been returned, to assist in the production of reminder notices, sent three weeks after the original surveys were posted.

Reminder notices

Reminder notices also included a request for invited participants to explain why they declined the invitation to participate. This resulted in explanation for non-response rate and an assurance that the population that responded was representative of those invited to participate. After reminder notices were sent, another 66 RNZFB members and 105 of the sighted group from the electoral roll responded.

Telephone contacts/record-keeping

Telephone calls ($N = 225$) were made to the researcher regarding requests for assistance, comments on the research or an explanation of decline to participate. An automatic answering service assisted with returning calls and record-keeping. A log of every message and telephone conversation was recorded. Three sighted participants requested telephone assistance with the survey and 10 sighted participants and 50 RNZFB members requested face-to-face assistance.

Interviewer training and agreement

A research assistant was enlisted to assist with interviews. This assistant interviewed the three sighted participants who requested telephone assistance, four of the sighted people who requested face-to face assistance and four of the RNZFB members who requested face-to face assistance. The researcher interviewed the remainder of the participants who

requested help; 11 from the electoral roll and 46 RNZFB members. The research assistant had extensive experience in survey research, working with older people and working with those who had impaired vision.

In an effort to standardise the interview process, training was conducted with the assistant. To ensure that the project was presented in a uniform manner to all who requested face-to-face assistance, the research assistant was trained through role playing as well as discussion of details of the study including the purpose, issues regarding confidentiality, the voluntary nature of participation, and the way in which survey results were to be used. The assistant was not informed of the researcher's hypotheses, in order to minimise bias in the interview process. The research assistant was instructed to read the questions exactly as worded on the survey form. A list of standard, non-directive probing responses was designed and provided to the assistant to use if needed. The assistant participated in designing the response code to ensure standardisation of recording responses. Completed surveys were reviewed throughout the process as part of the researcher's supervision of the assistant to ensure standardisation.

Interviews/record-keeping

All face-to-face interviews took place in the research participants' homes, as they all indicated this was their preference. An extensive log was kept to capture the rich, qualitative information gained from these interviews. Each visit lasted an average of 2.5 hours, the survey taking approximately 40 minutes to complete.

Survey record-keeping

Surveys returned from RNZFB members (identifiable by gold-coloured front page) were recorded as received and assigned a code number. No other identifying codes were used, in accordance with protocols used to protect the anonymity of members of that organisation. Surveys received from registered members of the electoral roll (identified by blue-coloured front page) were noted by code number as received. Some other identifying details were available through the electoral roll database if needed, such as gender, age, and type of area in which one lived. This also enabled the researcher to send reminder notices only to those who had not returned a survey.

Screening and classification into groups

Surveys received from those living in nursing homes, hospitals, or clearly in the care of others were omitted from the study. All participants were classified as vision impaired or sighted based on several factors: 1) members of the RNZFB were classified as vision impaired unless they were no longer eligible to be a member, for example, as a result of improved vision due to cataract surgery ($n = 3$). 2) Participants randomly selected from the electoral roll who indicated that they had difficulty seeing were assessed as vision impaired or sighted, based on visual function as reported in section five of the survey, visual functioning. Participants who reported that they could legally drive and read regular print, although they reported difficulty seeing, were classified as sighted. All 99 participants who were contacted through the electoral roll who had reported that they had difficulty seeing, also stated that they had enough vision to read and drive and, therefore, were classified as sighted for analyses. Some participants received and returned both surveys after

completing one of the surveys. The respondent was categorised as vision impaired or sighted based on the participants' reported vision status.

Coding

A comprehensive code book was developed throughout the pilot study and as the survey was being developed and administered. Two research assistants were trained to assist with the coding of the surveys. The researcher coded and entered data into a database using SPSS (Norusis, 1988) from the first 50 surveys returned from RNZFB members and the first 50 from the electoral roll to ensure consistent development of the code book. The NZ census (Statistics New Zealand, 1996 and 2001b), classification of occupations (Statistics New Zealand, 1992) and pilot study responses provided some categories for coding.

Data input

Data entry assistance was contracted to input the coded data into The Advanced Statistics Package for the Social Sciences (SPSS), SPSS-X and -XI were used for the analyses (Norusis, 1988). The researcher entered data from 100 surveys to ensure a quality process.

Dissemination of results

National and regional offices of the RNZFB agreed to publish results of the study and to make it available to members in various formats. All participants were also given a durable bookmark with large print contact details for the researcher and with a brief explanation that results of the study could be obtained by contacting the researcher. A record of those requesting results, and the requested format, was maintained.

3.4 Data Screening and Statistical Analyses in Relation to the Research Questions

Before analyses, data were screened for missing values, data entry errors, requirements for normal distribution and requirements for *t*-tests, ANOVA, correlations, and multivariate analyses. The independent variable of income was significantly positively skewed. Satisfaction with social support, satisfaction with independence, overall independence inventory and seven subscales of the independence inventory were significantly negatively skewed (BADL, personal management, caring for others, kitchen management, communications/electronics, quiet recreation and active recreation). Untransformed data were used because transformations did not improve skew markedly and multivariate statistical assumptions were met on multivariate tests with the untransformed data. Non-parametric tests were used where assumptions for parametric tests were not fully met. If results were similar, then parametric tests are reported. Where findings differ, non-parametric tests are reported. Sample sizes varied due to missing data from individual respondents. Where items were missing from a subscale, a mean score based on that individual's response on answered items within a subscale was calculated. Mean data related to respondents' response to at least one item within each subscale was used in independence and activity scales. For the regression analyses an overall mean substitution was used in the SWLS where there were missing data (Tobachnick & Fidell, 1996).

For this study, variables were analysed with simple comparisons of means using *t*-tests and ANOVA, and chi-square and other non-parametric tests where appropriate. Calculation for a significant difference in proportions between two groups (see Appendix H) was used for single-item questions including satisfaction with activity and social comparison of activity

and independence. Effect sizes are reported, using the eta squared statistic, along with probability values to determine relative practical significance. The effect size is essentially the magnitude of the difference between means (Pallant, 2001; Tabachnick & Fidell, 1996). Eta squared values are interpreted according to the following guidelines; .01 = small effect; .06 = moderate effect; and .14 = large effect (Cohen, 1988; Pallant). Correlations and hierarchical multiple regressions were used to further investigate relationships between variables.

Participants were divided into three age groups for many analyses, in order to examine the effects of age on the dependent variables. These age cohorts are used by Statistics New Zealand (2004) and have been characterised as "the young-old, age 65-74; the middle-old, 75-84; and the old-old, age 85+" (Orr, 1998, p. 3). These groups will be referred to throughout this thesis as age cohorts 1, 2 and 3, respectively. These age divisions were first defined by Neugarten in her classic, *Middle Age and Aging* (1968). The divisions were based on what was then considered to be typical needs of people in that age group. For example, people between the ages of 65 and 74 were usually newly retired and involved in post-retirement activities. Individuals in the middle-old group, 75-84, characteristically experienced some health problems and limitations in physical function; and the old-old were described as frail (Orr, 1998, p. 3).

A number of variables were recoded prior to analysis. Satisfaction scores for the SSQ, independence inventory subscales and Life 3 were reversed so that a higher score reflected a higher level of satisfaction or performance. The independence inventory and its subscale

score items were recoded to reflect a continuum of dependence to independence in daily activities actually performed, and not just a report of capacity to do so. Scores were recoded so that 0 means does not apply or I do not perform this activity and no-one performs it for me, or someone performs this activity for me; 1 means I perform this activity with lots of assistance, 2 means I perform this activity with some assistance, and; 3 means I perform this activity without assistance.

For correlational and regression analyses, the participants with impaired vision were coded with a value of one, and sighted participants with a value of two. Gender was coded as men with one, women with two. Marital status was recoded with a value of one for those who were married, and two for those who were not married or widowed, to reflect social support indicators rather than legal status. Living situation was coded with a value of one for those who lived alone and two for those who lived with others.

Descriptive characteristics of the participants are followed by univariate and multivariate analyses, testing the hypotheses as stated in Chapters Two and Three. Multivariate analyses were performed with activity, independence, and life satisfaction as dependent variables. For the following research questions, the indicated statistical tests were used with the variables indicated.

Research Question One

Do older people with impaired vision who live in private households in the Manawatu region of New Zealand function differently from their age-related sighted peers in terms of activity and independence? To explore this question, two-way between-groups ANOVA was utilised to identify main and interaction effects for age (by age cohorts) and vision status (vision impaired and sighted) on activity, as measured by the adapted FAI, and on independence as measured by the Independence Inventory.

Research Question Two

If there are differences in activity and independence between those with impaired vision and their age-related sighted peers, in which particular domains of daily living are these differences? To explore this question, in relation to activity, two-way between-groups ANOVA was utilised to identify main and interaction effects for age (by age cohorts) and vision status (vision impaired and sighted) for each of the subscales of the FAI. Proportions of responses for frequency of activity for individual items of the FAI were also examined. Regarding independence, overall comparisons of medians between those with impaired vision and those with sight, as well as within each of the three age cohorts, was used on each of the 12 Independence Inventory subscales. Proportions of independence responses were also compared between the two groups.

Research Question Three

Are there differences in satisfaction with or in social comparisons of activity and independence between those with impaired vision and their age-related sighted peers?

To explore this question, two-way between-groups ANOVA was utilised to identify main and interaction effects for age (by age cohorts) and vision status (vision impaired and sighted) on satisfaction with independence, as measured by the satisfaction with independence scale. Questions related to social comparison were descriptively analysed and the confidence interval calculation (see Appendix H) was used to identify the significance in a difference of proportions, because the question was a single-item question, not suitable for chi-square analyses or ANOVA.

Research Question Four

Is there a difference in satisfaction with life between those with impaired vision and their age-related sighted peers? To explore this question, two-way between-groups ANOVA was utilised to identify main and interaction effects for age (by age cohorts) and vision status (vision impaired and sighted) on overall life satisfaction, as measured by the SWLS.

Research Question Five

To what extent do activity and independence, and other variables, including age, vision status, social support and social comparison contribute to life satisfaction for this group of research participants? To explore this question, correlations and a multiple regression model were utilised to determine the variance in life satisfaction that can be attributed to activity, independence and other variables including age, vision status, social support and social comparison.

3.5 Summary of Methodology and Design

This chapter has described the method and rationale for the pilot and main phases of this study. An overview of the variables under study and the measurements used has been provided. Issues of alternative formatting and ethical issues specific to working with older, impaired individuals have been outlined.

The chapter that follows, Chapter Four, describes in detail the results obtained from analyses of the data and explores relationships among variables such as activity, independence and life satisfaction for older people with vision impairments and their age-related sighted peers living in the Manawatu region.

Chapter Four: Results

4.1 Introduction

The principal hypotheses of this study generally propose that the components of the adapted model of the ICF interact in complex ways, and that this model can be used to identify differences between people with impaired vision and their sighted peers. Within the specific hypotheses proposed is justification for an examination of the relationship between impairment, function, subjective dimensions of functioning, personal, and environmental variables for each of the two groups of older people. Attention will be focused on the personal factor age and the three established age cohorts will be utilised. The five research questions and related hypotheses are addressed in the presentation of the results that follow.

4.2 Sample Description

4.2.1 Demographic details

Detailed demographic details are provided in Table 4.1. Overall, 560 participants took part in this survey; 135 had impaired vision and 425 had no significant vision impairment. The majority (n = 258) were aged 65-74; 218 were aged 75-84 and 84 were aged 85+. An independent-samples t-test was conducted to compare the age for each group. The group with impaired vision (M = 82.3, SD = 6.76) was significantly older than the sighted group (M = 74, SD = 6.49; t (558) = 12.86, p = .000). The effect size was large (η^2 = .228).

Table 4.1 Demographic details

	Combined group $N = 560$		Vision impaired $N = 135$		Sighted $N = 425$	
	n	%	*n*	%	*n*	%
Age (years)						
65-74	258	46.1	16	11.9	242	56.9
75-84	218	38.9	68	50.4	150	35.3
85+	84	15.0	51	37.8	33	7.8
Gender						
Male	240	42.9	46	34.1	194	45.6
Female	320	57.1	89	65.9	231	54.4
Ethnicity						
New Zealander of European descent	504	90.6	121	89.6	383	91.0
New Zealander of Maori descent	20	3.6	5	3.7	15	3.6
New Zealander of Pacific Island descent	1	0.2	1	0.7	0	0
Other (includes European, Asian, Pacific Island, Indian, Australian & N. American)	31	5.6	8	5.9	23	5.5
Missing data	4	0.7	0	0	4	0.9
Size of community						
Main urban area	214	38.2	62	45.9	152	35.8
Secondary urban area	132	23.6	33	24.4	99	23.3
Minor urban area	126	22.5	30	22.2	96	22.6
Rural centre	32	5.7	4	3.0	28	6.6
Rural area	56	10.0	6	4.4	50	11.8
Current Living Situation						
Alone	207	37.0	68	50.4	139	32.7
With spouse/partner	309	55.2	53	39.3	256	60.2
With children	16	2.9	7	5.2	9	2.1
With spouse/partner & children	11	2.0	1	0.7	10	2.4
With other family members	11	2.0	4	3.0	7	1.6
With non-family	6	1.1	2	1.5	4	0.9
Other	0	0	0	0	0	0

	Combined group		Vision impaired		Sighted	
	n	%	*n*	%	*n*	%
Marital Status						
Married	330	58.9	56	41.5	274	64.5
Not-married	44	7.9	9	6.7	35	8.2
Widowed	185	33.0	70	51.9	115	27.1
Missing data	1	0.2	0	0	1	.2
Occupation/Former Occupation						
Homemakers	144	26.8	44	33.8	100	24.5
Legislators, administrators, managers	18	3.3	4	3.1	14	3.4
Professionals	83	15.4	11	8.5	72	17.6
Associate professionals, technicians	25	4.6	9	6.9	16	3.9
Clerks	60	11.2	11	8.5	49	12.0
Service and sales workers	39	7.2	11	8.5	28	6.9
Agriculture and fishery workers	52	9.7	14	10.8	38	9.3
Trades workers	66	12.3	12	9.2	54	13.2
Plant and machine operators, assemblers	30	5.6	10	7.7	20	4.9
Elementary occupations	21	3.9	4	3.1	17	4.2
Missing data	22	3.9	5	3.7	17	4.0
Educational Qualification						
No school qualification	214	39.3	59	45.0	155	37.4
School certificate passes	107	19.6	24	18.3	83	20.0
Matriculation/University Entrance+	39	7.2	13	9.9	26	6.3
Trade apprenticeship, professional certificate or diploma	109	20.0	23	17.6	86	20.8
Government exams for public service	24	4.4	7	5.3	17	4.1
University degree, diploma or certificate	52	9.5	5	3.8	47	11.4
Missing data	15	2.7	4	3.0	11	2.6

Most participants (57.1%. $n = 320$) were female. There was a more even distribution of male and female respondents within the sighted group (54.4% female) than for the group of those with impaired vision (65.9% female). This difference between the groups was significant, χ^2 (1, $N = 560$) = 5.14, p =.023. When looking at the differences within the three age cohorts, however, (cohort 1: 65-74; cohort 2: 75-84; and cohort 3: 85+), there were no significant differences in proportions of males to females found in any of the three age cohorts [age cohort 1: χ^2 (1, $N = 258$) = 0.208, p = .649; age cohort 2: χ^2 (1, $N = 218$) = 3.58, p = .058; age cohort 3: χ^2 (1, $N = 84$) = 0.116, p =.734].

Ninety percent of the participants were European ($n = 504$). The distribution of the ethnicity of the respondents was similar in both groups. The majority in both groups were of European background with a representation of Maori participants at 3.6%. There was no significant difference in the proportion of those who identified as New Zealand European between the group with impaired vision and the sighted group: χ^2 (1, $n = 504$) = 0.018, p = .767.

There was a significant difference in the size of community in which the two groups lived: χ^2 (4, $N = 560$) = 10.68, p = .030). Although the most common response in each group was that participants lived in main urban areas (45.9% group with impaired vision and 38.2% sighted group), the sighted group had a higher percentage living rurally. When examined across the three age cohorts, there was no significant difference in the proportion of those who lived in main urban areas: [age cohort 1: χ^2 (1, N =258) = 0.000, p =1; age cohort 2: χ^2 (1, $N = 218$) = 1.97, p = .159; age cohort 3: χ^2 (1, $N = 84$) = 0.084, p = .772]. Both groups became more urbanised with age.

Just under 60% of participants reported that they were married (n = 330). The group with impaired vision reported that they were not married or widowed in greater numbers than did the sighted group: χ^2 (2, n = 559) = 28.538, p = .000. When the three age cohorts were considered, however, there was no significant difference between the groups in relation to marital status [age cohort 1: χ^2 (2, N = 258) = 1.36, p = .564; age cohort 2: χ^2 (2, n = 217) = 2.08, p = .370; age cohort 3: χ^2 (2, N = 84) = 1.41, p = .683].

There was a significant difference between the two groups regarding living situation. The most commonly reported living situation of those with impaired vision (50.4%) was that they lived alone, whereas the majority of the sighted group (60.2%) reported that they lived with their spouse/partner. The difference between the groups in the proportion of those who lived alone or with others was significant: χ^2 (1, N=560) =12.97, p = .000. When the three age cohorts were considered, there were no significant differences between those with impaired vision and those with sight in the proportion of those who lived alone or with others [age cohort 1: χ^2 (1, N = 258) = 0.029, p =.769; age cohort 2: χ^2 (1, N = 218) = 458, p = .498; age cohort 3: χ^2 (1, N = 84) = 0.188, p =.664].

There was no significant difference between the two groups in terms of level of education: χ^2 (5, n = 545) = 10.24, p = .069. The most commonly reported level of education was no school qualification (45% of those with impaired vision and 37% of those with sight).

Both groups reported homemaker as the most common former occupation and there were no significant differences between the groups in terms of previous occupation: χ^2 (9, N = 538) = 15.19, p = .086.

The group with impaired vision reported a median annual income of $NZ13,000 and the sighted group reported a median annual income of $NZ14,000. There was no significant difference in median income between the groups (Mann-Whitney U = 15776.5, p = .636).

In summary, the description of both groups is, for the most part, similar. There were no significant differences between the two groups on ethnicity, education, previous occupation and income. Significant differences were found on gender, size of community and marital status. Comparisons across the three age cohorts found no significant differences on these variables, however. The group of those with impaired vision was significantly older than those with sight; therefore, age remains an important factor to consider in further analyses. The three established cohorts will be used in many of the analyses to follow.

4.2.2 Impairment

Impairments other than vision

The participants in this study, as a whole, reported relatively high percentages of arthritis, hearing impairment, high blood pressure, and heart disease, as shown in Table 4.2. The majority (92.4% of those participants with impaired vision and 91.5% of the participants with sight) reported having impairments other than vision. This difference was not significant: χ^2 (1, n = 533) = 0.021, p = .86). Those with impaired vision

Table 4.2 Incidence of reported impairments and health concerns

	Combined group ($n \geq 533$)		Vision impaired group ($n \geq 132$)		Sighted group ($n \geq 401$)		Difference in proportion
Impairment/ Health concern	*n*	%	*n*	%	*n*	%	%
High blood pressure	175	32.8	35	26.5	140	34.8	+8.3
Hearing impairment	182	34.0	53	40.2	129	32.0	-8.2
Heart disease	132	24.7	40	30.3	92	22.8	-7.5
Diabetes	61	11.4	22	16.7	39	9.7	-7.0
Physical impairment	68	12.7	23	17.4	45	11.2	-6.2
Confused/disoriented//forgetful	26	4.9	12	9.1	14	3.5	-5.6
Stroke	34	6.4	13	9.8	21	5.2	-4.6
Bowel disorder	54	10.1	17	12.9	37	9.2	-3.7
Cancer	48	9.0	10	7.6	38	9.5	+1.9
Kidney disease	17	3.2	6	4.5	11	2.7	-1.8
Hernia	30	5.6	6	4.5	24	6.0	+1.5
Asthma	67	12.5	18	13.6	49	12.2	-1.4
Other	60	11.2	16	12.1	44	10.9	-1.2
Psychological /psychiatric impairment	8	1.5	1	0.8	7	1.7	+0.9
Osteoporosis	41	7.7	11	8.3	30	7.5	-0.8
Arthritis	210	39.3	52	39.4	158	39.3	-0.1

* $p \leq .05$ significant for a difference of proportions

reported a mean of 2.5 impairments other than vision (SD = 1.7) and those with sight reported a mean of 2.2 impairments other than vision (SD = 1.5); t (200) = 2.05, p = .041. Although this difference was significant, when the age cohorts were considered no significant differences in the number of impairments other than vision between the group with impaired vision and the sighted group were found [age cohort 1: t(14.82) = 1.21, p = .246; age cohort 2: t (206) = 0.147, p = .883; age cohort 3: t (79) = -0.310, p = .757]. Details of the mean number of impairments, other than vision, for each group and age cohort are shown in Table 4.3.

Table 4.3 Means and standard deviations of numbers of impairments other than vision by age cohort and vision status

	Age					
	65-74		75-84		85+	
	M	*SD*	*M*	*SD*	*M*	*SD*
Vision impaired	2.67	2.09	2.42	1.68	2.66	1.64
Sighted	2.04	1.39	2.38	1.56	2.77	1.54

Although there were no significant differences in the overall proportions of those with impaired vision and those with sight in any specific impairment, when the three age cohorts were examined the data indicated a trend that those with impaired vision were more likely to have had diabetes and to have had a stroke than their sighted peers in the youngest age cohort.

Vision impairment

Of those with impaired vision, 16.3% (n = 21) reported that they started having real problems seeing before age 65; 29.4% (n = 38) between ages 65-74; 42.7% (n = 55) between ages 75-84; and 11.6% (n = 15) after age 85.

The majority of those with impaired vision (50.4%, $n = 65$) reported that their vision problems began to interfere with daily activities within the last five years; 31.0% ($n = 40$) said in the past 6-10 years; 8.5% ($n = 11$) said in the past 11-15 years; 2.3% ($n = 3$) 16-20 years; 3.2% ($n = 5$) 21-50 years and 3.9% ($n = 5$) said this occurred at least 51 years ago.

The most common cause of problems with vision was reported to be ARMD (51.9%, $n = 68$), followed by glaucoma (6.9%, $n = 9$) and diabetic retinopathy, (5.3%, $n = 7$), whereas 16.3% reported a combination of ARMD and another condition ($n = 22$), and 19.6% ($n = 26$) reported one of many other causes or combinations of causes including trauma, corneal disease, stroke, cataract, etc.

Of the 71 participants with impaired vision who responded to questions about the quality of their residual vision, the most common (31.5%, $n = 23$) description of vision was "peripheral vision only: can walk around safely but can not read"; 24.7% ($n = 18$) reported their vision to be "blurry, dark, dull"; and 19.2% ($n = 14$) reported that they "can see people but cannot recognise faces". A total of 6.8% ($n = 5$) of those who responded said they could see "nothing". In smaller percentages participants reported "tunnel vision", "fluctuating vision", "can't see kerbs", "can see in the distance but not near", combinations of these responses, and "other" ($n = 11$).

Of the 122 participants with impaired vision who responded to the questions about their visual function, 91.1% ($n = 112$) reported that they could not see newsprint; 81% ($n = 102$) reported that they could not see well enough to identify a familiar face across the room; and 60.5% ($n = 75$) reported that they could not read large print, 46.4% ($n = 58$)

reported that they could not see well enough to identify the food on their plate or to see playing cards in their hand (mid-range visual function). Note that participants were able to respond to as many descriptions of their vision as they thought applied.

Stable vision was reported by 42.6% (n = 52), while 55.7% (n = 68) reported that they were continuing to lose vision, and 1.6% (n = 2) wrote in a comment that their vision was improving.

4.3 Bivariate Relationships

An investigation of the dependent variables in relation to the independent variables of interest follows. The correlation matrix, shown in Table 4.4, demonstrates how the independent variables related bivariately to the dependent variables.

4.3.1 Vision status

Having sight was significantly and positively correlated with activity, independence, satisfaction with activity (as measured by a desire for a different level), satisfaction with independence, satisfaction with social support, living with others and life satisfaction. Having sight was significantly and negatively correlated with number of impairments other than vision, age, being male, unfavourable comparison of activity and independence to peers, being not married or widowed, and number of activities recently relinquished. There was no significant relationship between having sight and social support network size.

4.3.2 Age

There was a significant positive correlation between age and number of impairments other than vision, being not married or widowed, and number of activities recently

relinquished. There was a significant negative correlation between age and having sight, activity, independence, living with others, satisfaction with activity (as measured by a desire for a different level), satisfaction with independence, social support network size, and social support satisfaction. There was no significant relationship between age and gender, social comparison of activity or independence, or life satisfaction.

4.3.3 Time since onset of significant vision impairment

The relationships between time since onset of significant vision impairment and all of the independent and dependent variables analysed in the correlation matrix were investigated using the Pearson product-moment correlation coefficient. Only one variable was found to be significantly correlated with time since onset of vision impairment. There was a small positive correlation between time since onset of vision impairment and satisfaction with social support [$r = .181$, $n = 120$, $p = .048$] with longer time since onset of vision impairment being associated with better satisfaction with social support.

Partial correlation was used to explore the relationship between time since onset of vision impairment and satisfaction with social support, while controlling for age. There was no significant correlation found [$r = .179$, $n = 120$, $p = .051$] between time since onset of vision impairment and satisfaction with social support, when age was controlled.

Table 4.4 Correlation matrix of independent and dependent variables under study

Variable (measure)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Vision status															
2	Age	-.478**														
3	Gender	-.100*	.033													
4	# impairments (excluding vision)	-.095*	.142**	.062												
5	Frequency of activity	.276**	-.268**	.138**	-.171**											
6	# relinquished activities	-.401**	.322**	.093	.331**	-.354**										
7	Independence	.508**	-.398**	.021	-.289**	.449**	-.507**									
8	Satisfaction with independence	.515**	-.316**	-.068	-.309**	.336**	-.434**	.578**								
9	Preferred level of activity	.195**	-.134**	-.051	-.244**	.237**	-.254**	.339**	.405**							
10	Marital status	-.201**	.334**	.282**	.047	-.023	.045	-.027	-.118**	-.043						
11	Living situation	.157**	-.295**	-.282**	-.106*	-.035	-.034	-.058	.103*	.100*	-.781**					
12	Social support network size	.055	-.122*	.208**	.019	.218**	-.078	.067	.088	.013	.060	-.043				
13	Social support satisfaction	.172**	-.089*	.031	-.125**	.150**	-.131**	.164**	.453**	.136**	-.074	.034	.235**			
14	Comparison-independence	-.158**	-.011	.055	.196**	-.193**	.322**	-.270**	-.322**	-.251	-.147	.132**	-.090	-.092*		
15	Comparison- activity	-.150**	.006	.108*	.242**	-.221**	.357**	-.314**	-.356**	-.323**	-.070	.045	-.159**	-.158**	.711**	
16	Satisfaction with life	.205**	-.080	-.064	-.245**	.211**	-.293**	.229**	.406**	.311**	-.053	.076	.160**	.299**	-.290**	-.330**

**Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed).

1	Vision status:	1 = vision impaired; 2 = sighted
3	Gender:	1 = male; 2 = female
5	Frequency of activity	1 = never; 2 = less than 1 day per week; 3 = 1-3 days per week; 4 = 4-6 days per week; 5 = 7 days per week
7	Independence inventory	0 = dependent or DNA; 1 = lots of assistance; 2 = some assistance; 3 = independent
8	Satisfaction with independence	1 = very dissatisfied; 6 = very satisfied
9	Preferred level of activity	1 = much higher level; 2 = slightly higher level; 3 = same; 4 = slightly lower; 5 = much lower level
10	Marital status	1 = married; 2 = not married/widowed
11	Living situation	1 = alone; 2 = with others
13	Satisfaction with social support	1 = very dissatisfied; 6 = very satisfied
14	Social comparison-activity	compared to others is: 1 = much higher; 2 = slightly higher; 3 = same; 4 = slightly lower; 5 = much lower
15	Social comparison-independence	compared to others is: 1 = much higher; 2 = slightly higher; 3 = same; 4 = slightly lower; 5 = much lower
16	Satisfaction with life	range 5-35; higher score reflects a higher level of satisfaction

Social support satisfaction and social support network size were significantly correlated with activity and life satisfaction and have been identified in the model used in this research as important components of functioning, and so have been explored further here.

4.4 Social support

The Social Support Questionnaire (SSQ) (Sarason, Sarason, Shearin & Pierce, 1987) was used to measure network size for social support as well as degree of satisfaction with social support. A two-way between-groups ANOVA was conducted to explore the impact of vision status and age on social support network size as measured by the SSQ part A. Participants were divided into three cohorts according to their age. There was not a statistically significant main effect for age [F (2, 430) = 0.31, p = .732], or vision status [F (1,430) = 0.204, p = .652], nor was there a significant interaction effect [F (2, 430) = 0.934, p = .394]. Details of the results of the ANOVA are shown in Table 4.5. A table summarising means, standard deviations and significance of effects resulting from all ANOVA can be found in Appendix F.

Table 4.5 Descriptive statistics and tests of between-subjects effects: Social support network size

Social support network size									
Age cohort	65 - 74			75 – 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	15	2.11	1.36	56	2.36	2.34	40	2.20	1.73
Sighted	192	2.76	2.08	110	2.19	1.80	23	2.08	1.08

Main effects					
	df	M^2	*F*	*p*	Eta^2
Age	2	1.20	0.313	.732	.001
VI /sighted	1	0.78	0.204	.652	.000
Interaction effect age by vision status	2	3.59	0.934	.394	.004

* $p \leq .05$

A two-way between-groups ANOVA was also conducted to explore the impact of vision status and age on social support satisfaction as measured by the SSQ part B. Participants were divided into the three age cohorts. There was not a statistically significant main effect for age [F (2, 363) = 1.61, p = .201], or vision status [F (1, 363) = 3.82, p = .052], nor was there a significant interaction effect of age and vision status [F (2, 363) = 1.96, p = .42]. Details of the results of the ANOVA are shown in Table 4.6.

Table 4.6 Descriptive statistics and tests of between-subjects effects: Social support satisfaction

Social support satisfaction									
Age cohort	65 - 74			75 – 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	10	5.68	0.47	44	5.17	1.38	34	5.42	0.95
Sighted	167	5.73	0.61	91	5.70	0.67	23	5.55	0.74
Main effects									
				df	M^2	*F*	*P*	Eta^2	
Age				2	1.02	1.61	.201	.009	
VI /sighted				1	2.41	3.81	.052	.010	
Interaction effect age by vision status				2	1.23	1.96	.142	.011	

* $p \leq .05$

Although there were no significant differences between the two groups in social support network size or social support satisfaction, the group with sight reported in greater proportions that they received regular social support from a greater variety of sources, including friends, recreation groups and neighbours. See Appendix G for details about sources of social support, and see Appendix H for an explanation of the calculation of significance for a difference in proportions.

4.5 Research Question One

The first question posed in this study was *do older people with impaired vision who live in private households in the Manawatu region of New Zealand function differently from their age-related sighted peers in terms of activity and independence?*

Hypothesis 1a stated that the group with impaired vision will be less active and independent in daily living in comparison to their sighted peers. Hypothesis 1b stated that the older age cohorts will be less active and independent in daily living in comparison to the younger age cohort. Hypotheses 1c stated that there will be an interaction of age and vision status on activity and independence such that the older age cohorts of those with impaired vision will demonstrate fewer differences in activity and independence, in relation to their sighted peers, than will be observed in the younger age cohort.

4.5.1 Activity

A two-way between-groups ANOVA was conducted to explore the impact of vision status and age on frequency of activity as measured by the adapted Frenchay Activities Index (FAI). Participants were divided into the three age cohorts. There was a statistically significant main effect for age [F (2, 540) = 3.27, p = .039]. The effect size was small (partial η^2 = .012). Post-hoc comparisons, using the Tukey's honestly significant difference test (HSD) for equal variances, indicated that the mean score for age cohort 1 (M = 3.1, SD = 0.68) was significantly greater than the score for age cohort 2 (M = 2.85, SD = 0.76) and age cohort 3 (M = 2.58, SD = 0.79). The mean score for age cohort 2 was also significantly greater than that of age cohort 3. There was also a highly significant main effect for vision status [F (1, 5) = 15.88, p = .000], however, the

effect size was small (partial $\eta^2 = .029$). The mean score for those with impaired vision ($M = 2.56$, $SD = 0.749$) was significantly lower than that of the sighted group ($M = 3.04$, $SD = 0.72$). Despite the diminished difference of the means between the sighted and vision impaired groups at the older age cohorts, the interaction effect of age and vision impairment did not reach statistical significance [F (2 , 540) = 0.22, $p = .800$]. Details of the results of the ANOVA are shown in Table 4.7.

Table 4.7 Descriptive statistics and tests of between-subjects effects: Frequency of activity

Frequency of activity									
Age cohort	65 – 74			75 – 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	16	2.71	0.71	66	2.59	0.80	49	2.47	0.07
Sighted	236	3.13	0.67	148	2.97	0.71	31	2.74	0.93

Main effects					
	df	M^2	*F*	*p*	Eta^2
Age	2	1.68	3.27	.039*	.012
VI /sighted	1	8.14	15.88	.000*	.029
Interaction effect age by vision status	2	0.11	0.22	.800	.001

* $p \leq .05$

4.5.2 Independence

A two-way between-groups ANOVA was conducted to explore the impact of vision status and age on independence scores as measured by the Independence Inventory developed for this study. Participants were divided into the three age cohorts There was a highly significant main effect for age [F (2, 549) = 12.63, $p = .000$]. The effect size was small to moderate (partial $\eta^2 = .044$). Post-hoc comparisons using the Tamhane's T2 test (because variances were not equal) indicated that the mean score for age cohort 1 ($M = 2.73$, $SD = 0.37$) was significantly higher than for age cohort 2 ($M = 2.51$, $SD =$

0.55) and age cohort 3 ($M = 2.10$, $SD = 0.69$); and age cohort 2 was significantly higher than age cohort 3. There was also a highly significant main effect for vision status [F (1, 549) = 78.08, $p = .000$]. The effect size was moderate to large (partial $\eta^2 = .125$). The mean score for the group with impaired vision ($M = 2.05$, $SD = 0.69$) was significantly lower than that of the sighted group ($M = 2.70$, $SD = 0.38$). The interaction effect for age and vision status did not reach statistical significance [F (2, 549) = 0.76, $p = .468$]. Details of the results of the ANOVA are shown in Table 4.8.

Table 4.8 Descriptive statistics and tests of between-subjects effects: Independence

Independence									
Age cohort	65 - 74			75 – 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*N*	*M*	*SD*
Vision impaired	16	2.31	0.48	66	2.10	0.68	51	1.91	0.74
Sighted	240	2.75	0.35	149	2.69	0.36	33	2.39	0.49
Main effects									
			df	M^2	*F*	*P*	Eta^2		
Age			2	2.71	12.63	.000 *	.044		
VI /sighted			1	16.75	78.08	.000*	.125		
Interaction effect age by vision status			2	0.16	0.76	.468	.003		

* $p \leq .05$

Further analyses were undertaken to determine whether other aspects of independence differed between the groups. A significant difference was not observed between the group with impaired vision ($M = 4.08$, $SD = 9.9$) and the sighted group ($M = 2.06$, $SD = 10.5$) in the number of hours of weekly practical support received from others, including family, neighbours, friends, etc. [t (503, $n = 505$) = 1.87, $p = .062$]. The groups did differ, however, in the number of source types from which they received practical support. The group with impaired vision reported a mean of 2.14 source types of

practical help (*SD* = 1.16) and the sighted group, a mean of 1.0 source type (*SD*= 0.93) [*t* (189, *n* = 535) = 10.32, *p* = .000]. See Appendix I for details of the source types of instrumental support.

The group with impaired vision reported a mean of 2.19 sources of agency support (*SD* = 1.25) and the sighted group, a mean of 0.72 sources (*SD* = 0.88) [*t* (189, *n* = 465) = 12.39, *p* = .000]. Those with impaired vision reported much more frequently that they utilised RNZFB and home help services. See Appendix J for details of the sources of agency support reported to be utilised.

In summary, the results related to research question one and its related hypotheses are as follows: hypothesis 1a was supported as the two groups demonstrated significant differences in activity and independence with the group with impaired vision being less active and independent. Hypothesis 1b was also supported, as the older age cohorts were less active and independent than the younger age cohort. Hypothesis 1c) was not supported as there was no interaction effect of age and vision status on activity and independence, indicating that at the older age cohorts the group with impaired vision remained significantly less active and independent than their sighted peers.

4.6 Research Question Two

The second research question was *if there are differences in activity and independence between those with impaired vision and their age-related sighted peers, in which particular domains of daily living are these differences?*

Hypothesis 2a stated that domains that are vision dependent such as communication activities, leisure activities and money handling will be performed less frequently and with less independence by those with impaired vision than by their age-related sighted peers. Hypothesis 2b stated that the older age cohorts will be less active and independent than the younger age cohorts in the more physical domains of daily living such as outdoor and mobility activities. Hypothesis 2c stated that there will be an interaction of age and vision status on activity and independence in particular domains of daily living such that for the older age cohorts there will be differences between the groups of those with impaired vision and those with sight in fewer domains of activity and independence and in the total number of activities recently relinquished than will be observed in the younger age cohort.

4.6.1 Differences in domains of daily activity

In order to examine differences in frequency of activity within ADL domains, the Frenchay Activities Index items were divided into three major domains of life activity: domestic chores, leisure/work, and outdoor/mobility (Holbrook & Skilbeck, 1983). The domestic category consisted of preparing main meals, washing up dishes, washing clothes, light housework and heavy housework The work/leisure category consisted of social outings, actively pursuing a hobby, talking on the telephone, reading books, reading mail, using a typewriter or computer and paid or volunteer work. The outdoor/mobility subscale consisted of local shopping, walking outside, driving, using public transport, outings, car rides, gardening, household maintenance and car maintenance.

A two-way between-group ANOVA was conducted to explore the impact of age and vision status on frequency levels of activity in each of the three domains of daily

activity. In the domain of domestic activities, there was not a statistically significant main effect for age [F (2, 539) = 0.290, p = .748], or vision status [F (1, 539) = 2.607, p = .107], nor was there a significant interaction effect [F (2, 539) = 0.025, p = .975]. Details of the results of the ANOVA are shown in Table 4.9.

Table 4.9 Descriptive statistics and tests of between-subjects effects: Domestic activity subscale

Domestic activity subscale									
Age cohorts	65 - 74			75 - 84			85 -100		
	N	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	16	3.13	1.25	66	3.17	1.20	48	3.07	1.13
Sighted	236	3.40	1.12	148	3.39	1.15	31	3.26	1.22
Main effects									
				do	M^2	*F*	*p*	Eta^2	
Age				2	0.38	.29	.748	.001	
VI /sighted				1	3.45	2.61	.107	.005	
Interaction effect age by vision status				2	0.03	.02	.975	.000	

$*p \leq .05$

In the domain of work/leisure there was not a statistically significant main effect for age [F (2, 540) = 2.78, p = .063]. There was a highly significant main effect for vision status F (1, 540) = 17.41, p = .000]. The effect size was small to moderate (partial η^2 = .031). The mean for the group with impaired vision was 2.63 (SD = 0.85), and for the sighted group the mean was 3.20 (SD = 0.80). Despite the diminished mean difference in frequency of work/leisure activity between those with impaired and those with sight at the oldest age cohort, there was not a significant interaction effect of age and vision status [F (2, 540) = 0.40, p = .671]. Details of the results of the ANOVA are shown in Table 4.10.

Table 4.10 Descriptive statistics and tests of between-subjects effects: Work/leisure activity subscale

Work / leisure activity subscale									
Age cohort	65 - 74			75 - 84			85 -100		
	n	*M*	*SD*	*N*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	16	2.85	0.76	66	2.62	0.89	49	2.57	0.84
Sighted	236	3.28	0.75	148	3.14	0.81	31	2.89	1.06

Main effects

	df	M^2	*F*	*P*	Eta^2
Age	2	1.84	2.78	.063	.010
VI /sighted	1	11.51	17.41	.000*	.031
Interaction effect age by vision status	2	0.26	0.40	.671	.001

* $p \leq .05$

In the domain of outdoor/mobility activity there was a highly significant main effect for vision status [F (1, 540) = 15.43, p = .000]. The group with impaired vision reported significantly lower levels of activity (M = 2.19, SD = 0.76) than the sighted group (M = 2.73, SD = 0.77). The effect size was small (partial η^2 = .028). There was also a significant main effect for age [F (2, 540) = 4.86, p = .008]. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the age cohorts were significantly different from each other, with increasingly lower scores for the older age cohorts [age cohort 1: M = 2.82 , SD = 0.72; age cohort 2: M = 2.49, SD = 0.80; age cohort 3: M = 2.17, SD = 0.81). The effect size was small (partial η^2 = .018). Despite the diminished mean difference at the older age cohorts, there was not a significant interaction effect of age and vision on frequency of outdoor/mobility activity [F (2, 540) = 0.47, p = .627). Details of the results of the ANOVA are shown in Table 4.11.

Table 4.11 Descriptive statistics and tests of between-subjects effects: Outdoor work/mobility subscale

Outdoor work/mobility activity subscale									
Age cohort	65 - 74			75 - 84			85 -100		
	n	*M*	*SD*	*N*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	16	2.36	0.84	66	2.24	0.78	49	2.08	0.71
Sighted	236	2.86	0.71	148	2.60	0.79	31	2.33	0.94

Main effects					
	df	M^2	*F*	*p*	Eta^2
Age	2	2.81	4.86	.008*	.018
VI /sighted	1	8.91	15.43	.000*	.028
Interaction effect age by vision status	2	0.27	0.47	.627	.002

* $p \leq .05$

An analyses of the difference in proportions between those with impaired vision and those who are sighted, in frequency of performance of each of the items in the FAI, and within the three age cohorts, is provided in Appendix K.

4.6.2 Differences in domains of independence

Each of the 12 subscales of the Independence Inventory was analysed using the independent samples *t*-test. The sighted group performed at a highly significantly greater level of independence in each subscale ($p = .000$ for each subscale). To summarise, those with sight reported significantly more independence in each of the subscale domains of daily living in comparison to those with impaired vision. See Appendix L for details of the proportions of independence for each group and each age cohort within the 12 subscale domains of daily living.

The domains in which the group with impaired vision reported the lowest levels of independence (lots of assistance required, or activity performed by someone else) were

home management, outdoor responsibilities, quiet recreation, community activities, and handling money. The sighted group reported this level of dependence in none of the 12 subscales of independence.

In the youngest age cohort, those with impaired vision reported the lowest level of independence in the areas of outdoor work and community activities. The sighted group reported this level of dependence in none of the 12 subscales.

In the middle age cohort those with impaired vision reported the lowest level of independence in the areas of home management, outdoor work, quiet recreation, community activities and handling money. The sighted group reported this level of dependence only in the domain of outdoor work.

In the oldest age cohort, those with impaired vision reported the lowest level of independence in the areas of caring for others, home management, kitchen management, outdoor work, clothing care, community activities and money handling. The sighted group reported this level of dependence only in the domains of home management and outdoor work.

4.6.3 Activities relinquished

Participants were asked which activities they had relinquished in the previous five years and why. A two-way between-groups ANOVA was conducted to explore the impact of vision status and age on the number of recently relinquished activities (refer to Figure 4.1). Participants were divided into the three age cohorts. There was a highly significant main effect for vision [F (1, 410) = 30.31, p = .000]. The effect size was

moderate (partial $\eta^2 = .069$). The group with impaired vision reported significantly more recently relinquished activities ($M = 6.23, SD = 3.45$) than was reported by the sighted group ($M = 3.36, SD = 2.89$). The main effect for age was significant [$F(2, 410) = 3.01, p = .050$]. The effect size was small (partial $\eta^2 = .014$). Tamhane's T2 test was used in a post-hoc analysis of differences between the age cohorts. Age cohort 1 ($M = 3.02, SD = 2.82$) had relinquished significantly fewer activities than had age cohort 2 ($M = 4.64, SD = 3.13$) and age cohort 3 ($M = 5.78, SD = 3.65$). Age cohorts 2 and 3 were not significantly different from each other. The interaction effect did reach statistical significance [$F(2, 410) = 4.98, p = .007$]. The effect size was small (partial $\eta^2 = .024$). A follow-up analysis of simple effects, using a one-way ANOVA, was conducted to explore this interaction effect further. The number of relinquished activities did not differ across the three age cohorts for the group with impaired vision, but there were highly significant differences between all three age cohorts for the sighted group [$F(2, 289) = 13.11, p = .000$]. The effect size was medium to large (partial $\eta^2 = .083$). Post-hoc comparisons, using Tamhane's T2 test for unequal variances, indicated that the mean score for age cohort 1 of the sighted group indicated significantly fewer activities recently relinquished than for the sighted age cohort 2 and the sighted age cohort 3. The sighted age cohort 2 did not differ from the sighted age cohort 3. Details of the results of the ANOVA are shown in Table 4.12.

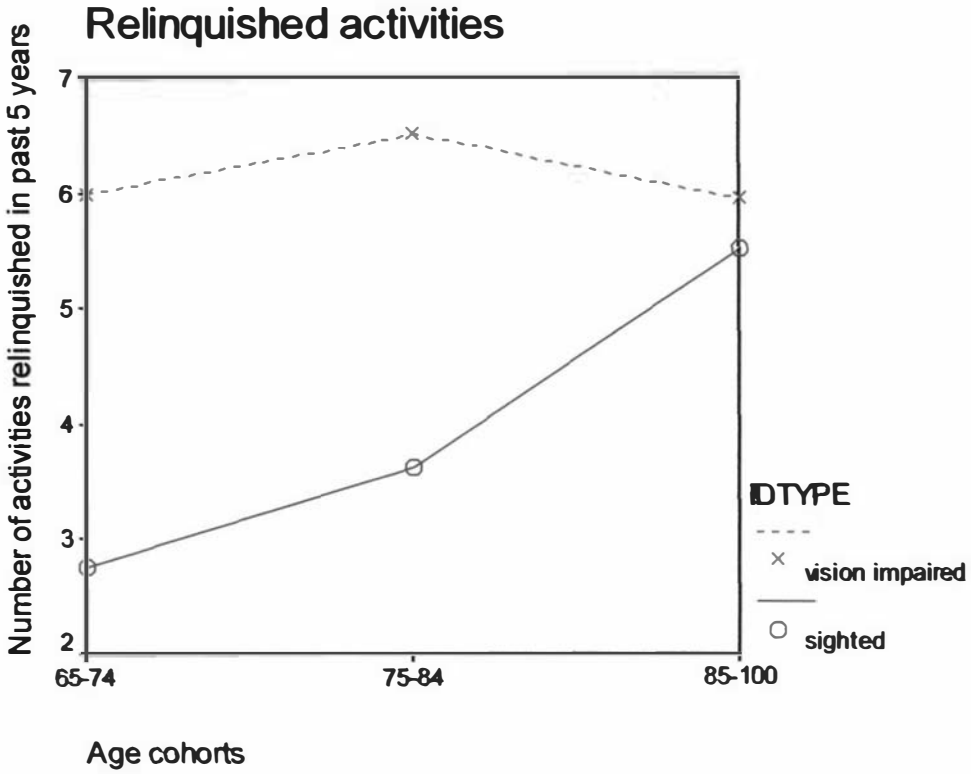


Figure 4.1 Means of the number of recently relinquished activities for those with impaired vision and those with sight for each of the three age cohorts.

Table 4.12 Descriptive statistics and tests of between-subjects effects: Number of recently relinquished activities

Recently relinquished activities									
Age cohort	65 - 74			75 - 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	13	6.00	3.78	63	6.50	3.08	48	5.93	3.82
Sighted	149	2.75	2.57	115	3.61	2.65	28	5.50	3.38

Main effects					
	df	M^2	*F*	*p*	Eta^2
Age	2	26.06	3.01	.050*	.014
VI /sighted	1	261.97	30.30	.000*	.069
Interaction effect: age by vision status	2	43.03	4.97	.007*	.024

* $p \leq .05$

The reasons given for relinquishing activities varied between the groups. Poor vision was the most common response for those with impaired vision as to why they had given up activity (93.5%, $n = 124$). This group also reported that poor hearing and lack of transport were reasons for stopping activity. The sighted group's most common reason for having given up activity was physical difficulties (46.2%, $n = 253$). They also reported that lack of interest and time were reasons for having given up activity.

When examining the three age cohorts, trends appear indicating that more sighted people than people with impaired vision relinquished activities for physical reasons (age cohort 3) and lack of interest (age cohort 2). More people with impaired vision relinquished activities because of poor vision (all three age cohorts), poor health (age cohort 2) and lack of transport (age cohort 1).

In summary, the results related to research question two and its related hypotheses are as follows: Hypothesis 2a was partially supported. Vision impairment was associated with a reduction in activity in the areas of work and leisure, activity areas thought to be visually dependent. Vision impairment was not associated with a reduction in activity in the domestic areas of daily living, not usually considered visually dependent activities. This hypothesis was not supported, in regard to independence, in the finding that vision impairment was found to be associated with a reduction in independence not only in vision dependent domains but across all 12 domains of daily activity.

Hypothesis 2b was supported in that the older age cohorts were less active and independent than the younger age cohorts in the more physical domains of daily living,

such as frequency of outdoor and mobility activities, and independence in home management and outdoor work.

Hypothesis 2c was supported in the finding that there was an interaction of age and vision status on activity and independence in particular domains of daily living, such that at the older age cohorts there were differences between the groups of those with impaired vision and those with sight in fewer domains of activity and independence. There was also an interaction of age and vision on the total number of activities recently relinquished such that increased age resulted in greater numbers of relinquished activities for those with sight, but not for those with impaired vision. At the older age cohorts the groups became less different in terms of the number of activities relinquished. Activities relinquished varied and were relinquished for different reasons for those with impaired vision and those with sight.

4.7 Research Question Three

The third research question was *are there differences in satisfaction with or in social comparisons of activity and independence between those with impaired vision and their age-related sighted peers?*

Hypothesis 3a stated that those with impaired vision will be less satisfied with their activity and independence than will their sighted peers. Hypothesis 3b stated that the older age cohorts will have higher levels of satisfaction with functioning than will the younger age cohort. Hypothesis 3c stated that those with impaired vision will compare themselves less favourably to their peers than will those with sight, in terms of activity and independence.

4.7.1 Satisfaction with activity

When asked if they would like their level of activity to be different to what it was currently, responses from those with impaired vision were different to that of the sighted group. More participants with impaired vision preferred a higher level of activity to their current level, in comparison to their sighted peers (64.9% and 51.6%, respectively). When the three age cohorts were considered, the proportion of those with impaired vision who preferred a higher level of activity was significantly higher than those with sight only in the middle age cohort. Details of the proportions of those who preferred a higher level of activity are shown in Table 4.13.

Table 4.13 Proportion of those who preferred a higher level of activity to their current level

	Vision impaired		Sighted		
	n 131	%	*n* 411	%	Proportion difference
All ages	85	64.9	212	51.6	-13.3*
65-74	11	68.8	107	45.5	-23.3
75-84	50	75.8	82	56.9	-18.9*
85+	24	49.	23	71.9	+22.9

* $p \leq .05$ significant for a difference of proportions

4.7.2 Satisfaction with independence

A two-way between-groups ANOVA was conducted to explore the impact of age and vision status on levels of satisfaction with independence as measured by the total satisfaction with independence scale (refer to Figure 4.2). Participants were divided into the three age cohorts. There was a highly significant main effect for vision [F (1, 548) = 92.01, p = .000]. The effect size was large (partial η^2 = .144). The mean score for those with impaired vision was significantly lower (M = 4.67, SD = 1.16), than the mean score for the sighted group (M = 5.70, SD = 0.54). The main effect for age did not

reach significance [F 2, 548) = 1.93, p = .146]. The interaction effect of age and vision status did reach statistical significance [F (2, 548) = 10.77, p = .000]. The effect size was small (partial η^2 = .038).

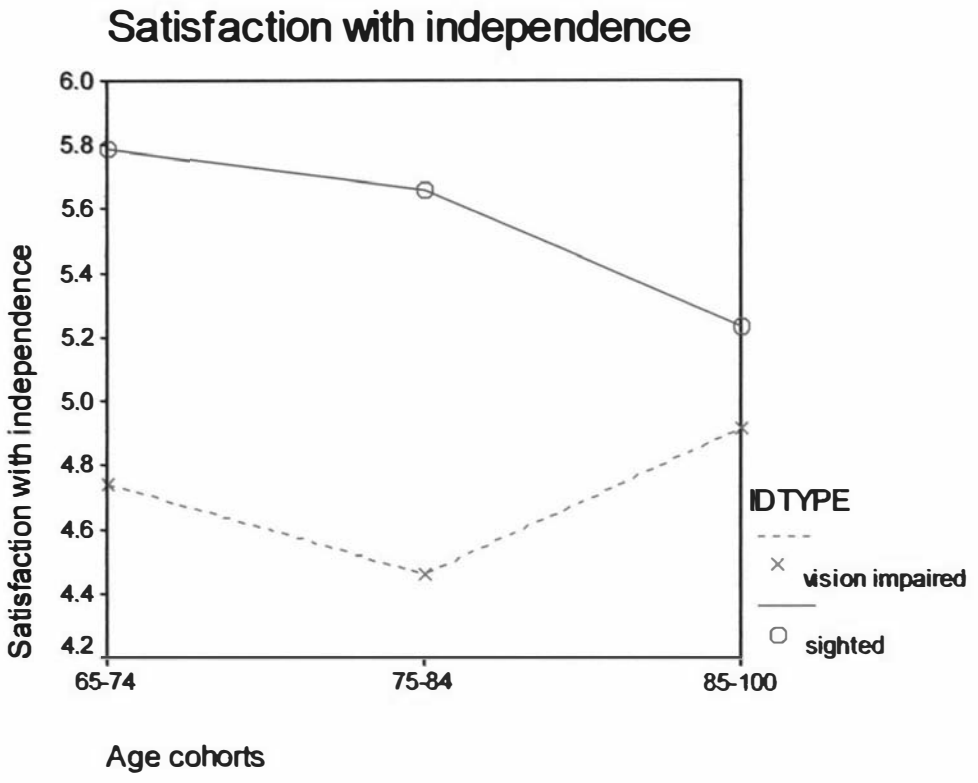


Figure 4.2 Means of satisfaction with independence for those with impaired vision and those with sight for each of the three age cohorts.

Further analyses of simple effects were conducted to explore this interactive relationship and separate one-way ANOVA were run to look at the effect of age on satisfaction with independence separately for groups with impaired vision and those with sight. There was no significant difference in satisfaction with independence between the three age cohorts for those with impaired vision using Tamhane's T2 test for unequal variance. For the sighted group there were significant differences between

cohorts 1 and 2, and between cohorts 1 and 3. There was not a significant difference in the scores between cohorts 2 and 3. Details of the results of the ANOVA are shown in Table 4.14.

Table 4.14 Descriptive statistics and tests of between-subjects effects: Satisfaction with independence

Satisfaction with independence									
Age cohort	65 - 74			75 - 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*N*	*M*	*SD*
Vision impaired	16	4.74	0.98	66	4.46	1.21	51	4.91	1.10
Sighted	239	5.79	0.36	149	5.66	0.57	33	5.23	0.96
Main effects									
		df	M^2	*F*	*p*	Eta^2			
Age		2	0.99	1.93	.146	.007			
VI /sighted		1	47.35	92.02	.000*	.144			
Interaction effect age by vision status		2	5.54	10.77	.000*	.038			

* $p \leq .05$

4.7.3 *Satisfaction with independence in specific domains of independence in daily living*

The group with impaired vision reported significantly lower levels of satisfaction with independence in all 12 domains of activity of daily living using independent samples *t*-tests ($p = .000$ for difference in satisfaction for each subscale). The largest differences in means of satisfaction between the two groups were in the areas of quiet recreation, active recreation, outdoor work, community activities, and handling money. See Appendix M for details of satisfaction with independence by vision status and by age.

Overall, the group with impaired vision was least satisfied with independence in quiet recreation and the sighted group was the least satisfied with independence in active

recreation. These were also the same domains for which the groups were least satisfied with in age cohorts 1 and 2. In age cohort 3, the group with impaired vision remained least satisfied with independence in quiet recreation whereas the sighted group was the least satisfied with independence in community activities.

4.7.4 Social Comparisons of activity and independence

When asked how they thought their activity level compared to that of their peers, 37.1% of those with impaired vision and 17.6% of the sighted group thought they were less active than their peers. This was significantly different when assessed by standard error of proportions.

When asked how they thought their independence level compared to that of their peers, 35.3% of those with impaired vision and 12.2% of the sighted group thought they were less independent than their peers. This difference was significant.

When responses within the three age cohorts were examined, an interesting pattern emerged. The proportion of those with impaired vision who thought they were less active and independent than their peers diminished between the youngest and oldest age cohorts. The proportion of those with sight who thought they were less active and independent than their peers increased with age. Details of proportions of those who reported that they functioned less actively and independently than their peers are shown in Tables 4.15 and 4.16.

Table 4.15 Proportions of those who reported that they thought they functioned less independently than their peers

	Vision impaired		Sighted		
	n 124	%	*n* 412	%	Proportion difference
All ages	45	36.3	50	12.2	-24.1*
65-74	8	50.0	21	9.0	-41*
75-84	26	41.9	20	13.0	-28.9*
85+	11	23.9	9	29.1	+5.2

* $p \leq .05$ significant for a difference of proportions

Table 4.16 Proportions of those who reported that they thought they functioned less actively than their peers

	Vision Impaired		Sighted		
	n 124	%	*n* 412	%	Proportion difference
All ages	46	37.1	71	17.6	-19.5*
65-74	7	46.7	38	16.5	-30.2*
75-84	29	47.6	25	17.5	-30.1*
85+	10	20.9	8	27.6	+6.7

* $p \leq .05$ significant for a difference of proportions

In summary, the results related to research question three and its related hypotheses are as follows: Hypothesis 3a, that vision impairment would be associated with lower levels of satisfaction with functioning, was supported. Overall, the group with impaired vision was less satisfied with their activity and independence than were their sighted peers. Hypothesis 3b, that the older age cohorts would have higher levels of satisfaction with activity and independence, was not supported (nor was the counter hypothesis).

Hypothesis 3c, that those participants with impaired vision would compare themselves unfavourably to their peers, in terms of activity and independence, was partially

supported. Overall, the difference in the proportion of those with impaired vision who compared themselves unfavourably to their peers was significantly higher than it was for those with sight. An exception was that at age cohort 3 there was no significant difference between the two groups in the proportion of those who reported that they functioned less actively and independently than their peers. In effect, there was an interaction of age and vision on social comparison such that in the group of those who were vision impaired there was an increased proportion of those who made favourable comparisons of activity and independence to their peers and in the group with sight there was a decrease in the proportion of those who made favourable comparisons of activity and independence to their peers.

4.8 Research Question Four

The fourth research question was *is there a difference in satisfaction with life between those with impaired vision and their age-related sighted peers?*

Hypothesis 4a stated that those with impaired vision overall would report a lower level of satisfaction with life. Hypothesis 4b stated that there will be an interaction of age and vision status on life satisfaction such that those with impaired vision at the older age cohorts will demonstrate smaller differences in satisfaction with life in comparison to their age-related sighted peers than will be demonstrated in the younger age cohort.

Table 4.17 Descriptive statistics and tests of between-subjects effects: Satisfaction with life

Satisfaction with life									
Age cohort	65 – 74			75 - 84			85 -100		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Vision impaired	15	18.73	9.16	53	19.58	6.95	42	24.28	5.75
Sighted	222	24.94	5.93	120	23.93	6.82	25	23.28	6.93

Main effects					
	df	M^2	*F*	*p*	Eta^2
Age	2	96.09	2.31	.100	.010
VI /sighted	1	562.97	13.57	.000*	.028
Interaction effect age by vision status	2	223.99	5.40	.005*	.022

* $p \leq .05$

A two-way between-groups ANOVA was conducted to explore the impact of vision status and age on satisfaction with life as measured by the Satisfaction With Life Scale (SWLS) (refer to Figure 4.3). Participants were divided into the three age cohorts. There was not a statistically significant main effect for age [F(2, 471) = 2.32, p = .100]. There was a highly significant main effect for vision status [F (1, 471) = 13.57, p = .000]. The effect size was small (partial η^2 = .028). The mean score for the group with impaired vision (M = 21.26, SD = 7.03) was significantly lower than that of the sighted group (M = 24.50, SD = 6.30). The interaction effect of age and vision did reach statistical significance [F (2, 471) = 5.40, p = .005]. The effect size was small (partial η^2 = .022). A follow-up analysis of simple effects was conducted with a one-way ANOVA which explored the effects of age on satisfaction with life separately for those with impaired vision and the sighted group. Significant differences across the three age cohorts were found within the group with impaired vision, but not within the sighted group. Post-hoc comparisons using Tamhane's T2 test found a significant difference

within the group with impaired vision between age cohorts 2 and 3 (M = 19.58, SD = 6.96; M = 24.49, SD = 5.76), respectively, where those in age cohort 3 had a higher level of life satisfaction. Age cohort 1 (M = 18.73, SD = 9.17) did not differ significantly from age cohort 2, nor did it differ significantly from age cohort 3. Details of the ANOVA are shown in Table 4.17.

Figure 4.3 Means of satisfaction with life for those with impaired vision and those with sight for each of the three age cohorts

Results for satisfaction with life were unexpected and so further analyses were conducted for a second measure of life satisfaction, Life 3, and for the one-item QOL question. Results were similar, in that there was an interaction effect of age and vision status on both measures such that those in age cohort 3 with impaired vision had higher

levels of life satisfaction and QOL in comparison to all participants in age cohorts 1 and 2.

In summary, the results related to research question four and its related hypotheses are as follows: Hypothesis 4a, that those with impaired vision would report a lower level of satisfaction with life, was supported. Overall, the group with impaired vision did report a lower score in life satisfaction. Upon further analysis, however, as stated in hypothesis 4b, there was an interaction effect of age and vision status on life satisfaction such that group with impaired vision in the oldest age cohort demonstrated less difference in life satisfaction in comparison to their sighted peers than had been observed at the younger age cohorts.

4.9 Research Question Five

Research question five was *to what extent do activity and independence, and other variables under study, contribute to life satisfaction for this group of research participants?*

Hypothesis 5a stated that activity and independence will contribute to life satisfaction. Hypothesis 5b stated that other variables under study, including age, vision status, social support and social comparison, will also contribute to life satisfaction. Hypothesis 5c stated that there would be interaction effects of age and vision status for factors such as social support or social comparison, which would predict satisfaction with life in different ways for those with impaired vision and those with sight.

Bivariate correlations indicated that life satisfaction was related to many of the variables under study. These correlations assisted in the selection of variables for use in the following regression model.

Hierarchical multiple regression analysis was used to assess the contribution of independent variables (age, gender, number of impairments, vision status, activity and independence scores, social support, social comparison and interaction terms) on the dependent variable, life satisfaction. Hierarchical multiple regression allowed for blocks of variables to be entered according to the logic drawn from the adapted ICF model developed for this study (Pallant, 2001; Tobachnick & Fidell, 1996). This enabled the assessment of the amount of variance that could be attributed to each block of variables after accounting for the variance contributed by previous blocks of variables. Interaction scores were created by calculating deviation scores and then multiplying the deviation scores of the two variables under study to create product (or interaction) terms. Interaction terms were created for independent variables and vision status where those with impaired vision were coded as zero and those who were sighted were coded as one. These interaction terms were included to determine if the variables contributed to life satisfaction in different ways for those with impaired vision and those with sight.

Hierarchical regression analysis was utilised to evaluate the contribution of each set of independent variables to variance in life satisfaction. The effects of the demographic variables of age and gender were estimated, and then impairment variables were entered, followed by activity and independence, social support, social comparison and, finally, the interaction variables were considered. The results are presented in Table

4.18. The standardised coefficients for each variable within the blocks are reported. Total variance explained by each block of the equation is provided (R^2 and adjusted R^2) along with the added variance explained by each block of variables while controlling for previous blocks (R^2 change). R was significantly different from zero at the end of blocks two, three, four and five.

At step one, demographic variables that were found to have significant bivariate relationships with the dependent variable of life satisfaction (age and gender) were entered into block one. This block of variables was not statistically significant, explaining only 0.4% of variance (adjusted R^2) in life satisfaction, [F (2, 413) =1.80, p = .166]. After step two, with the addition of the two impairment variables, total variance explained in life satisfaction was 7.0 % (adjusted R^2) [F(4, 413) = 8.72, p = .000]. The unique variance in life satisfaction explained by impairment variables was 7% when controlling for demographic variables. The R^2 change when entering the impairment variables after demographic characteristic variables was significant [F (2, 413) = 15.52, p = .000]. After step three, with activity and independence variables entered, total variance explained in life satisfaction increased to 8.1% (adjusted R^2) [F (6, 413 = 7.08, p= .000]. The activity and independence variables accounted for 1.7% unique variance in life satisfaction when controlling for demographic and impairment variables. The R^2 change after entering the activity and independence variables to the equation was significant [F (2, 413) =3.57, p = .029]. After step four, with social support and social comparison variables entered, total variance explained in life satisfaction increased to 17% (adjusted R^2) [F (10, 413 = 9.46, p = .000].

Table 4.18 Hierarchical multiple regression of demographic, impairment, activity and independence, social support, social comparison and interaction variables on life satisfaction showing standardised regression coefficients, R, R^2, adjusted R^2 and R^2 change for all participants (N = 560).

	Steps				
Predictors	1	2	3	4	5
Demographic characteristics					
Age	-.072	.045	.073	.036	.211
Gender	-.057	-.029	-.053	-.054	-.055
Impairment variables					
Vision status		.185***	.136*	.094	.060
Number of impairments (excluding vision)		-.208***	-.178***	-.130**	-.098
Function variables					
Activity			.107*	.048	.125
Independence			.065	.009	-.150
Social variables					
Social support network size				.081	.067
Social support satisfaction				.204***	.146*
Social comparison - activity				-.119	-.300*
Social comparison - independence				-.098	-.038
Interaction variables					
Vision status x age					-199*
Vision status x number of impairments (excluding vision)					-.035
Vision status x activity					-.090
Vision status x independence					.209
Vision status x satisfaction with social support					.101
Vision status x social comparison-independence					-.061
Vision status x social comparison –activity					.244*
R	.093	.280***	.307***	.436***	.471***
Total R^2	.009	.079	.094	.190	.222
Adjusted R^2	.004	.070	.081	.170	.189
R^2 change	.009	.070***	.016*	.096***	.032*

*$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

The social support and social comparison variables accounted for 9.6% unique variance in life satisfaction when controlling for demographic, impairment, activity and independence variables. The R^2 change after entering the social support and social comparison variables to the equation was highly significant [F (4, 413) = 11.90, p = .000].

Finally, a fifth block of variables, the interaction terms, was included in the model. Total variance explained in life satisfaction increased to 18.9 % (adjusted R^2) [F (17, 413) = 6.65, p = .000]. Interaction variables accounted for 3.2% unique variance in life satisfaction when controlling for demographic, impairment, activity and independence, and social support and comparison variables. The R^2 change after entering the interaction terms to the equation was significant [F (7, 413) = 2.31, p = .025].

Standardised beta coefficients were examined at each step, which allowed for observation of the effects of each individual variable on the dependent variable, life satisfaction, within each block of variables. The extent to which the addition of subsequent blocks explained variance in life satisfaction was observed. With all variables in the equation (block five), neither age nor gender significantly related to life satisfaction, nor had they in any of the five blocks.

With all variables in the equation (block five), neither vision status nor total number of impairments (excluding vision) was a significant predictor of life satisfaction, although they were significant in previous blocks, such that those with impaired vision and those with more impairments reported poorer life satisfaction. This observed change at step five is due to the suppressing effect of the addition of the interaction variables, and the

varied effect of some variables upon those with impaired vision in comparison to those with sight (Tabachnick & Fidell, 1996). In this model some variables enhance the importance of other independent variables by suppressing irrelevant variability in those independent variables.

In relation to impairment variables, a greater number of impairments (other than vision) was weakly negatively correlated with life satisfaction. Once the interaction variable of vision status and number of impairments (other than vision) was considered, only those with sight demonstrated a relationship between having more impairments and a lower level of life satisfaction.

Activity scores were significant only in block three, such that those who reported more frequent activity also reported higher life satisfaction. Activity scores were not significant after the addition of the social support, social comparison, and interaction variables. These other variables explain differences in life satisfaction better than activity scores. Independence scores were not significantly related to life satisfaction in any of the blocks of variables.

Satisfaction with social support was significantly related to life satisfaction in blocks four and five, such that those who reported higher levels of satisfaction with social support reported higher levels of life satisfaction. A significant interaction of vision status and social support satisfaction was not found, indicating that social support satisfaction is important for the group as a whole, even after taking into account how social support satisfaction affects those with impaired vision and those with sight separately. Social support network size was not significantly related to life satisfaction

in any block. Social comparison of activity was significantly related to life satisfaction at block five. Favourable comparison of activity to one's peers was weakly positively correlated with life satisfaction. Once the interaction variable of vision status and social comparison of activity was taken into account, only those with impaired vision demonstrated a relationship between favourable comparison of activity to one's peers and higher levels of life satisfaction. Social comparison of independence was not related in either block. See Table 4.16 for an explanation of the interaction of vision status and social comparison of activity. The interaction variable of vision status and age was also significantly related to life satisfaction in block five. While age had no significant correlation with satisfaction with life, once the interaction variable of age and vision status were taken into account, an older age predicted a higher level of life satisfaction for those with impaired vision. This relationship between age and life satisfaction was not demonstrated by those with sight. This was previously demonstrated in the two-way between-group analysis of the effect of age and vision status on life satisfaction and the one-way follow-up ANOVA (refer to table 4.17).

Hypothesis 5a stated that activity and independence will contribute to life satisfaction. This hypothesis was not supported. Activity and independence were not unique significant predictors of life satisfaction in the final regression model. Nor were activity and independence predictors of life satisfaction as part of an interaction variable with vision status. Hypothesis 5b stated that other variables under study, including age, vision status, social support and social comparison, will contribute to life satisfaction. This hypothesis was supported. Social comparison of activity contributed significantly to life satisfaction as did satisfaction with social support. Hypothesis 5c stated that there would be interaction effects for factors such as social support or social

comparison, which would predict satisfaction with life in different ways for those with impaired vision and those with sight. Hypothesis 5c was partially supported as the interaction variable for vision status and social comparison of activity was significantly related to life satisfaction such that social comparison of activity had a stronger association with life satisfaction for the group with impaired vision than for the sighted group. Age interacted with vision status such that those with impaired vision reported a higher level of life satisfaction at older ages while this association did not exist for those with sight.

4.10 Summary of results

The hypotheses related to research question one were supported in that independence and frequency of activity were found to be lower in those with impaired vision than in the group of their sighted peers. Moreover, the older age cohorts were less active and independent than the younger age cohort. Hypothesis 1c was not supported, however, as there was no interaction effect between vision status and age on activity or independence, indicating that for the older age cohorts the group with impaired vision remained significantly less active and independent than their sighted peers.

Hypotheses related to research question two were largely supported. Vision impairment was associated with a reduction in activity in the areas of work and leisure, activity areas thought to be visually dependent. Vision impairment was not associated with a reduction in activity in the domestic tasks of daily living, not usually considered visually dependent activities. The hypothesis that only visually dependent tasks would be performed with less independence by the group with impaired vision was not supported. Vision impairment was found to be associated with a reduction in

independence, not only in vision-dependent domains, but across all 12 domains of daily activity.

Hypothesis 2b was supported in that the older age cohorts were less active and independent than the younger age cohorts in the more physical domains of daily living, such as frequency of outdoor and mobility activities, and independence in home management and outdoor work.

Hypothesis 2c was supported in the finding that there was an interaction of age and vision status on activity and independence in particular domains of daily living such that at the older age cohorts there were differences between the groups of those with impaired vision and those with sight in fewer domains of activity and independence. There was also an interaction of age and vision in the total number of activities recently relinquished such that increased age resulted in greater numbers of relinquished activities for those with sight, but not for those with impaired vision. At the older age cohorts the groups became less different in terms of the number of activities relinquished. Activities relinquished varied and were relinquished for different reasons for those with impaired vision and those with sight.

Research question three was related to satisfaction with activity and independence. The hypothesis that vision impairment would be associated with lower levels of satisfaction with activity and independence was supported. Overall, the group with impaired vision was less satisfied with their activity and independence than were their sighted peers.

The hypothesis that the older age cohorts would have higher levels of satisfaction with activity and independence was not supported. Hypothesis 3c, that older people with impaired vision would compare themselves unfavourably to their peers in terms of activity and independence was partially supported. Overall, the difference in the proportion of those with impaired vision who compared themselves unfavourably to their peers was significantly higher than it was for those with sight. An exception was that at the oldest age cohorts, proportionally more sighted participants said that they functioned less actively and independently than their peers than did participants with impaired vision.

Research question four related to overall satisfaction with life. Those with vision impairments did report a lower level of life satisfaction, overall. When the three age cohorts were considered, however, for age cohort 3, the group with impaired vision reported a higher level of life satisfaction than that reported by their sighted peers. For this oldest age cohort, those with impaired vision also reported higher levels of life satisfaction than the younger cohorts with impaired vision.

Research question five was related to an exploration of those factors which may contribute to life satisfaction. Despite a moderate bivariate association between activity and independence and life satisfaction, in the regression model, activity and independence did not contribute significantly to overall life satisfaction for the combined group of older participants, nor for the two groups, those with impaired vision and those with sight, when examined separately.

Significant predictors of life satisfaction included factors other than activity and independence, such as age, particularly for participants with impaired vision. Satisfaction with social support, and social comparison of activity, particularly for those with impaired vision, were unique and significant predictors of life satisfaction in the final regression model.

The chapter that follows, Chapter Five, is a discussion of these findings.

Chapter 5: Discussion

5.1 Introduction

The purpose of this study was to investigate the differences in activity, independence, and life satisfaction between older people with impaired vision and their sighted, age-related peers, and to then examine the links between impairment, disability, contextual factors, and satisfaction, in the context of an adapted ICF model. Specifically, this study aimed to answer the following research questions: 1) Do older people with impaired vision who live in private households in the Manawatu region of New Zealand function differently from their age-related sighted peers in terms of activity and independence? 2) If there are differences in activity and independence between the vision impaired and sighted groups, in which particular domains of daily living are these differences? 3) Are there differences in satisfaction with or in social comparisons of activity and independence between the groups with impaired vision and with sight? 4) Is there a difference in satisfaction with life between the groups with impaired vision and with sight? and, 5) To what extent do activity and independence and other variables under study (impairment, subjective or contextual variables) contribute to life satisfaction for this group of research participants?

This chapter provides an interpretation of the findings and a discussion of them in relation to previous studies. Limitations of the present study, implications of the findings and suggestions for further research and for practice are also presented.

The adapted model of the ICF used in this study was a useful framework for organising the variables under study. The ICF, which has provided a useful standard language that has been adopted throughout the world, utilises an agreed upon common language, allows the inclusion of all people, not just those with impairments or those who are disabled, and allows for the evaluation of environment and its effect on people. The adapted ICF model used in this study incorporated subjective dimensions of functioning, as well as body structures and functions, activity and independence, and personal and environmental components. There have been arguments for the inclusion of satisfaction as a qualifier for participation in the ICIDH and ICF models (Ueda & Okawa, 2003), but this is the first study known to the author which has conceptualised and measured satisfaction with life, functioning and social supports as integral and separate components of functioning. This division has proved to be useful and has resulted in findings which may substantially improve the provision of rehabilitation services. According to the theory inherent in the ICF and its adapted model used in this study, the various components can be related in multi-dimensional, complex ways, and not simply linearly, as previously proposed in earlier WHO models (WHO, 1980).

This study found small to large correlations between a) impairment and activity and independence; b) impairment and subjective dimensions of life; c) impairment and contextual factors; d) activity and independence and subjective dimensions of functioning, and e) activity and independence and contextual factors. This offers some support to the proposed adapted model of the ICF. The multi-dimensional relationships found in this

study have been found in other studies (Fuhrer, Rintala, Hart, Clearman & Young, 1992; Heinemann & Whiteneck, 1995).

In general, the group with impaired vision reported a significantly lower level of activity and independence in virtually every domain of daily living. There were specific domains of activity and independence that appeared to represent the largest difference in functioning between the groups, such as independence in community activities, caring for others, handling money and frequency of work and leisure activities. Although these were the areas where independence and frequency of activity were significantly lower for the group with impaired vision, the activities in which they were most dependent and the activities which produced the greatest dissatisfaction, in terms of independence, for this group, were not the same. The group with impaired vision reported that they were least satisfied with their independence levels in the domains of quiet recreation, community activities and handling money. The domains of daily living in which this group was most dependent were outdoor work and community activities. Those with impaired vision also reported a significantly lower level of life satisfaction than was reported by their sighted peers. Although differences in activity and independence were apparent between the two groups of participants, activity and independence did not appear to make unique and significant contributions to life satisfaction for either group. Other factors such as social comparison of activity and social support satisfaction emerged as important contributors to life satisfaction for all participants in this study. The effects of age, as examined through factoring in three age cohorts within the research, have also revealed important differences between the age cohorts studied.

5.2 Research Question One

Do older people with impaired vision who live in private households in the Manawatu region of New Zealand function differently from their age-related sighted peers in terms of activity and independence?

Yes. The group with impaired vision did function differently from their sighted, age-related peers. They reported significantly lower levels of independence and frequency of activity. Advancing age also had an effect on functioning. Results showed a significant main effect for both age and vision status on activity and independence scores, such that lower activity and independence scores were reported by those who were older, and by those who had impaired vision. The interaction of age and vision impairment, however, did not have a significant effect on activity or independence.

The findings that vision impairment was related to lower levels of functioning were expected, and were similar to previous findings (Clark et al., 1999; D'Argent-Molina et al., 1996; Heyl & Wahl, 2001; Keller et al., 1999; Ringering & Amaral, 1990; Salive et al., 1994; Wahl, Oswald & Zimprich, 1999). The differences found between the groups were greater, however, than seen in a previous study by Crews and Campbell (2001) who also controlled for age and found that those with vision impairments did not differ significantly from their sighted peers in participation in social activities. Crews and Campbell did find that those in their study with impaired vision did report significantly more health impairments and more difficulty with some BADL and IADL items than was reported by their sighted peers in two age cohorts, aged 70-74 and aged 85+.

When age cohorts were examined in the present study, a slightly different picture emerged, at times, as it did in previous studies. In the present study, there was a main effect for age such that activity and independence diminished with age for both groups. The group with impaired vision reported lower levels of independence and frequency of activity in all three age cohorts. Although there was no interaction effect of age and vision status, at the oldest age cohort, the difference in frequency of activity between the group with impaired vision and those with sight diminished.

One notable study contradicted findings of many previous studies, yet highlights the trend observed in the present study related to the oldest age cohort and activity for this cohort. Davis et al. (1995) found that those with vision impairments did not function significantly differently to their age- related peers. In that study the participants with impaired vision did function with less independence, but the difference was not statistically significant. In that study, the participants with impaired vision did report fewer daily activities than the control group, but no differences in self-reported functional capacity between those with impaired vision and those with sight were reported.

In the present study, for the two younger age cohorts, significant and large differences were found between the vision impaired and sighted groups in terms of activity and independence, but at the oldest age cohort, these differences were diminished in terms of frequency of activity. Other studies, which controlled for age, include Branch et al. (1989), D'Argent-Molina et al. (1996), LaForge, Spector & Sternberg (1992), Reuben et al. (1999), Rovner and Ganguli (1998), Rubin (1994), Rudberg, Furner, Dunn & Cassell (1993), Salive

et al. (1994), and Wang, Foran & Mitchell (1999). Most found that older people with impaired vision were approximately twice as likely to have difficulty in daily living activities, in comparison to sighted peers, after controlling for age (Burmedi et al., 2002a).

The findings of the present study support the findings of other studies which identified that older people with impaired vision functioned less actively and independently than their sighted peers using multiple regression models. These studies found vision impairment to be a significant predictor of ADL performance, after controlling for age (Clark et al., 1999; Jette & Branch, 1985; Kington, Rogowski, Lilliard & Lee, 1997; Wahl, Schilling et al., 1999). Jette and Branch found that age was related to lower levels of self-reported and performance-based daily functioning. As was found in the present study, Kington et al. (1997) also found that both age and vision were associated with daily functioning. Of the many health and demographic factors investigated, only age, incontinence and vision impairment were associated with poorer performance in their five outcome measures, which included physical role functioning, emotional role functioning, general mental health, physical function and general health perception.

Ivanoff, Sonn, Lundgren-Lindqvist, Systrand and Steen (2000) found in those aged 85 years old, the relationship between daily functioning and visual acuity was not strong. This finding by Ivanoff et al. may be corroborated with the findings of the present study, in which, at the oldest age cohort (age 85+), mean differences in both activity and independence between those with impaired vision and those with sight were not as dramatic as they were at the younger age cohorts. Ivanoff et al. suggested that such findings are an

implication of the adaptation to impaired vision after time. This explanation was not supported by the present study. Time since onset of significant vision impairment was not significantly correlated with activity, independence, satisfaction with independence or life satisfaction.

Activity, as explored in the present study, could be considered equivalent to participation in activity, as it measured frequency of involvement in activity. Responses related to frequency of involvement in activities were assessed separately from the degree of independence with which one performed daily activities. Both activity and independence were related to main effects for age and vision such that those who were older and those who were vision impaired had lower scores. Activity, however, for those aged 85+ showed a diminished difference in means between those with impaired vision and those with sight, whereas independence did not demonstrate this pattern. It is possible that those who have impaired vision have had practical and social support in place for many years, which would enable them to remain reasonably active, though they may not necessarily function independently. The sighted group is likely to be experiencing the onset of disabilities, but may not have built up networks of support to assist with transportation and companionship to enable them to continue with favourite activities to the extent that those with impaired vision have. In a previous study by Good and La Grow (2000) older people with impaired vision in the Manawatu region clearly differentiated activity from independence and reported that they valued community involvement more than independence. They expressed a desire to participate in community activities more strongly than they expressed a desire for independence.

Independence as a concept requires careful consideration, as it clearly has unique meaning and value to individuals and culture can determine some of this meaning. New Zealand culture is likely to be influenced by Maori and Pacific Island values. Many Pacific, Asian, Hispanic, Native American and Indian cultures value interdependence, and mutual family support, above independence (Clay, 1992; Good & La Grow, 2000; La Grow, 1998). This can differ from the westernised U.S. concept, which values individual independence, a concept from which rehabilitation finds its roots. In some of these cultures "empowerment of the individual, as seen in the Western context, is perceived as being selfish and undesirable" (Pinto & Sahur, 2001, The concept of independence in culture ¶ 1). The importance of family and community involvement within New Zealand is articulated at policy level, within both the New Zealand Disability Strategy (Ministry of Health, 2001) and in the Positive Ageing Strategy (MSD, 2001). It became evident, in the face-to-face meetings with research participants, that those who received help from family members viewed themselves as independent, and those who received support from outside family, such as agency support, viewed themselves as dependent. For similar reasons, in calculating of levels of independence and of support needed by older Australians, while describing the impact of population ageing, Kendig and McCallum (1986) excluded assistance from a spouse from the definition of assistance. Experience in the rehabilitation field in the U.S. and in New Zealand has brought to light a contradictory concept of independence: in the U.S., often older people would view themselves as independent as long as help did not come from family.

In the present study, independence was not correlated with marital status, or living situation (alone or with others). But being married and living with others were correlated with higher levels of satisfaction with independence. This could mean, perhaps, that if someone is available to complete a task, although you may not be capable of independently doing so, you can remain satisfied with that level of dependence. Horowitz et al. (2000) found that those who lived with others were better adapted to their impaired vision, which could be considered similar to the findings of the present study. Horowitz et al. (2000) also found, however, that those who lived with others were significantly more satisfied with life, which was not found in the present study.

Independence was significantly positively correlated with satisfaction with social support, although it was not related to social support network size. It is possible that those who feel supported, and who believe their quality of support is good no matter how many people actually support them, may be able to take risks in independence and, therefore, be more independent. If one believes there is a safety net of others who care for and support them, they may attempt more independence in daily living. Those who do not feel supported may not be able to take the same risks in independent functioning because no such safety net exists, or exists in their perception.

In summary, independence and frequency of activity were reported to be lower for older age cohorts and for those with vision impairments. This is similar to what has been found in other studies. What is unique to the present study is that differences in activity levels between those with impaired vision and those with sight at the oldest age cohort, while still

significant, were found to be less dramatically different. This may be very useful in developing an understanding of how vision impairment affects older people in different ways, within various age cohorts. This knowledge, that both age and vision affect activity and independence, may assist older people, and those that work with them in rehabilitation or daily living skills instruction to set more reasonable and informed goals. Understanding that age-related peers are all experiencing diminished activity and independence may assist people to adjust expectations of themselves and of rehabilitation. This, in turn, could enhance self-esteem, satisfaction and the rehabilitation process. The present study supports the finding of Clark et al. (1998) who, identified that age must be considered as an important contributor to reduction in activities, just as vision impairment must be considered.

5.3 Research Question Two

If there are differences in activity and independence between those with impaired vision and their age-related sighted peers, in which particular domains of daily living are these differences?

Differences in frequency of activity were found between those with impaired vision and those with sight in work/leisure, where vision impairment had a negative association with frequency of activity. In outdoor/mobility domains both age and vision impairment had a negative association with frequency of activity. It was an unexpected finding that there were no significant differences attributed to vision status or age in the domain of domestic activities. Domestic activities such as cooking, cleaning, and clothing care, however, are

often tasks targeted in rehabilitation programmes for adults who are blind and vision impaired. It is possible that individuals who are older and who have impaired vision perform essential, familiar tasks in familiar environments, such as domestic tasks, with the same frequency as their sighted peers. Rehabilitation skills instruction may improve the independence, safety and efficiency of their performance of these tasks, even though the frequency is equivalent to that of their sighted peers. It is also possible that the older adults with impaired vision in this study may have received rehabilitation training in adaptive techniques for daily living, which often focus on kitchen management and other domestic tasks. Virtually every participant with impaired vision (n = 134) reported that they had received services from the RNZFB, but none specifically identified that they had received ADL instruction.

Teaching adaptations to performing specific tasks of daily living is a primary function of occupational therapists, and vision rehabilitation therapists (Ponchillia & Ponchillia, 1996). What is clear from the present study is that knowledge of how people in various age cohorts experience daily living may assist in ameliorating difficulties encountered in daily life.

Differences in frequency of activity between the groups with impaired vision and with sight were found in six tasks for age cohort 1, three tasks for age cohort 2 and only one task for age cohort 3. Within age cohort 1, proportionally fewer of those with impaired vision reported less frequent performance of the following six activities: driving; reading mail, newspapers and magazines; gardening; car rides; household maintenance, and paid or volunteer work. Within age cohort 2 proportionally fewer with impaired vision reported

less frequent performance in the following three activities: driving; reading mail, newspapers and magazines, and using a typewriter or computer. Within age cohort 3 the only activity with proportionally fewer people with impaired vision reporting less frequent performance was reading mail, newspapers and magazines.

In a study of those with impaired vision, Percival (2003) noted that, nearly 25% never or rarely went to local shops. Findings of the present study indicate a much higher percent (48.4%) of the group with impaired vision never or rarely go out to shops. A possible explanation of the difference in findings is that Percival's study took place in large U.K. cities, where residents would have used public transportation throughout their lives, and would have access to some shops and other amenities within walking distance of their homes. New Zealand and the Manawatu region, in contrast, are more rural, have a higher proportion of drivers of private vehicles and few dignified options for non-drivers. The Manawatu region in particular is lacking in a quality, accessible public transport system. "The transport requirements of older people are hard to meet through bus or train services, being ad hoc and sporadic, rather than regular and along well-used routes, like the trip to work or to school" (New Zealand Land Transport Safety Authority, 2004).

Those with impaired vision had recently relinquished significantly more daily activities than their sighted peers. They reported most frequently that they gave up activities due to their vision impairment. The group with impaired vision had relinquished the following activities in greater proportions than their sighted peers: going out at night, driving, cooking, walking, gardening, craftwork, travel, shopping, social activities, visual

entertainment and reading. When controlling for age by using the three age cohorts, the differences in the number of activities relinquished were no longer significant for the oldest group. At age cohort 3 the sighted group reported having relinquished nearly as many activities as those with impaired vision. Those with sight relinquished activities mostly for physical reasons, making the two groups less different in the number of recently relinquished activities. Note that at age cohort 2, the group with impaired vision had recently relinquished more activities than in the other age cohorts, which could explain some of the other unexpected findings about this middle age cohort and their relatively low scores on satisfaction measures.

These results were similar to those of Burack-Weiss (1990) who also investigated relinquished activities in a population of older people with impaired vision. She reported that "when visually impaired elders give up, or are dependent in, activities of daily living, it is much more likely to be as a result of vision loss than of another health problem"(p. 211). What is now known, through the findings of the present study, is that older *sighted* participants also reported relinquishing activities, for various reasons, some different than the reasons cited by participants with impaired vision. At the oldest age cohort, the number of activities recently relinquished is not significantly greater for those with impaired vision than for their sighted peers.

Differences in independence between the two groups were found in every domain of daily living measured, such that the group with impaired vision was less independent. They were significantly less independent than the sighted group in 10 domains of daily living in age

cohort 1, in 12 domains at age cohort 2, and in only 7 domains in age cohort 3. At each age cohort the vision impaired group was significantly less independent in community activities, money handling, quiet recreation, kitchen management, caring for others, personal management and communication activities. At age cohorts 1 and 2, those with impaired vision were less independent in outdoor work activities, home management and active recreation, which no longer produced lower scores for those with impaired vision at age cohort 3. At age cohort 3 those with impaired vision were less independent in areas of personal management, caring for others, kitchen management, communication activities, quiet recreation, community activities and handling money, but they no longer differed (as they did at younger age cohorts) in areas of BADL, home management, outdoor work activity, active recreation and clothing care.

Findings of the present study support those of Elfervig (1997), who produced evidence that older adults with impaired vision had particular difficulty with shopping, clothing care and money handling. In the present study more independence was evident in the area of clothing care. This is particularly puzzling, because in the Manawatu region, clothing care includes the somewhat physically demanding work of pegging clothes on an outside line, as few homes have automatic dryers in comparison to in the U.S. (J. Philo, Fisher & Paykel, personal communication 3 May 2005). This discrepancy could be explained by the particular pride, which was evident in personal interviews, at being able to manage the household laundry.

The findings of the present study are also similar to those published by Statistics New Zealand (1998), which showed that most people who were older were very independent and, overall, fewer than five percent required assistance with food preparation or bathing. About 10% required assistance with getting out and about, and 15% required assistance with shopping. Housework was the daily living domain where most assistance was needed by older people. These figures were similar to what was found in the present study for those who were sighted, with the figures for assistance required being higher for the group with impaired vision. According to Statistics New Zealand, the need for assistance dramatically increased with age, especially after age 85. This too, was supported by the findings of the present study. At the oldest age cohort there were fewer differences in independence between the groups with impaired vision and with sight. For the sighted group, home management was second only to outdoor work, for activity requiring assistance and everybody required more assistance, whether living with a vision impairment or not.

The present study supports earlier studies conducted in Australia and New Zealand that have suggested that older people are generally very independent and require very little day-to-day assistance. Transportation and household repairs were the only two domains of daily living where dependence in the older population was reported by Gething (1990); Kendig and McCallum (1986); and Statistics New Zealand (1998). These findings are similar to the findings of the present study. New findings, however, provide evidence that community activities, which included accessing transport, is the area of daily life where the greatest discrepancy between the two groups was found. Although all older people

reported high levels of dependence in this area, those with impaired vision reported an even higher rate of dependency, while home maintenance appeared to be similarly difficult for both groups.

In summary, most older people in this study were active and independent, although there were differences between those with impaired vision and their sighted peers in specific areas of daily living. Outdoor/mobility and work/leisure areas were the domains of daily living where those with impaired vision were significantly less active. There was no difference in frequency of activity between the two groups in the domain of domestic activity. When examining specific activities within the three age cohorts, those with impaired vision were significantly less active than the sighted group in six activities for those in age cohort 1, five activities for those in age cohort 2; and only three activities for those in age cohort 3. The group with impaired vision reported that they relinquished more activities than did the sighted group in age cohorts 1 and 2, but about the same in age cohort 3. .

Comparison of independence levels showed an across the board difference between the two groups in all 12 domains of daily living investigated. Those with impaired vision were most independent in areas of BADL, active recreation, personal management and communication, as was the sighted group. The sighted group, however, also reported a high level of independence in quiet recreation, money handling, caring for others and community activities. The largest discrepancy in independence between the two groups was in areas of community activities, caring for others, handling money, and quiet

recreation. This is similar to findings from previous studies. A unique finding from this study, however, is the effect that viewing these groups by age cohort had on these comparisons. Groups no longer differed at age cohort 3 (as they did at younger age cohorts) in areas of BADL, home management, outdoor work activity, active recreation and clothing care. These areas of daily life, which are traditionally targeted for rehabilitation interventions, may need to be reconsidered, in light of this information. It may not be a reasonable expectation to obtain independence in these areas, at the older age cohorts. Other areas of daily living could be focused on for more realistic goal setting in rehabilitation.

5.4 Research Question Three

Are there differences in satisfaction with or in social comparisons of activity and independence between those with impaired vision and their age-related sighted peers?

5.4.1 Satisfaction with activity

A significantly greater proportion of those with impaired vision reported that they would prefer a higher level of activity than they currently had, than was reported by their sighted peers. When the three age cohorts were investigated, the group with impaired vision in age cohort 3 was not significantly different from their sighted peers in the proportion of those who preferred a higher level of activity. Satisfaction with activity (as measured by a preference for a different level) was significantly positively correlated with reporting more frequent activity as well as with more satisfaction with social support.

Very few studies have investigated this important element of functioning, satisfaction with functioning, except for a study by Van Zandt, Van Zandt and Wang (1994), which found that those who found social support in a formalised support group had higher levels of satisfaction with activity. They surmised that this was because those people were more likely to find ways to cope with functional limitations through such a group.

5.4.2 Satisfaction with independence

The group with impaired vision was, overall, significantly less satisfied with their level of independence than were their sighted peers. Increasing age was also found to be associated with lower satisfaction with independence, but only for those who were sighted. Those with impaired vision differed little across the three age cohorts so that by age 85+ there was no longer a significant difference between the two groups in satisfaction with independence. This could be because as the sighted group move into their late 80s, they may have just begun to experience the onset of impairments which limit independence. Their peers with impaired vision may have already experienced a loss that is most feared, the loss of vision, and may have found ways to compensate and cope.

The group with impaired vision were less satisfied with independence, than were their sighted peers, in every domain of independence measured ($N = 12$). The daily living domains where the largest differences in satisfaction between the two groups were found were quiet recreation, community activities, handling money and active recreation.

It is interesting to note that the domains of independence associated with the greatest dissatisfaction for those with impaired vision were not the same domains with which those with impaired vision reported themselves to be most dependent. Nor were the domains associated with the greatest dissatisfaction the same domains where those with impaired vision were most different from their sighted peers. For example, the group with impaired vision was more dissatisfied with active recreation than their sighted peers, but they reported high levels of independence in this area and relatively close levels to those reported by the sighted group.

It is possible that people fight to retain independence in the areas most important to them, but their satisfaction with their independence could be low. Thus, in a standard assessment of independence, if only areas of difficulty are targeted without identification of the priorities of the individual, important areas for intervention could be missed. People could benefit from rehabilitation interventions in areas in which they are already relatively active and independent, but dissatisfied.

It is not surprising that both groups of participants in this study reported dissatisfaction in areas of recreation, as at and after retirement age, leisure time can become more important. Vision impaired participants interviewed for this study reported feeling "robbed" of their opportunity for leisure and recreation activities with the onset of vision loss when their work responsibilities had diminished or ended. This is important to highlight, because recreation is not often a priority in rehabilitation programmes for older people. Percival (2003) reported that groups designed to meet social and recreational needs of older people

with impaired vision are valued by those that participate, but such programmes are under-funded and in short supply. J. Moore (2003) reported a similar unmet need in New Zealand. Burack-Weiss (1990) reported that older people with impaired vision give up activities that once brought great pleasure as they struggle with daily survival skills. Generally, rehabilitation programmes prioritise homemaking, personal management, kitchen management, clothing care and communication tasks. Of course, this may be necessary for safety and practical survival purposes, but we must note the priorities provided to us here, by older people with impaired vision, who are dissatisfied with their independence in recreation. Previous research and preliminary analyses of the present study (Good, 2000b; Good, La Grow & Alpass, 2002; Good, La Grow & Alpass, 2003) indicated that the specific tasks of daily living which older adults with impaired vision thought most important included reading and correspondence, hobbies and crafts, travel and mobility, and kitchen management and gardening (See Appendix N for poster presentations).

The Functional Independence Measure for Blind Adults (FIMBA) is one of just a few identified assessment instruments, designed for populations with impaired vision, which addresses and measures satisfaction with functioning. The data provided in published studies that utilised this instrument do not provide information about relative levels of satisfaction with performance, but only about degree of change in frequency, independence and satisfaction with specific tasks after rehabilitation (De l'Aune, Welsh & Williams, 2000; Long et al., 2000). Articles written to develop the conceptual models of the ICF do allude to the importance of measuring satisfaction with functioning. Although such

measures are not specifically included in the ICF classification, satisfaction has been mentioned as being an important component to consider within the conceptual framework of the ICF and for any models of functioning designed from its classification system (Madden, Choi & Sykes, 2003).

New evidence from the present study allows us a better understanding of satisfaction with independence and with activity for both groups of participants, and how satisfaction relates to reported performance. This will aid in identifying the relative importance of addressing problems in daily living skills with rehabilitation programmes and may help us to target areas that not only cause difficulty but also cause dissatisfaction, no matter what the difficulty encountered by older persons with impaired vision.

5.4.3 Social comparison of activity and independence

A primary motivation for this research was to discover if there were differences in activity and independence between older people with impaired vision and those with sight, to investigate if the functional differences were more perceived than real and to determine if activity and independence affected satisfaction with functioning and with life. Examining social comparisons made it possible to assess if satisfaction could be attributed to a difference in reported functioning or to a perceived difference from one's peers. If perceptions are that vision impairment creates greater functional difficulties than actually exist, educating older people with impaired vision and service providers about norms and ranges of performance of daily activities for those with impaired vision and those with sight may improve life satisfaction markedly.

Social comparisons are determined by comparisons made with others around us or with what we remember ourselves as being like in the past. Low levels of emotional well-being have been associated with unfavourable social comparisons (Frieswijk et al. 2004a, 2004b; Heidrich & Ryff, 1993; Suls et al., 1991; Ybema & Bunk, 1995). Social comparisons are complex because people choose targets of comparison for reasons often unexplained and place importance on factors in very complex ways (Diener & Lucas, 2000). Nevertheless, for the purposes of this study, it was deemed important to investigate comparisons of reported functioning, perceptions of this functioning in relation to peers and how each of these factors related to satisfaction with functioning and with life.

The group with impaired vision estimated that they functioned less actively and independently than their peers did until age 85+, when the groups with and without vision became less different in their estimations of functioning in relation to peers. In the present study 36% of those with impaired vision thought they were less active than their peers. Of those with impaired vision 37% thought they were less independent than others their age. Kaarlela (1978) found that about 35% of her participants, who had impaired vision, estimated that they were less capable than others of their age.

Results from the present study show a significant correlation between rating your activity and independence as low, in comparison to peers, and composite scores of frequency of activity and levels of independence. This could indicate that older people do have a fair idea of how they function in relation to their peers. There is also a strong correlation between perception of one's activity and independence being lower than one's peers and

dissatisfaction with activity and independence. Interestingly, the association between social comparisons and satisfaction with activity and independence is stronger than the association between reported activity and independence and satisfaction with them. This could indicate that how one believes one compares with their peers, in terms of functioning, may have more of an influence on satisfaction with functioning, than how active and independent one is. These findings are similar to those found by Frieswijk et al. (2004b), who found an independent effect on life satisfaction of social comparison, separate from the effect of frailty in older people. It is possible that this is a measurement issue, and social cognitive comparisons may naturally be more equivalent to cognitive measures of satisfaction than to measures of frailty or function (activity and independence).

What we now know, however, from findings of the present study, is that at age cohort 3 those with impaired vision did not appear as likely to rate their activity and independence as lower than their peers as they had in age cohorts 1 and 2. The sighted group appeared more likely to rate their activity and independence as lower in comparison to peers at the older age cohorts. This suggests that social comparisons at the oldest age cohort must be investigated further, to gain an understanding of why, for persons with impaired vision, satisfaction with functioning and social comparison of functioning seemed stable or even to improve. It is also relevant to investigate why, for those who were sighted, satisfaction and positive social comparisons decreased in the older age cohorts. It could be, as Burack-Weiss (1990) suggests, "the oldest [with impaired vision] respondents do somewhat better than the younger ones; possibly because they are 'survivors' and generally hardier" (p. 213). Alternatively, this improved social comparison and satisfaction with function could

be related to the fact that at the older age cohorts the people with impaired vision appeared to be functioning more similarly to their peers. They may be aware of this and this positive appraisal of performance may not only reflect reality, but also enhance life satisfaction.

Strauss (1966) conducted doctoral research almost 40 years ago and noted important aspects of social comparison for adults with impaired vision. Strauss found that older people with impaired vision did make social comparisons, and this could enhance self-esteem. As people age, they may make more social comparisons because it can become less threatening, as sighted peers begin to experience loss of function for numerous reasons. In Strauss's study some people with impaired vision did not make social comparisons, and Strauss surmised that this was due to social isolation. In the present study, in fact, a larger number of people in one's social network was correlated with favourable comparisons in activity. This does support the idea behind Strauss's theory that a reduction of social comparisons could be related to isolation.

In summary, satisfaction with functioning was lower for those with impaired vision than for their sighted peers, except in age cohort 3, where those with impaired vision were more satisfied. Similarly, social comparisons of activity and independence were less favourable for those with impaired vision, except for those in age cohort 3, where those with impaired vision made more favourable comparisons to their peers.

5.5 Research Question Four

Is there a difference in satisfaction with life between those with impaired vision and their age-related sighted peers?

Life satisfaction is a "conscious cognitive judgment of one's life in which the criteria for judgment are up to the person" (Pavot & Diener, 1993, p. 164). Life satisfaction was deemed an important variable to investigate in the present study, as were the links between life satisfaction, impairment and functioning. Subjective dimensions of life are more commonly being recognised as important in the field of rehabilitation, as expressed by Scherer and Cushman (2001).

> Today, it is a common view in rehabilitation that the perspectives individuals with disabilities have regarding their quality of life is more relevant than objective indicators of this construct, since individuals may be quite positive about their life circumstances even though they might appear bleak according to objective measures (Scherer & Cushman, 2001, p. 387).

The findings in this study related to life satisfaction and its association with age and vision status were interesting. There was a significant effect for vision status, and those who had vision impairments, as a group, reported a lower satisfaction with life than was reported by their sighted peers. Overall, age did not produce a main effect for life satisfaction, but there was an interaction effect for vision status and age, such that those who had impaired vision

had a significant rise in life satisfaction at age cohort 3 to the point that their life satisfaction scores were actually higher than those of their sighted peers at that age.

The overall mean SWLS score obtained in the present study was 23.75 on this scale which has a range of 5-35. Previous studies, related to life satisfaction in general, have produced scores for older adults that were about 24 on the SWLS (Pavot, Diener, Colvin & Sandvik, 1991). The sighted group's mean score was 24.50, similar to what has been found in other studies. In the present study those with impaired vision had a mean score (21) just about at the neutral point on the scale (20). This was comparable to scores obtained from disabled students in a study by Chwalisz, Diener and Gallagher (1988) who found a mean score of 20 in their sample of disabled participants.

Overall, the findings related to life satisfaction were as expected, and supportive of earlier studies that linked vision impairment with lower reported levels of life satisfaction or similar measures of well being (Bazargan, Baker & Bazargan, 2001; Branch et al., 1989: Carrabellese et al., 1993; Gillman, Simmel & Simon, 1986; Heine & Browning, 2002; Reinhardt, 1996; Upton, Bush & Taylor, 1998; Williams et al., 1998).

Davis et al. (1995) also found that older participants with impaired vision had lower life satisfaction scores than their sighted peers, and associated this with reduced social support. In the present study, although life satisfaction was positively correlated with both social support network size and satisfaction with social support, and social support satisfaction was found to contribute to life satisfaction in the regression model, there was no significant

difference between those with impaired vision and those with sight in the size of their social support networks, or in their degree of satisfaction with this support. Davis et al. found life satisfaction was highly correlated with high levels of functional independence, as was also found in the present study. But results of the regression model of this study indicate that independence did not contribute significantly to life satisfaction after controlling for social support and other variables.

In the present study neither marital status nor living situation was linked to life satisfaction for the group as a whole, or for the two groups when examined separately. This is in contrast to what was found in a study by Elfervig (1997), who found that being married was linked to overall life satisfaction. The findings of the present study are also contradictory to what was found by Horowitz et al. (2000) who identified that living with others was linked with a higher level of life satisfaction.

It is possible that being married is associated with higher incomes and higher standards of living in the U.S. where these other studies have been conducted. But in the present study income was only linked with concurrent impairments and social comparison variables. Income was not significantly correlated with any other variable under study including life satisfaction, activity, independence, social support network size or satisfaction with social support. In New Zealand, being married does not necessarily increase your income or standard of living, because Social Security benefits for older adults are adjusted for living situation. An alternative explanation for why marital status and living situation were not correlated with life satisfaction, as they have been in other studies conducted in other

countries, is that government supports for older people, including practical assistance in the home, allow for some formalised social supports as well. Home help organisations allow for social time between clients and home help supporters (Lavender Blue Home Help Organisation, SupportLinks Manawatu, personal communications, March 16, 2005). In other countries a spouse may be the only source of practical assistance available to older people, so those who are widowed or not married may have unmet needs that are not addressed by government sponsored assistance.

The rise in life satisfaction in the oldest of those with impaired vision is puzzling, although others have also found that older age cohorts have reported a higher level of life satisfaction (Hamarat et al., 2002; Hileras et al., 2001). Hamarat et al. found that among healthy, active adults, aged 45+, the oldest old reported life satisfaction at least as good as, and better than the younger age cohorts. Hamarat et al. attributed this to resilience of those who have coping resources, which are adequate throughout life, and remain so after age 75. They also surmise that life satisfaction, like the use of coping resources and personality traits, remains stable over our adult lives. Logical as these arguments are, they offer no clear explanation for why the oldest cohort with impaired vision experienced a rise in life satisfaction which exceeded that of the sighted group. Unless the explanation lies in another hypothesis of Hamarat et al. that flexibility and cognitive adjustments in coping increase life satisfaction and older people, who have already experienced a great loss such as loss of vision, may have enhanced coping skills and flexibility, in comparison to their sighted peers.

Hilleras et al. found that health and emotional stability were the most important factors for predicting life satisfaction in those aged 90+. Hilleras et al. also noted that subjective health had a greater impact on life satisfaction than functioning (activity and independence), which corroborates the findings in the present study that subjective concepts (social comparison of activity and independence) were more strongly correlated with life satisfaction than were more objective measures of activity and independence. Hilleras et al. also reported that life satisfaction actually does increase with age.

Life satisfaction was linked with health in the present study, as it has been in earlier studies. Although health was not directly assessed, the number of impairments other than vision was recorded in this study. As was found in an earlier study (Elfervig 1997), in the present study, a greater number of health impairments other than vision was linked with lower life satisfaction. In the present study there were no significant differences between the groups with impaired vision and with sight in the number of impairments they had, other than vision, once the three age cohorts were considered. In those with impaired vision the number of impairments other than vision did not steadily increase with age, as it did with the sighted group. This may be a possible explanation for the finding of higher life satisfaction levels in the oldest age cohort with impaired vision. Simons (2002) found that at the oldest ages, satisfaction with life was predicted by perceived health. Although in the present study, health impairments increased in number, with age, perceived health was not measured. It is possible that if one perceives one's health in relation to others, those in the oldest cohort with impaired vision may have correctly estimated that their health is as good

as or better than their peers, because everyone is acquiring impairments with age, and expectations for good health are reduced.

Further linking life satisfaction to health, Kim (1997) found that life satisfaction was more strongly associated with perceptions of health rather than to objective measures of health, as was also found by Simons (2002). Kim found no association between activity levels and life satisfaction, which is contradictory to what was found in the present study (a moderate correlation between activity and life satisfaction) and other studies that found stronger links between activity and life satisfaction (e.g. Heine & Browning, 2002).

The weak link between function and life satisfaction found in the present study was also identified in two studies related to physical impairment. Burger and Marincek (2000), in their study on post-polio syndrome and life satisfaction, found that life satisfaction and contentment appeared to be stable traits, unrelated to function. However, they also found that new polio symptoms decreased life satisfaction. This is in alignment with what was found in the present study, in the relatively strong correlation between the number of recently relinquished activities and overall life satisfaction. In a study of those who had experienced spinal cord injury, Scherer and Cushman (2001) concluded that life satisfaction was only weakly associated with functioning and should be measured separately from measures of satisfaction with specific areas of life, such as activity and independence. Similarly, in the present study, satisfaction with activity and independence did have strong correlations with vision status, age, activity, independence, number of other impairments, social support satisfaction and social comparisons. Life satisfaction was less strongly

correlated with most factors under study. This may indicate that life satisfaction may be more closely related to personality and other long-standing traits, than to more temporary states, such as functioning levels.

Finally, in a study that examined the links between physical health, social comparisons and life satisfaction, Frieswijk et al. (2004b) found that social comparisons had a greater and independent association with life satisfaction than frailty did in older people. This finding is similar to what was found in the present study, in that subjective components of functioning (i.e. social comparisons) were more closely associated with life satisfaction than more objective measures (i.e. health or functioning).

When asked what contributed to and detracted from life satisfaction the group of participants in this study with impaired vision reported that their personal relationships and independence contributed to their life satisfaction with proportionally more frequency than their sighted peers mentioned these factors. Poor vision was mentioned as the primary detractor from quality of life by about 70% of those with impaired vision who responded to the open-ended question. No other factor was mentioned so frequently. Hilleras et al. found similar responses to their investigation of life satisfaction. See Appendix N for details of what research participants in the Manawatu region reported contributed to and detracted from their QOL in this and other studies conducted by the author (Good, La Grow & Alpass, 2002; 2003).

In summary, satisfaction with life was found to be lower overall for those who had impaired vision in this study, as has been found in most previous research, with a few exceptions. The unusual finding that the oldest age cohort with impaired vision reported a higher life satisfaction score than not only any younger age cohort with impaired vision or with sight, but their sighted peers in the oldest age cohort may be as a result of resiliency and accumulated flexibility and skills for coping. It could also be explained by social comparison theories developed by Festinger (1954) and recently applied in studies relating to older people, as described in Chapter One. At this age group (85+) the group with impaired vision functioned more similarly to their sighted peers, and reported that they perceived this to be true. It may be this that explains a higher life satisfaction. For the first time, as older people, the group with impaired vision may realistically compare themselves favourably to their peers, in terms of daily functioning, and it may be this which explains their higher levels of life satisfaction.

5.6 Research Question Five

To what extent do activity and independence, and other variables under study (i.e. impairment, subjective dimensions of functioning, contextual factors), contribute to life satisfaction for this group of research participants?

Although there were significant bivariate relationships between activity and independence and life satisfaction in this study, as was found in a previous study by Reinhardt (1996), independence was not found to be a significant contributor to life satisfaction, within the multiple regression model, after demographic and impairment variables were considered.

Whereas activity was found to be a significant contributor to life satisfaction after controlling for impairment and demographic variables, it was no longer significant once social support and social comparison variables were considered. Satisfaction with social support was more highly correlated with life satisfaction than either activity or independence variables were. Social comparison variables were even more highly correlated with life satisfaction than those of social support or activity and independence.

It was an unexpected finding that activity and independence were not found to be significant and unique contributors to life satisfaction, as these aspects of daily functions are so often the focus of rehabilitation programmes for persons with impaired vision. This warrants further exploration of the other variables under study, such as impairment, demographic, social support, and social comparison variables.

Vision impairment made a unique contribution to life satisfaction in the initial steps of the regression model in the present study, as it did in a study by Reinhardt (1996) in which function, social support and demographic variables were controlled. Note that vision impairment's effect on life satisfaction was limited, somewhat, by social support and social comparison factors, and of course by the effect of entering the interaction variables in the present study. The presence of a vision impairment was reported to be the greatest limitation to life satisfaction by 65% of the participants with impaired vision. They reported that vision impairment limited life satisfaction some, or most of the time, on average. These participants also reported in great numbers (70%) that vision impairment detracted from their QOL. It is often assumed that vision impairment limits function

which, in turn, limits life satisfaction. This supposition, however, has not been supported by the findings of this study. Vision impairment clearly has a negative effect on life satisfaction. From this study, however, we have determined that it does not appear to be limited activity and independence that create this lower level of life satisfaction. What is still unknown is just which aspects of living with a vision impairment results in lower life satisfaction.

Age was not significantly bivariately correlated with life satisfaction in this study but made a unique contribution to life satisfaction, for only those with impaired vision, in multivariate analyses. There was not a significant main effect for age on life satisfaction, but there was an interaction effect of age and vision status on life satisfaction, such that with an increase in age there was a decrease in life satisfaction for the sighted group, but for the group with impaired vision, with an increase in age there was an increase in life satisfaction, as discussed in the earlier section in this chapter on life satisfaction.

Gender was not found to be a significant contributor to life satisfaction, as has been found in previous studies (Willits & Crider, 1988). Similarly, in a meta-analysis of 300 empirical studies, gender differences were found to be small in measures of social well-being that included life satisfaction (Pinquart & Sorensen, 2001). Pinquart and Sorenson suggested that older women are at risk for having more health impairments, being widowed and having lower incomes. Despite these risks, women may have better access to social supports and may have better skills for coping with role changes. Generally, gender differences in social well-being are small.

Living with more impairments was significantly negatively bivariately correlated with life satisfaction and added a significant negative contribution to life satisfaction in the multiple regression model, but only for those who were sighted (see previous discussion on suppressor variables). This is an interesting finding, and unexpected, as it is often surmised that it is the compounding effect of vision impairment with other impairments that is so problematic for older people (Barrick, 1998; Crews & Whittington, 2000; Kempen, Verbrugge, Merril & Ormel, 1998). People with impaired vision, especially at the oldest age groups, may be more flexible, adapted to dependence, have had more time to build up social and practical supports, and may be especially resilient to the losses of health that may only be beginning to affect their sighted peers.

Several studies have found social support to be an important factor for older people in general and specifically for those living with vision impairments (Crews, 1994; Goudy & Goudeau, 1981; Carabeleese et al., 1993; Crews, 1991; Reinhardt, 2001; Reinhardt, Boerner & Benn, 2003). Ringering and Amaral (1990) and Leinhass and Hedstrom (1994) found no difference in social supports between older people with impaired vision and with sight, although Davis et al. (1995) did find that those with vision impairments experienced lower levels of social support. Hersen et al. (1995) speculated that a reduction in social support for older people with impaired vision was due to lack of skills for reciprocation in social situations.

Neither social support network size nor degree of satisfaction with social supports differed between those who had impaired vision and those who were sighted in the present study,

however, social support was significantly correlated with life satisfaction. Satisfaction with social support also contributed independently and significantly to life satisfaction for both groups. This was not surprising as life satisfaction and satisfaction with social support are both measures of satisfaction, although the degree to which they are correlated is not so high as to make the variables redundant in analysis.

Social support appears to be critical to life satisfaction for both groups in this study, although there appears to be no difference between the two groups in the size of their support networks or their satisfaction with the support they receive. Jacobs, Van Zandt and Stinnett (1983) claimed that their data could dispel myths that social isolation is an integral component of life with vision impairment, in their study which demonstrated that older people with impaired vision had adequate and reciprocal support networks, which is in line with what was found in the present study.

In summary, activity and independence were not found to be significant predictors of life satisfaction, as had been expected, once other variables were considered. Social support was found to be a predictor of life satisfaction for older people, as has been found in previous studies. Further, satisfaction with social support and network size did not differ for the two groups in this study, after age was considered.

Favourable social comparisons of activity and independence were significantly correlated with life satisfaction in this study. Further, social comparison of activity was found to be a significant independent contributor to life satisfaction, but only for those who had impaired

vision. This is an important and unexpected finding, although it is logical. People with impaired vision are likely to experience compromised activity and independence. For them, comparison to others can be important and has been demonstrated to be so in previous studies (Frieswijk et al., 2004a, 2004b; Kaarlela, 1978; Strauss, 1966). Although social comparisons could be considered a measure of satisfaction, of sorts, life satisfaction and social comparisons were correlated highly, but not so much as to be problematic in a regression analysis. "Social comparison is receiving increasing recognition as an important strategy for adaptation in old age" (Frieswijk et al., 2004a, p. 250). Results of the present study, with social comparison being one of the most notable contributors to life satisfaction for participants with impaired vision, are further validation for the need for subsequent investigation. Emmons and Diener (1985), as cited in Frieswijk et al. (2004a) further explain the value of social comparisons for older people:

> By comparing themselves with age peers in similar situations, elderly people can make an adjusted assessment that allows them to reinterpret their present lives in a positive manner. In this way, they can preserve their life satisfaction despite age-related loss (e.g. Baltes & Baltes, 1990). Social comparison has been shown to be more predictive of life satisfaction than factors such as aspiration level or comparison with one's prior situation (Emmons & Diener, 1985, as cited in Frieswijk et al., 2004a, p. 250).

The concept of social comparison has not been explored to any great extent and many questions arise around its underlying concepts, especially in relation to vision impairment. For example, we may ask if those with impaired vision compare themselves to other people

with impaired vision or to sighted peers. Good & La Grow (2000) discovered that when asked to nominate an "exemplary peer" older people with impaired vision nominated only other persons with impaired vision. La Grow, Leung & Signal (1996) found, to the contrary, that their participants nominated sighted peers. Strauss (1966) also found that the majority of her research participants nominated sighted others for social comparison, or opted not to compare at all. Strauss hypothesised that this is a result of social isolation, which can diminish capacity for social comparison. The idea that vision impaired people are unusually isolated, however, has been refuted (Jacobs, Van Zandt & Stinnett, 1983). It is clear that in Palmerston North and the Manawatu region of the North Island of New Zealand a tight-knit community of RNZFB members exists, opportunities for social contact among members are abundant, and this allows for social comparisons, which may enhance life satisfaction. Strauss (1966) hypothesised that "the period of striving for major life goals tends to be past, not only for the older person who becomes blind, but for the bulk of his peers as well, so that comparison behavior is still relevant within the age-peer group" (p. 41). In the present study, however, social comparison contributed to life satisfaction only for the participants with impaired vision. Strauss also found that social comparison increased in frequency with age after age 50. In the present study, frequency of social comparison was not measured, but it is possible that at the oldest age cohort (age cohort 3) social comparisons may be much less threatening, as older people with impaired vision are likely to compare more favourably to their sighted peers. Those with impaired vision aged 85+ functioned more like their peers and reported awareness of this, allowing for improved social comparison. This, in turn, may be the explanation for improved life satisfaction for the oldest cohort of participants with impaired vision.

In summary, social comparison, especially of activity, was determined to be an important contributor to life satisfaction for those with impaired vision in this study. It was found to be more strongly associated with life satisfaction than reported levels of functioning (activity and independence). Social comparison of activity was more strongly associated with life satisfaction than was satisfaction with activity. The concept of social comparisons has not been explored to any great extent in previous studies. The findings in this study, however, could lend strength to the argument for improved education for older adults with impaired vision, and for those preparing to provide rehabilitation services, about activity and independence levels that could be expected of individuals within specific age cohorts of older people, so that a better understanding of expectations can be developed. Further research into the concepts of social comparison for this population is warranted.

The five research questions and 13 associated hypotheses of this study have been explored through the framework of the proposed model of functioning of older people, an adapted model of the ICF, as proposed in Chapter Two. Of the 13 hypotheses tested, investigating the relationships between the components of the proposed model, seven were supported, three were partially supported and three were not supported.

Those with impaired vision were less active and independent than their sighted peers, as hypothesised. Those who were older were also less active and independent than those who were younger. There was no interactive effect of age and vision status upon activity and independence levels.

The hypothesis that domains of daily living that are highly vision dependent would be the activities performed with less frequency and with less independence by those with impaired vision than their sighted peers was partially supported. Frequency of activity was lower for those with impaired vision in comparison to their sighted peers where expected, mostly in highly vision-dependent tasks. An unexpected finding, however, was that those with impaired vision were significantly less independent than their sighted peers in every domain of daily living. This occurred not only in the highly vision-dependent domains but in all areas of daily living measured. As expected, age as well as vision status was associated with lower levels of activity and independence in the more physical domains of daily living such as outdoor work and heavy housework. In addition, as expected, there was an interaction effect of age and vision on the number of activities recently relinquished, such that at the older age cohorts those with impaired vision became less different from their sighted peers in terms of the number of activities recently relinquished.

As hypothesised, those with impaired vision were found to be, overall, less satisfied with their functioning than were their sighted peers. The hypothesis that older age cohorts would have higher levels of satisfaction with functioning, due to reduced expectations, was not supported.

The hypothesis that the group with impaired vision would compare themselves less favourably to their sighted peers was partially supported. In age cohorts 1 and 2 proportionally more participants with impaired vision made unfavourable comparisons of activity and independence than did their sighted peers. In age cohort 3, however, there was

no longer a significant difference in the proportion of those with impaired vision and those with sight who made unfavourable comparisons of activity and independence to their peers.

The hypothesis that those with impaired vision would report a lower level of life satisfaction was supported. There was a main effect for vision status on life satisfaction. There was also, however, an interaction effect of age and vision status on life satisfaction, as was hypothesised, such that those with impaired vision in the two older age cohorts demonstrated smaller differences in satisfaction with life in comparison to their age-related sighted peers, than was demonstrated in the youngest age cohort.

The hypothesis that life satisfaction was associated with activity and independence was not supported. Although associated in a bivariate analysis, when controls for age, gender, impairment and social supports were utilised, activity and independence made no unique or significant contribution to life satisfaction in the regression analysis. The hypothesis that social support and social comparison would make unique contributions to life satisfaction was supported.

5.7 Implications of Findings

The results from this study concur with results from previous studies in the analyses of the interrelationship of impairment, functioning, subjective dimensions of functioning and contextual factors for older people with impaired vision, and in comparison to their age-related sighted peers. This study differs from other studies, primarily in its focus on the interaction of subjective dimensions of functioning with other variables, and in the

examination of the three age cohorts. Implications of the findings in relation to theory, method and practice follow.

The adapted model of the WHO's model of functioning, the ICF, used in this study, has incorporated subjective dimensions of functioning. These dimensions have proved to be relevant in understanding life satisfaction in this older population, particularly for those with impaired vision in relation to social comparison of activity. The degree of importance of social comparison of activity for older people with impaired vision was unexpected, and had not previously been investigated to any great degree. Some research has emerged since the development of this study in relation to social comparisons and life satisfaction for older people (Frieswijk et al., 2004a, 2004b). These researchers have developed more robust measures, which could be used in the future in the further development of the concepts of social comparison for specific populations, including those with impaired vision and older people. Theoretical development of the adapted ICF model as used in this study could assist in the acquisition of a greater understanding of the association of impairment, activity and participation and associated limitations and barriers, subjective dimensions of functioning and contextual factors. This may aid in an understanding not only of functioning of people but of how their perceptions of support and functioning may be related to the other factors in the model. In this study, favourable social comparisons of activity made a significant contribution to overall life satisfaction. This could be one of the subjective dimensions of functioning to be utilised in future developments of the conceptual models derived from the WHO classifications. Further exploration of subjective dimensions of functioning could enhance understanding of people as individuals with very

personal reactions to, and experiences of impairment, activity, independence, and personal and environmental factors of their lives (Ueda & Okawa, 2003).

Within this study, age was methodologically considered with a careful examination of the three age cohorts commonly used in census taking, statistical research and exploratory studies. The unique levels of activity, independence and satisfaction for each of the cohorts have not previously been examined for those with impaired vision, and in comparison to their sighted peers.

The unique characteristics of each age cohort of those with impaired vision are reported below. Those with impaired vision in age cohort 1 reported differences from their sighted peers in more areas of daily activity than was reported in the two older age cohorts. They reported that they had given up activities due to difficulties with transport in greater numbers than was reported in the other two age cohorts.

Those with impaired vision in age cohort 2 reported significant differences from their sighted peers in more areas of independence than was reported in the other two age cohorts. This middle cohort also reported lower levels of satisfaction with activity than was reported by the other two age cohorts of those with impaired vision. They reported fewer sources of social contact and fewer sources of agency support than were reported by the other two age cohorts of those with impaired vision. Those in age cohort 2 reported that they had given up activities due to health in greater numbers than was reported by those in the other two age cohorts.

Those with impaired vision in age cohort 3 had unique differences from the other two cohorts with impaired vision. There was an interaction effect of age and vision status on life satisfaction, satisfaction with independence, number of recently relinquished activities, and social comparison of activity and independence (see Figures 4.1, 4.2 and 4.3, and Tables 4.15 and 4.16). These interaction effects reflect a similarity in scores between those with impaired vision and those with sight at age cohort 3 on those three variables.

Many of these differences were unexpected, although there was an expectation that the older age cohorts would differ less from their sighted peers. Age could be carefully controlled and age cohorts considered in further research because evidence from this study showed differences in the association of activity, independence, and satisfaction within age cohorts. In addition, specific domains of activity and independence emerged as more or less problematic when age cohorts were considered.

Previous studies have found that those in the oldest age cohorts were surprisingly more optimistic and those in the middle age cohort less optimistic than those in the youngest age cohort. Optimism has been found to be highly correlated with satisfaction with life (Diener, 1998), which allows us to relate the patterns of positive attitude across age cohorts in the study by Seccombe and Ishii-Kuntz (1991) to what has been found in the present study. Future research could be conducted to further explore the differences among age cohorts of older people with a focus on life satisfaction and other measures of well-being.

There are several implications of this study for rehabilitation practice. Efforts within rehabilitation practice should be made to assess individuals and to assist them in goal setting for rehabilitation with better informed expectations about what one can expect of oneself and of rehabilitation in a context of norms and ranges of peer performance. Establishing norms and ranges of typical behaviours in these age groups is not an attempt to promote normative functioning in those with impaired vision. Mediocrity, as determined by average performance of older people, is not the goal. Nevertheless, understanding how peers function can better inform expectations and goal setting within the rehabilitation process. Education about peer performance could also assist in the social comparison process, especially if a person with impaired vision is under the mistaken assumption that they perform less actively and independently than their peers, with or without sight. As has been discovered, favourable comparison of activity has been determined to be an important contributor to overall life satisfaction. It has also been determined that those with impaired vision functioned similarly to their sighted peers in frequency of performance of domestic areas of daily living, as well as other domains, at the oldest age cohort (i.e. BADL, home management, active recreation). Education about norms and ranges of activity, independence and satisfaction could certainly assist in personnel preparation programmes, where new vision rehabilitation specialists can gain a better understanding of what to expect of older clients, and of how to help older people set realistic goals for rehabilitation.

A better understanding of which specific tasks of daily living pose unique difficulties for older people with impaired vision, and which tasks were found to create the most dissatisfaction, can assist in targeting interventions in rehabilitation. This could allow

clients and professionals to utilise valuable rehabilitation energy, time and resources in a way that is most meaningful to individuals with impaired vision. Understanding more specifically the unique needs of older people with impaired vision within specified age cohorts could further assist in assessing needs and designing programmes for rehabilitation. As Briggs notes:

> We do not have sufficient information to enable us to deploy resources in the most efficient and effective way. Much research and evaluation is required to establish which aspects of rehabilitation should be provided and which should fall into disuse. There is a danger that elderly people will increasingly be supplied with prosthetic services that simply compensate for disability (such as home help or provision of meals). Such services may be needed if therapeutic measures have failed, but also tend to confirm disability, lead to further decline in function and reinforce dependence. (Briggs, 1997, p. 400-401).

Although activity and independence have not been shown in this study to contribute significantly to life satisfaction, they are related to life satisfaction, and may be mediated through social comparisons and social supports. Rehabilitation practice, therefore, could assist people to improve function, improve ability to make favourable comparisons to peers, and develop strategies to improve support systems so that they are more satisfying, as these are the elements which have been seen to be most important to this older population.

We need to carefully consider the unique needs of each of the age cohorts. Each of the age cohorts under study demonstrated unique levels of activity and independence. The middle age cohort demonstrated more difficulties in activity and independence and was the most

dissatisfied with several aspects of their lives. This is also the group that demonstrated the greatest difference in functioning and satisfaction in comparison to their sighted peers. It is possible that this is due to measurement error or sampling bias (see limitations of study), but there is also a possibility that this represents an underlying reality that must be addressed for this age group.

5.8 Generalisability of Findings

The research participants, as a group, closely reflected the older population of New Zealand in general, and of the Manawatu region in particular, in terms of distribution of age, ethnicity, marital status, education level, previous occupation, income, health impairments and living situation (Health Funding Authority, 1998; MidCentral District Health Board, 2004; Statistics New Zealand, 2004). Two exceptions were the gender distribution in the oldest cohort in the present study, which had an overrepresentation of males. There was also an under representation of reported psychological or psychiatric impairments in comparison to reported national prevalence rates.

According to Statistics New Zealand (2004), 9% of those aged 65+ are over the age of 85. This closely matched what was found in the present study (8% of the sighted group were aged 85+). Four percent of those aged 65+ in New Zealand identified as Maori in the most recent census, 3.65% in the Manawatu region. In the present study 3.6% reported this identification. Living with others was the most common living arrangement for older people in New Zealand in the 2001 census. This was also true for participants in this study, with 65% living with others. Most older New Zealanders reported that they had no formal

education qualifications in the 2001 census, which was the case for the participants in this study. The median income in NZ in 2001 for those aged 65+ was $NZ13,100. In the present study the median income was $NZ14,000. Health impairments such as vision impairment, arthritis, hearing impairment, high blood pressure, heart disease and physical disability were reported in high numbers by older people in the 2001 NZ census, as was reported in this study.

Details about health impairments of participants in the present study were also similar to those found in the U.S. for this age group (Blake, 1984; Jette, 1995) with exceptions of arthritis, high blood pressure, heart disease and orthopaedic impairments being reported in smaller proportions in the present study.

The group with impaired vision differed from the sighted group in very few demographic areas except for age. Because the group with impaired vision was significantly older than the group with sight, age was an important factor to control for with the utilisation of the three age cohorts. The only significant demographic difference for the group with impaired vision, after controlling for age, was that they were more likely to have had a stroke or diabetes, in the youngest age cohort. This is, of course, understandable, as diabetes and stroke are causes of vision impairment.

These findings of differences between those with impaired vision and those with sight were similar to what was reported by Kaarlela (1978). As in the present study, Kaarlela noted that those with impaired vision, aged 65+, had more impairments other than vision, lower

incomes and were more likely to be widowed and female. These findings were consistent with those from the present study when comparing the group with impaired vision and the group with sight overall. When age cohorts were considered, however, no significant demographic differences were identified. Branch, Horowitz and Carr (1989) also found few demographic differences in the two groups they studied, some with vision impairments and others sighted, except for age. After controlling for age and gender, however, those with impaired vision were more likely to report impairments other than vision, which was not found in the present study, when the three age cohorts were considered.

Crews & Campbell (2001) found, as was found in the present study, that the proportions of sighted research participants who had had a stroke or diabetes was lower than for that of those with impaired vision. Crews and Campbell also reported, however, prevalence rates of osteoporosis, depression and confusion, heart disease, hypertension, and arthritis to be proportionally greater in those who had vision impairments, findings not consistent with those of the present study. The present study found differences between the two groups, but these were not statistically significant and not to the extent found by Crews & Campbell. Nor was the overall prevalence of these conditions as great in the present study as was found in Crews & Campbell's study. This could reflect a healthier New Zealand older population, in comparison to those in the U.S. There is evidence that heart disease is reducing at greater rates in New Zealand than in the U.S. and Australia (Irish Health.com med media group, 2005). Life expectancy is greater for New Zealanders than for those from the U.S. (Statistics New Zealand, 2004, p. 15). This difference could also be reflected in sample bias, if only the healthiest of those invited to participate in the present study did,

indeed, participate. There is, however, no evidence of this reflected in response rates, and reasons given for declining to participate.

Rates of psychological/psychiatric impairments in the present study were not reflective of what is thought to be typical in New Zealand for this age group (1.4% in the present study, 3% found in New Zealand's disability census). Despite previous research linking depression with vision impairments (Belsky, 1999; Carabellese et al., 1993; Crews & Campbell, 2001; D'Argent-Molina et al., 1996; Heine & Browning, 2002; Horowitz, 2000, Horowitz, 2003; Stuen, 1990; Swagerty, 1995; Williams et al., 1998), there was no significant difference between the two groups in the proportion of those who reported psychological/psychiatric difficulties in the present study. This could be explained in the way the question was posed in this study. The participants were asked if they had experienced psychological or psychiatric impairments, and this may not have received the same response as a more direct question about depression. The present findings were no different, however, than those of Ringering & Amaral (1990) who controlled for age and found no greater risk for depression in the group who had vision impairments in comparison to their sighted peers.

As expected, the group with impaired vision reported the cause of their vision impairment to be mostly ARMD followed by the other well-known leading causes of vision impairment for older people (Lighthouse Research Institute, 1995; RNZFB, 2004; Wang, Foran & Mitchell, 2000). Cataracts, however, in the present study, were reported in fewer numbers than expected and in comparison to other studies (Burack-Weiss, 1990; Wang et al.2000).

This could be explained by the fact that cataracts are often treatable and a frequent cause of unilateral, rather than bilateral vision impairment, which would not necessarily make someone eligible for RNZFB registration. Three respondents who had been registered members of the RNZFB reported that they had been vision impaired, but were no longer, after cataract extraction. These participants were assigned to the sighted group for analyses, as they reported that they were now able to see well enough to read and to drive.

In summary, the demographic and impairment description of the population sample was very similar to that of the New Zealand older population in general except for important differences found for age. The comparison details of the two subgroups, with and without sight, were similar to what has been found in other comparison studies with few exceptions. The sample, overall, reported better health than samples from U.S. studies, and the group with impaired vision was not as dramatically different from their sighted peers as has been reported in U.S. studies. This could be explained by what is known about the relative better health of New Zealanders, as measured by life expectancy rates, although sampling bias may also explain such discrepancies.

This research has used newly developed concepts of subjective dimensions of functioning, incorporated into an adapted model of functioning for older adults and carefully examined differences between older adults with impaired vision and their sighted peers. Age cohorts were also examined carefully to identify unique descriptions of functioning within each age cohort. The results of this study can be used to enhance theoretical and methodological

approaches to research and to enhance rehabilitation practice to improve life satisfaction of older adults with impaired vision.

5.9 Limitations of this study

The variables selected for exploration were based on the adapted model of the ICF developed for this study, the researcher's personal, professional and research experience, as well as consultation with others and through review of the literature. It is possible that other variables, which have been unexplored, may have an impact on activity, independence and life satisfaction for this population. Positive and negative affect was investigated in the pilot study but participants were reluctant to respond to these questions. As a result, the positive and negative affect scale was omitted from the larger study. It is possible that personality or affect may have been a more significant determinant of life satisfaction than the other measures under study, as the overall model explained only a small percentage (19%) of the variance in life satisfaction.

Cross-sectional rather than longitudinal data have been explored, which limits inferences that can be made regarding causality. The study was undertaken within a specific regional area, where rehabilitation services, transportation services, disability support and community activities have their own unique contributions to the lives of the population under study. The generalisability of the findings may be applicable in varying degrees in other communities where rehabilitation services have been established for a longer period of time, where older people with impaired vision have more or less skilled role models, or where services are more or less available to older people. The Manawatu region may have

a uniquely close-knit community of members of the RNZFB which could explain the relatively positive levels of satisfaction with social support within this population of those with impaired vision.

Response rates for the survey were remarkably high, but many surveys were returned unopened, and some with no explanation. Unfortunately, the postal protocols for returning mail made it impossible to determine if it was individuals who returned the surveys or the post office, due to inacurate addresses, death of invited participants or that some had moved.

Data gathering methods were made as uniform as possible, however, it is possible that surveys completed with assistance had different responses to those completed independently. There is some evidence that observation, rather than self-report could result in more accurate data regarding independence and activity in BADL in older frail people (Kempen et al.,1996), although Klein et al. (1999) found significant moderate positive correlations between self-reported visual functions and performance-based measures in adults.

Sample sizes of groups varied significantly, however, sample sizes were large enough to accommodate these differences. For the most part, sample sizes represented the general age structure of age cohorts in New Zealand and in RNZFB registration statistics. For example, 9% of the those aged 65+ in New Zealand are aged 85+. Within the sample of sighted research participants in this study 8% were aged 85+. Moreover, the majority of

older people with impaired vision who are registered with the RNZFB are aged 80+ and the sample in this study accurately reflects this, just as it accurately represents the group of those aged 65-75 as representing a small minority of the population receiving RNZFB services.

The sample size of participants with impaired vision in this study was relatively large yet may not be representative of the total older, vision impaired population in the region. Findings pertain to the sample but may not pertain to the population in general.

Few participants were able to report their visual acuity and the descriptions of their visual function provided did not allow for a clear classification of degree of vision impairment. Because accurate data indicating degree of vision impairment was not obtained, analysis of the influence of degree of vision loss on activity, independence, and life satisfaction was limited.

Alternative explanations of these results could be related to skewed scales or missing data, although participant numbers were high enough to accommodate these differences and multivariate statistical assumptions were met on multivariate tests with the untransformed data. No more than 15% of responses were missing from any variables analysed.

Some potentially valuable detail was lost in collapsing scales (i.e. social support network size, social support satisfaction, and independence) into a single composite score or subscale score.

5.10 Future Directions and Recommendations

There has been a recent upsurge of research activity relating to ageing and to ageing and vision loss, undoubtedly due to the ageing of our worldwide population. Little research has been done, to date, using the ICF model or incorporating subjective aspects of functioning, such as satisfaction with activity, independence, and social support. It is important to note that, although a plethora of literature exists regarding social support issues and techniques for teaching specific daily living skills to children and working aged adults who are blind or vision impaired, very little literature has been produced identifying skills to be targeted when the person with impaired vision is aged 65+. There is even less information distinguishing needs of older people with impaired vision in age cohorts such as those in ages 65-74, 75-84 and 85+. Nor have we understood what aspect of vision impairment is most directly related to life satisfaction. Further studies examining the particular aspects of vision impairment that relate most closely to life satisfaction would produce more literature available to assist those providing direct rehabilitation services to this population. Likewise, specific information about tasks which specific age groups find most difficult, and create dissatisfaction, especially in relation to age-related peers, would be useful in understanding how best to assess needs, plan rehabilitation goals, provide instruction to this population, and ultimately to improve life satisfaction.

With the data produced from this study, more appropriate assessment measures and curricula for rehabilitation for older people with impaired vision could be developed. Curricula could also be developed to assist in educating those undergoing personnel preparation or continuing education, about norms and ranges of activity and independence

of the older population in general. Such education could better inform expectations for rehabilitation outcomes.

Future research in daily life with a vision impairment could include qualitative methods to provide a more in-depth perspective of the impact of vision impairment on older people. This, in turn, could enhance practitioners' understanding of how to best assist older people undergoing vision rehabilitation.

Professional preparation of those who will work in the field of vision rehabilitation must include more comprehensive information about ageing in general, and in particular, how older people with impaired vision differ from their peers, so that a better understanding of expectations may assist service providers, older people with impaired vision and their families.

Professional preparation of those who work in the more general fields of gerontology or physiotherapy, nursing, recreation or occupational therapy must include more information about the effects of vision impairment on older people so that these professionals can better meet the needs of this growing population.

The participants with impaired vision in this study indicated that daily activities in which they were most dependent were outdoor work, community activities and caring for others. Activities in which they were most different from their sighted peers, in terms of independence, were community activities, caring for others and handling money. Activities

which they may have still performed but for which their level of dependence created dissatisfaction for them were quiet recreation, community activities and active recreation. These differences, areas of dependence and areas of dissatisfaction must be addressed within rehabilitation programmes designed for older people with impaired vision.

Participants in this study, with impaired vision and with sight, had similar social support network sizes and similar levels of satisfaction with these supports. Yet the supports for those with impaired vision came from fewer types of sources. Those with sight reported in greater proportions than those with impaired vision that they received support from friends, neighbours, and sports and recreation groups.

Practical support from others, including agencies, was more fragmented for those with impaired vision. Those with impaired vision reported that, although they did not receive significantly more hours of support than those with sight, this help came from their children, from agencies, paid assistance, other family, neighbours, and friends in greater proportions than it did for those with sight.

Social support satisfaction was a significant predictor of life satisfaction and so skills for developing wider social support networks and relationships viewed as more satisfying may be an important aspect of vision rehabilitation which could be incorporated into programme planning.

Further factor analysis could be conducted on independence inventory items to create a new approach to skill instruction, not in traditional domains, such as kitchen management, communication, and personal management, but in the level of difficulty of tasks for people with impaired vision.

5.11 Conclusions

Vision impairment is one of the most feared impairments in our culture today. This study set out to determine if the loss of activity and independence, which has always been presumed to accompany vision loss and has proven to do so in this study, is a rational explanation for the resulting lowered levels of life satisfaction which often accompanies impaired vision. This has been done by investigating reported performance in daily living, perceived differences from peers in performance of daily activities, and the effect of both of these factors on life satisfaction. Vision rehabilitation programmes target skills for daily living in an effort to reduce dependence in those who have impaired vision, allowing them to function more similarly to their peers. Until now, normative functioning levels of those aged 65+ have not been quantified or identified, in order to identify which specific skills people with impaired vision need to function more similarly to their peers. Indeed there were significant differences in activity and independence between people with impaired vision and those with sight in this present study. Age also had an impact on activity and independence. There was also evidence that there were other factors, such as, social support, satisfaction with activity and independence, and social comparisons, that were more closely related to life satisfaction than activity or independence. This understanding could have a great impact on the delivery of rehabilitation services for older people with

impaired vision. Helping older people to develop specific adaptive daily living skills, good supportive social networks, confidence, and a greater appreciation for the independence and activity that one can maintain as a person with impaired vision may greatly enhance the overall life satisfaction of those living with vision impairment in their later years.

Older people with impaired vision are underserved and misunderstood. Vision rehabilitation service providers do not always understand ageing or older people in general, and may not know when to push clients, or when to accept that they may not want to or need to learn skills for independence. Data provided here can enhance an understanding of what to expect of older, vision impaired rehabilitation clients, in the context of norms and ranges of performance of their peers, both sighted and vision impaired. We do not necessarily know what to expect of ourselves as we age, nor as we age with a vision impairment. Now, with some enhanced understanding of how older people with impaired vision differ from their peers, we can address those gaps and educate people about how they function similarly to their peers, which may reduce anxiety, or feelings of being different from their peers. This information will be useful in assisting researchers, educators, service providers, families and individuals with impairments to understand how the functioning of those with impaired vision may be similar to or different from their peers to gain an improved understanding of expectations of performance of skills for daily living and to ultimately improve life satisfaction.

References

Ainlay, S. C. (1988). Aging and new vision loss: Disruptions of the here and now. *Journal of Social Issues, 44*(1), 79-94.

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being*. New York: Plenum Press.

Ansello, E. F. (1988). The intersecting of aging and disabilities. *Educational Gerontology, 14*, 351-363.

Babcock, J. A., Goodrich, G. L., Head, D. N., & Boyless, J. A. (2000). Developing geriatric training outcome assessments in vision rehabilitation. *Journal of Visual Impairment & Blindness, 24*, 307-321.

Barbier, O., Penta, M., & Thonnard, J. (2003). Outcome evaluation of the hand and wrist according to the International Classification of Functioning, Disability, and Health. *Hand Clinics, 19*, 371-378.

Barrick, J. (1998). Letter. *New Beacon, 82*(968).

Barron, C. R., Foxall, M. J., Von Dollen, K., Jones, P. A., & Shull, K. A. (1994). Marital status, social support, and loneliness in visually impaired elderly people. *Journal of Advanced Nursing, 19*, 272-280.

Bazargan, M., Baker, R. S., & Bazargan, S. H. (2001). Sensory impairments and subjective well-being among aged African American persons. *Journals of Gerontology, 56B*, 268-278.

Belsky, J. K. (1999). *The psychology of aging*. Pacific Grove, CA: Brooks/Cole.

Bendtsen, P., Bjurulf, P., Trell, F., Lindstrom, F., & Larsson, J. E. (1995). Cross-sectional assessment and subgroup comparison of functional disability in patients with rheumatoid arthritis in a Swedish health-care district. *Disability and Rehabilitation, 17*, 94-99.

Bilbao, A., Kennedy, C., Chatterji, S., Ustun, B., Vasquez, B., & Jeffrey, T. (2003). The ICF: Applications of the WHO model of functioning, disability and health to brain injury rehabilitation. *NeuroRehabilitation, 18*, 239-250.

Blake, R. (1981). Disabled older persons: A demographic analysis. *Journal of Rehabilitation, 47*(4), 19-27.

Blake, R. (1984). What disables America's elderly? *Generations, 7*(4), 6-9.

Blasch, B., Wiener, W.R., & Welsh, R.L. (1997). *Foundations of orientation and mobility (2nd ed.)*. New York: American Foundation for the Blind.

Bond, M. J., Clark, M. S., Smith, D. S., & Harris, R. D. (1995). Lifestyle activities of the elderly: composition and determinants. *Disability and Rehabilitation, 17*, 63-69.

Bond, M. J., Harris, R. D., Smith, D. S., & Clark, M. S. (1992). An examination of the factor structure of the Frenchay Activities Index. *Disability and Rehabilitation, 14*, 27-29.

Bowen, R., & Atwood, C. (2004). Living and dying for sex: A theory of aging based on the modulation of cell cycle signaling by reproductive hormones. *Gerontology, 50*, 265-290.

Branch, L. G., Horowitz, A., & Carr, C. (1989). The implications for everyday life of incident self-reported visual decline among people over age 65 living in the community. *Gerontologist, 29*, 359-365.

Brennan, M., & Silverstone, B. (2000). Developmental perspectives of aging and vision loss. In B. Silverstone, M. A. Lang, B. Rosenthal & E. Faye (Eds.), *The Lighthouse handbook on vision impairment and vision rehabilitation* (pp. 409-429). New York: Oxford University Press.

Brenner, M. H., Curbow, B., Javitt, J. C., Legro, J. C., & Summer, M. W. (1993). Vision change and quality of life in the elderly. Response to cataract surgery and treatment of other chronic ocular conditions. *Archives of Ophthalmology, 11*, 680-685.

Briggs, R. (1997). Factors specific to disabled elderly people. In B. A. Wilson & D. L. McLellan (Eds.), *Rehabilitation studies handbook* (pp. 379-404). Cambridge: Cambridge University Press.

Brush, J., Threats, T., & Calkins, M. (2003). Influences on perceived function of a nursing home resident. *Journal of Communication Disorders, 36*, 379-393.

Burack-Weiss, A. (1990). *Age-related vision loss: A study of adaptive tasks. Dissertation Abstracts International, 52(02),* 681A. (UMI No. 9118534).

Burger, H., & Marincek, C. (2000). The influence of post-polio syndrome on independence and life satisfaction. *Disability and Rehabilitation, 22*, 318-322.

Burmedi, D., Becker, S., Heyl, V., Wahl, H. W., & Himmelsbach, I. (2002a). Behavioral consequences of age-related low vision. *Visual Impairment Research, 4*, 15-45.

Burmedi, D., Becker, S., Heyl, V., Wahl, H.W., & Himmelsbach, I. (2002b). Emotional and social consequences of age-related low vision: A narrative review. *Visual Impairment Research, 4*, 47-71.

Buunk, B. P. (1995). Comparison direction and comparison dimension among disabled individuals: Toward a refined conceptualization of social comparison under stress. *Personality & Social Psychology Bulletin, 21*, 316-330.

Buunk, B. P., & Gibbons, F. X. (1997). *Health, coping, and well-being: Perspectives from social comparison theory.* Mahwah, NJ: Lawrence Erlbaum Associates, Inc., Publishers.

Carabellese, C., Appollonio, I., Rozzini, R., Bianchetti, A., Frisoni, G. B., Frattola, L., et al. (1993). Sensory impairments and quality of life in a community elderly population. *Journal of the American Geriatric Society, 41,* 401-407.

Carod-Artal, F. J., Gonzalez-Gutierrez, J. L., Herrero, J. A. E., Horan, T., & De Seijas, E. V. (2002). Functional recovery and instrumental activities of daily living: Follow-up 1-year after treatment in a stroke unit. *Brain Injury, 16,* 207-216.

Carroll, T. J., (1961). *Blindness: What it is, what it does, and how to live with it.* Boston: Little, Brown and Company.

Cassin, B., & Solomon, S.A.B. (1997*). Dictionary of eye terminology (3rd ed.).* Gainesville, FL: Triad Publishing.

Cavannaugh, J., C. (1997). *Adult development and aging* (third ed.). Pacific Grove, CA: Brooks/Cole Publishing.

Chwalisz, K., Diener, E., & Gallagher, D. (1988). Autonomic arousal feedback and emotional experience: Evidence from the spinal cord injured. *Journal of Personality & Social Psychology, 54,* 820-828.

Clark, M. S., Bond, M. J., & Sanchez, L. (1999). The effect of sensory impairment on the lifestyle activities of older people. *Australasian Journal on Ageing,* 18, 124-129.

Clay, J. A. (1992). Native American independent living. *Rural Special Education Quarterly, 11*(1), 41-50.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, N.J.: Eribaum.

Crews, J.E. (1991). Strategic planning and independent living for elders who are blind. *Journal of Visual Impairment & Blindness, 85,* 52-57.

Crews, J. E. (1994). The demographic, social, and conceptual contexts of aging and vision loss. *Journal of the American Optometric Association, 65*(1), 63-68.

Crews, J. E., & Campbell, V. A. (2001). Health conditions, activity limitations, and participation restrictions among older people with visual impairments. *Journal of Visual Impairment & Blindness, 95*, 453-467.

Crews, J. E., & Frey, W. D. (1993). Family concerns and older people who are blind. *Journal of Visual Impairment & Blindness, 8*, 6-11.

Crews, J. E., & Whittington, F. J. (2000). *Vision loss in an aging society: A multidisciplinary perspective.* New York: American Foundation for the Blind.

Crook, T. H., & Larrabee, G. J. (1990). A self-rating scale for evaluating memory in everyday life. *Psychology & Aging, 5*, 48-57.

Cummings, E. & Henry, W. (1961). Growing old: The process of disengagement. New York: Basic Books.

D'Argent-Molina, P., Hays, M., & Breart, G. (1996). Sensory impairments and physical disability in aged women living at home. *International Journal of Epidemiology Aging and Human Development, 25*, 621-629.

Davis, C., Lovie-Kitchin, J., & Thompson, B. (1995). Psychosocial adjustment to age-related macular degeneration. *Journal of Visual Impairment & Blindness, 89*, 16-27.

De l'Aune, W. R., Welsh, R. L., & Williams, M. D. (2000). A national outcomes assessment of the rehabilitation of adults with visual impairments. *Journal of Visual Impairment & Blindness, 94*, 281-291.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 45*, 542-575.

Diener, E. (1998). Subjective well-being and personality. In D. Barone, M. Hersen & V. B. VanHasselt (Eds.), *Advanced personality* (pp. 311-334). New York: Plenum.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49, 71-75.*

Diener, E., & Lucas, R. E. (2000). Subjective emotional well-being. In M. Lewis & J. M. Haviland (Eds.), *Handbook of Emotions (2nd ed.)* (pp. 325-337). New York: Guilford.

Dodds, A. G., Bailey, P., Pearson, A., & Yates, L. (1991). Psychological factors in acquired visual impairment: The development of a scale of adjustment. *Journal of Visual Impairment & Blindness*, 306-310.

Elfervig, L. T. S. (1997). *Functional independence and life satisfaction with vision loss from age-related macular degeneration: A study of older adults. Dissertation Abstracts International, 57(12)*, 7449B. (UMI No. 9717113).

Emmons, R. A., & Diener, E. (1985). Factors predicting satisfaction judgments: A comparative examination. *Social Indicators Research, 16*, 157-167.

Fairfax, J. (2002). *Theory of quality of life of stroke survivors.* Unpublished doctoral dissertation, Wayne State University, Detroit, MI.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.

Frieswijk, N., Buunk, B. P., Steverink, N., & Slaets, J. P. J. (2004a). The interpretation of social comparison and its relation to life satisfaction among elderly people: Does frailty make a difference? *Journals of Gerontology, 59B*, 250-257.

Frieswijk, N., Buunk, B. P., Steverink, N., & Slaets, J. P. J. (2004b). The effect of social comparison information on the life satisfaction of frail older persons. *Psychology & Aging, 19*, 183-190.

Fuhrer, M. J., Rintala, D. H., Hart, K. A., Clearman, R., & Young, M. E. (1992). Depressive symptomology in persons with spinal cord injury who reside in the community. *Archives of Physical Medicine and Rehabilitation, 74*, 255-260.

Furner, S. E., Rudberg, M. A., & Cassel, C. K. (1995). Medical conditions differentially affect the development of IADL disability: Implications for medical care and research. *Gerontologist, 35*, 444-450.

Garcia, P., & McCarthy, M. (1995). *Measuring health. A step in the development of city health profiles.* Copenhagen: World Health Organization Regional Office for Europe.

Gething, L. (1990). *Working with older people* (2nd ed.). Sydney: W.B. Harcourt Brace Jovanovich Publishers.

Gillman, A. E., Simmel, A., & Simon, E. P. (1986). Visual handicap in the aged: Self-reported visual disability and the quality of life of residents of public housing for the elderly. *Journal of Visual Impairment & Blindness, 80*, 588-590.

Gluckman, A., & Tagg, M. (1995). *Ageing is attitude: The New Zealand experience.* Auckland: Tandem Press.

Good, G. A. (1999, July). *Independent living skills of older individuals: A review of assessment instruments.* Poster presented at the Rehabilitation Teaching: The Next Century Conference, Kalamazoo, MI.

Good, G. (2000a, July). *An instrument to assess daily functioning of older people: A trial study.* Paper presented at the international conference of the Association for the Education and Rehabilitation of the Blind and Vision Impaired, Denver, CO.

Good, G. (2000b, July). *Older, vision impaired and Kiwi: Older New Zealanders rate the importance of activities of daily living.* Poster session presented at the international conference of the Association for the Education and Rehabilitation of the Blind and Vision Impaired, Denver, CO.

Good, G. (2000c, July). *Assessing points of variance in independence between sighted and blind older adults.* Paper presented at the international conference of the Association for the Education and Rehabilitation of the Blind and Vision Impaired, Denver, CO.

Good, G. A. (2001a). Ageing, vision loss and quality of life: Are we asking the right questions? In S. J. La Grow (Ed.), *New Zealand Rehabilitation Association 2001 Conference* (pp. 21-26). Wellington: NZRA.

Good, G. A. (2001b). Ethics in research with older, disabled individuals. *International Journal of Rehabilitation Research, 24*, 165-170.

Good, G. A., & La Grow, S. J. (2000). Using peer sampling with older visually impaired adults to set goals for instruction of independent living skills. *RE:view, 3*), 132-141.

Good, G., La Grow, S., & Alpass, F. (July 2002). *Daily living problems identified by older, vision impaired New Zealanders and their sighted peers.* Poster session presented at the International conference of the Association for the Education and Rehabilitation of the Blind and Vision Impaired, Toronto, Canada.

Good, G., La Grow, S., & Alpass, F. (April 2003). *Life satisfaction of older vision impaired New Zealanders.* Poster session presented at the 11th International Mobility Conference (IMC-11). Stellenbosch, South Africa.

Goudy, W. J., & Goudeau, J. F. (1981). Social ties and life satisfaction of older persons: Another evaluation. *Journal of Gerontological Social Work, 4*(1), 35-50.

Granger, C. V., Mann, W. C., Outenbacher, K. J., Tomita, M. R., & Fielder, R. C. (1994). Functional measures of geriatric subjects in the community. *Topics in Geriatric Rehabilitation, 10*, 7-21.

Guralnik, J. M. (1985). *Determinants of functional health status in the elderly. Dissertation Abstracts International 47(03),* 1014B. .

Haley, J. A. M., & Kooyoomjian, J. T. (2003). Are the ICF activity and participation dimensions distinct? *Journal of Rehabilitation Medicine, 3*, 145-149.

Hamarat, E., Thompson, D., Steele, D., Matheny, K., & Simons, C. (2002). Age differences in coping resources and satisfaction with life among middle-aged, young-old, and oldest-old adults. *Journal of Genetic Psychology, 163*, 360-367.

Havlik, R. J., & National Center for Health Statistics. (1986). Aging in the eighties, impaired senses for sound and light in persons 65 and over: Preliminary data from the supplement on aging to the National Health Interview Survey: United States, January-June, 1984. *Advance Data from Vital and Health Statistics, 125*, 1-8.

Head, D. N., Babcock, J. L., Goodrich, G. L., & Boyless, J. A. (2000). A geriatric assessment of functional status in vision rehabilitation. *Journal of Visual Impairment & Blindness, 94*, 357-371.

Headey, B.W., Veenhoven, R., & Wearing, A.J. (1991). Top-down versus bottom-up theories of subjective well-being. *Social Indicators Research, 24*(1), 81-100.

Headey, B. W., Kelley, J., & Wearing, A. J. (1993). Dimensions of mental health: Life satisfaction, positive affect, anxiety and depression. *Social Indicators Research, 29*(1), 63-82.

Health Funding Authority. (1998). *Disability in New Zealand: Overview of the 1996/97 surveys*. Wellington: Ministry of Health.

Heenan, B. (1993). Older New Zealanders: Population patterns and trends. In P. Koopman-Boyden (Ed.), *New Zealand's ageing society: The implications* (pp. 29-54). Wellington: Daphne Brasell Associates Press.

Heidrich, S. M., & Ryff, C. D. (1993). The role of social comparisons processes in the psychological adaptation of elderly adults. *Journals of Gerontology, 48B*, 127-136.

Heine, C., & Browning, C. J. (2002). Communication and psychosocial consequences of sensory loss in older adults: Overview and rehabilitation directions. *and Rehabilitation, 24*, 763-773.

Heinemann, A. W., & Whiteneck, G. G. (1995). Relationships among impairment, disability, handicap, and life satisfaction in persons with traumatic brain injury. *Journal of Head Trauma Rehabilitation, 10*(4), 54-63.

Hersen, M., Kabacoff, R. I., Van Hasselt, V. B., Null, J. A., Ryan, C. F., Melton, M. A., et al. (1995). Assertiveness, depression and social support in older visually impaired adults. *Journal of Visual Impairment & Blindness, 89*, 524-530.

Hesketh, B., & Dawes, R. V. (1991). The Minnesota model of work adjustment. In B. Hesketh & A. Adams (Eds.), *Psychological perspectives on occupational health and rehabilitation* (pp.1-16). Marrickville, NSW: Harcourt Brace Jovanovich.

Heyl, V., & Wahl, H. (2001). Psychosocial adaptation to age-related vision loss: A six-year perspective. *Journal of Visual Impairment & Blindness, 95*, 739-748.

Hileras, P. K., Jorm, A. F., Herlitz, A., & Winblad, B. (2001). Life satisfaction among the very old: A survey on a cognitively intact sample aged 90 years or above. *International Journal of Aging & Human Development, 52*, 71-90.

Holbrook, M., & Skilbeck, C. E. (1983). An activities index for use with stroke patients. *Age and Ageing, 12*, 166-170.

Horowitz, A. (2003). Depression and vision and hearing impairments in later life. *Generations, 27*(1), 32.

Horowitz, A., Leonard, R., & Reinhardt, J. P. (2000). Measuring psychosocial and functional outcomes of a group model of vision rehabilitation services for older adults. *Journal of Visual Impairment & Blindness, 94*, 328-337.

Horowitz, A., Reinhardt, J. P., Boerner, K., & Travis, L. A. (2003). The influence of health, social support quality and rehabilitation on depression among disabled elders. *Aging & Mental Health, 7*, 342-350.

Hsieh, C. L., & Hsueh, I. P. (1999). A cross-validation of the comprehensive assessment of activities of daily living after stroke. *Scandinavian Journal of Rehabilitation Medicine, 31*, 83-88.

Irish Health.com Med Media Group. *Heart disease facts and figures*. Retrieved 14 March, 2005, from http://www.irishhealth.com

Ivanoff, S. D., Sonn, U., Lundgren-Lindqvist, B., Sjstrand, J., & Steen, B. (2000). Disability in daily life activities and visual impairment: a population study of 85 year-old people living at home. *Scandinavian Journal of Occupational Therapy, 7*, 148-155.

Jacobs, P. L., Van Zandt, S., & Stinnett, N. (1983). Working towards independence for the elderly visually impaired. *Physical & Occupational Therapy in Geriatrics, 2*(3), 39-53.

Jette, A. M. (1995). Disability trends and transitions. In R. H. Binstock &. George, L. K. (Eds.), *Handbook of aging and the social sciences* (4th ed.) (pp. 94-116). San Diego, CA: Academic Press.

Jette, A. M., & Branch, L. G. (1985). Impairment and disability in the aged. *Journal of Chronic Diseases, 38*(1), 59-65.

Jette, A.M., Haley, S.M. & Kooyoomijan, J.T. (2003). Are the ICF activity and participation dimensions distinct? *Journal of Rehabilitation Medicine, 35,* 145-149.

Kaarlela, R. (1978). *A survey of the characteristics and needs of two selected groups of old blind persons. Dissertation Abstracts International 39(02)*, 813-814A. (UMI No. 7813677).

Keeffe, J. E., McCarty, C. A., Hassell, J. B., & Gilbert, A. G. (1999). Description and measurement of handicap caused by vision impairment. *Australian & New Zealand Journal of Ophthalmology, 27*, 184-186.

Keller, B. K., Morton, J. L., Thomas, V. S., & Potter, J. F. (1999). The effect of visual and hearing impairments on functional status. *Journal of the American Geriatrics Society, 47*, 1319-1325.

Kempen, G., Steverink, N., Ormel, J., & Deeg, D. J. H. (1996). The assessment of ADL among frail elderly in an interview survey: Self-report versus performance-based tests and determinants of discrepancies. *Journals of Gerontology, 51B*, 254-260.

Kempen, G., Verbrugge, L., Merril, S., & Ormel, J. (1998). The impact of multiple impairments on disability in community-dwelling older people. *Age and Ageing, 27*, 595-604.

Kendig, H., L., & McCallum, J. (1986). *Greying Australia: future impacts of population ageing*. Canberra: Australian Government Publishing Service.

Kennedy, C. (2003). Functioning and disability associated with mental disorders: The evolution since ICIDH. *Disability and Rehabilitation, 25*), 611-619.

Kim, J. K. (1997). *Determinants of life satisfaction among the high-functioning elderly: Implications of effects of psychological factors and activity participation. Dissertation Abstracts International MAI 36(03),* 706.

Kington, R., Rogowski, J., Lillard, L., & Lee, P. P. (1997). Functional associations of "trouble seeing". *Journal of General Internal Medicine, 12*, 125-128.

Klein, B. E. K., Klein, R., Lee, K. E., & Cruickshanks, K. J. (1999). Associations of performance-based and self-reported measures of visual function. The Beaver Dam Eye Study. *Ophthalmic Epidemiology, 6*, 49-60.

Klein-de Vrankrijker, M. W. (2003). The long way from the International Classification of Impairments, Disabilities and Handicaps (ICIDH) to the International Classification of Functioning, Disability and Health (ICF). *Disability and Rehabilitation, 25*, 561-564.

Kleinschmidt, J. J. (1999). Older adults' perspectives on their successful adjustment to vision loss. *Journal of Visual Impairment & Blindness, 93*, 69-81.

Kleinschmidt, J. J., Trunnell, E. P., Reading, J. C., White, G. L., Richardson, G. E., & Edwards, M. E. (1995). The role of control in depression, anxiety and life satisfaction among visually impaired older adults. *Journal of Health Education, 26*, 26-36.

Koopman-Boyden, P. G. (1993). *New Zealand's ageing society: The implications.* Wellington: Daphne Brasell Associates Press.

La Grow, S. J. (1992). *The rehabilitation of visually impaired people.* Auckland: Royal New Zealand Foundation for the Blind.

La Grow, S., J., Leung, S., & Signal, T. (1996). Using peer sampling to set independent travel goals for older clients. *RE:view, 28*, 59-64.

La Grow, S. J., Ponchillia, P. E., & Ponchillia, S. V. (1998). The impact of service delivery systems on the individualization of rehabilitation programming for people who are visually impaired. *RE:view, 30*, 55-63.

LaForge, R. G., Spector, W. D., & Sternberg, J. (1992). The relationship of vision and hearing impairment to one-year mortality and functional decline. *Journal of Aging & Health, 4*, 126-148.

Langlois, J. A., Norton, R., Campbell, J., & Leveille, S. (1999). Characteristics and behaviours associated with difficulty in performing activities of daily living among older New Zealand women. *Disability and Rehabilitation, 21*, 365-371.

Law, M., Baptiste, S., Carswell, A., McColl, M. A., Polatajko, H., & Pollock, N. (1998). *The Canadian Occupational Performance Measure.* (3rd ed). Ottawa, ON: CAOT Publications.

Leinhass, M. M., & Hedstrom, N. J. (1994). Low vision: How to assess and treat its emotional impact. *Geriatrics, 49*(5), 53-55.

Lerner, R. M., & Busch-Rossnagel, N. A. (1981). Individuals as producers of their own development: Conceptual and empirical bases. In R. M. Lerner & N. A. Busch-Rossnagel (Eds.), *Individuals as producers of their development: A life-span perspective* (pp. 1-36). New York: Academic Press.

Lighthouse Research Institute. (1995). *The Lighthouse national survey on vision loss: The experience, attitudes and knowledge of middle-aged and older Americans.* New York: The Lighthouse, Inc.

Long, R. G., Crews, J. E., & Mancil, R. (2000). Creating measures of rehabilitation outcomes for people who are visually impaired: The FIMBA project. *Journal of Visual Impairment & Blindness, 94*, 292-306.

Luker, K. A., & Perkins, E. S. (1987). The elderly at home: Service needs and provision. *Journal of the Royal College of General Practitioners, 37*(299), 248-250.

Madden, R., Choi, C., & Sykes, C. (2003). The ICF as a framework for national data: The introduction of ICF into Australian data dictionaries. *Disability and Rehabilitation, 25*, 676-682.

Mangione, C. M., Lee, P. P., Gutierrez, P. R., Spritzer, K., Berry, S., & Hays, R. D. (2001). Development of the 25-item National Eye Institute Visual Function Questionnaire (VFQ-25). *Archives of Ophthalmology, 119*, 1050-1058.

Marsiske, M., Klumb, P., & Baltes, M. M. (1997). Everyday activity patterns and sensory functioning in old age. *Psychology & Aging, 12*, 444-457.

Massey University. (1988). *Code of ethical conduct for research and teaching involving human subjects.* Palmerston North, New Zealand: Author.

Matcha, D.A. (1997) *The sociology of aging: A social problems perspective.* Needham Heights, MA: Allyn & Bacon.

McIlvane, J. M., & Reinhardt, J. P. (2001). Interactive effect of support from family and friends in visually impaired elders. *Journals of Gerontology, 56B*, 374-382.

MidCentral District Health Board. (2004). *Health and wellbeing of older people: A strategic direction for 2004-2010 Consultation Document*: Palmerston North: MidCentral District Health Board.

Ministry of Health. (April, 2001). *The New Zealand disability strategy: Making a world of difference whakanui oranga.* Wellington: Ministry of Health.

Ministry of Social Development. (October 2001). *Positive ageing in New Zealand: Diversity, participation and change: Status report 2001.* Retrieved 11 November, 2001 from www.executive.govt.nz/minister/dalziel

Moller, K. (2003). Deafblindness: A challenge for assessment - is the ICF a useful tool? *International Journal of Audiology, 42*(suppl 1), S140-142.

Moore, J. (2003). *Raising awareness of older people during education of future RNZFB rehabilitation staff: IMC X post conference report.* Auckland: RNZFB.

Moore, T. J. (1995). *The rehabilitation context. Habilitation and rehabilitation in New Zealand: A paper commissioned by the National Advisory Committee on Core Health and Disability Support Services.* Wellington: Core Services Committee, Ministry of Health.

Morgan, M., Patrick, D. L., & Charlton, J. R. (1984). Social networks and psychosocial support among disabled people. *Social Science & Medicine, 19*, 489-497.

Morris, R., Fletcher, D., & Scott, S. (2002). Blindness is feared. *Counseling and rehabilitation, Ophthalmology Clinics of North America, 15,* 167-170.

Neugarten, B. L. (1968). Adult personality: Toward a psychology of the life cycle. In B.L. Neugarten (Ed.), *Middle age and aging: A reader in social psychology* (pp. 137-147). Chicago, IL: University of Chicago Press.

New Zealand Land Transport Safety Authority. (2004). *Older people and transport.* Retrieved 12 October, 2004 from http://www.ltsa.govt.nz

Norusis, M. J. (1988). SPSS/PC+ advanced statistics V2.0. Chicago: SPSS Inc.

Oppegard, K., Hansson, R. O., Morgan, T., Indart, M., Crutcher, M., & Hampton, P. (1984). Sensory loss, family support, and adjustment among the elderly. *Journal of Social Psychology, 123*, 291-292.

Orr, A. L. (1991). The psychosocial aspects of aging and vision loss. In N. E. Weber (Ed.), *Vision and aging: Issues in social work practice* (pp. 1-14). Binghamton, NY: Haworth Press, Inc.

Orr, A. L. (1992). *Vision and aging: Crossroads for service delivery.* New York: American Foundation for the Blind.

Orr, A., L. (1998). *Issues in aging and vision: A curriculum for university programs and in-service training*. New York: American Foundation for the Blind.

Orr, A. L., & Rogers, P.A. (2001). Development of vision rehabilitation services for older people who are visually impaired: A historical perspective. *Journal of Visual Impairment & Blindness, 95*, 669-689.

Orr, A. L., & Rogers, P. A. (2002). *Solutions for success: A training manual for working with older people who are visually impaired*. New York: American Foundation for the Blind.

Pallant, J. (2001). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows (Version 10)*. Buckingham: Open University Press.

Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment, 5*, 164-172.

Pavot, W. G., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further validation of the Satisfaction With Life Scale: Evidence for the cross-method convergence of well-being measures. *Journal of Personality Assessment, 57*, 149-161.

Percival, J. (2003). Visual impairment in later life - research insights. *New Beacon, 87*(1017), 80-85.

Perenboom, R. J. M., & Chorus, A. M. J. (2003). Measuring participation according to the International Classification of Functioning, Disability and Health (ICF). *Disability and Rehabilitation, 25*, 577-587.

Pinquart, M., & Sorensen, S. (2001). Gender differences in self-concept and psychological well-being in old age: A meta-analysis. *Journals of Gerontology, 56B*, 195-213.

Pinto, P., E., & Sahur, N. (2001). *Working with people with disabilities: An Indian perspective*. Retrieved February 2, 2005, from http://cirrie.buffalo.edu/india.html#_Toc521302804

Ponchillia, P. E., & Ponchillia, S., V. (1996). *Foundations of rehabilitation teaching with persons who are blind or visually impaired*. New York: American Foundation for the Blind.

Potter, A. R. (1999). *Setting up an eye service in the Republic of Benin*. Retrieved January 28, 2004, from http://www.jceh.co.uk/journal1/20_9.asp

Putzke, J. D. (1999). *Activities of daily living in heart transplant candidates. Dissertation Abstracts International, 60(06),* 2957B.

Reinhardt, J. P. (1996). The importance of friendship and family support in adaptation to chronic vision impairment. *Journals of Gerontology, 51B*, 268-278.

Reinhardt, J. P. (2001). Effects of positive and negative support received and provided on adaptation to chronic visual impairment. *Applied Developmental Science, 5*, 76-85.

Reinhardt, J. P., & Blieszner, R. (2000). Predictors of perceived support quality in visually impaired elders. *Journal of Applied Gerontology, 19*, 345-362.

Reinhardt, J. P., Boerner, K., & Benn, D. (2003). Predicting individual change in support over time among chronically impaired older adults. *Psychology & Aging, 18*, 770-779.

Rentsch, H. P., Bucher, P., Nyffeler, I., Dommen Wolf, C., Hefti, H., Fluri, E., et al. (2003). The implementation of the 'International Classification of Functioning, Disability and Health' (ICF) in daily practice neurorehabilitation: An interdisciplinary project at the Kantonsspital of Lucerne, Switzerland. *Disability and Rehabilitation, 25*, 411-421.

Reuben, D. B., Mui, S., Damesyn, M., Moore, A. A., & Greendale, G. A. (1999). The prognostic value of sensory impairment in older persons. *Journal of the American Geriatrics Society, 47*, 930-935.

Richardson, J., & Hawthorne, G. T. (1998). *The Australian Quality of Life (AQOL) instrument: Psychometric properties of the descriptive system and initial validation.* Paper presented at the 19th Australian Conference of Health Economists, Sydney, NSW.

Ringering, L., & Amaral, P. (1990). Vision loss in the elderly: Psychosocial repercussions and interventions. In A. Johnson & M. Lawrence (Eds.), *Low vision ahead: Proceedings of the International Conference on Low Vision 1990* (pp. 193-198). Melbourne: Association for the Blind, Victoria.

Rodda, M., & Zanbrzycki, G. (1994). Sensory disabilities and leisure activities in later life. *Journal of Practical Approaches to Developmental Handicap, 18*(1), 6-12.

Rogers, P., & Long, R. G. (1991). The challenge of establishing a national service delivery program for older blind persons. *Journal of Gerontological Social Work, 17*, 153-163.

Rogers, P., Menchetti, B., & Lai, S.-C. (2000). Using existing databases to evaluate rehabilitation outcomes of older persons who are visually impaired. *Journal of Visual Impairment & Blindness,* 94, 338-342.

Rogers, P. A., Schmitt, S. A., & Scholl, G. T. (1997). Demographic and cultural considerations in rehabilitation. In J. E. Moore, W. H. Graves & B. Patterson (Eds.), *Foundations of rehabilitation counseling with persons who are blind or visually impaired.* (pp. 150-178). NY: American Foundation for the Blind.

Rosenbloom, A. A. (2000). Vision care for elderly individuals: Innovation and advancement in low vision services. In J. E. Crews & F. J. Whittington (Eds.), *Vision loss in an aging society: A multidisciplinary perspective* (pp. 85-108). New York: American Foundation for the Blind.

Rovner, B. W., & Ganguli, M. (1998). Depression and disability associated with impaired vision: The movies project. *Journal of American Geriatrics Society, 46*, 617-619.

Rowe, J. W., & Kahn, R. L. (1998). *Successful aging*. New York: Dell Publishing.

Royal New Zealand Foundation for the Blind. (1992). *Focus on rehabilitation: A rehabilitation service delivery plan for people with a visual impairment.* Auckland: Author.

Royal New Zealand Foundation of the Blind. (2004). *Member services*. Retrieved November 11, 2004, from http://www.rnzfb.org.nz

Rubin, G. S., Roche, K. B., Prasada-Rao, P., & Fried, L. P. (1994). Visual impairment and disability in older adults. *Optometry and Vision Science, 71*, 750-760.

Rucker, I. S., Wehman, P., & Kregel, J. (1996). *Analysis of functional assessment instruments for disability/rehabilitation programs*. Richmond, VA: Medical College of Virginia, Virginia Commonwealth University.

Rudberg, M. A., & Cassel, C. K. (1993). Are death and disability in old age preventable? In J. L. Albarede & P. J. Garry (Eds.), *Facts and research in gerontology*, Vol. 7. (pp. 191-202): Springer Publishing Co.

Rudberg, M. A., Furner, S. E., Dunn, J. E., & Cassel, C. K. (1993). The relationship of visual and hearing impairments to disability: an analysis using the longitudinal study of aging. *Journals of Gerontology, 48B*, 261-265.

Salive, M. E., Guralnik, J., Glynn, R. J., Christen, W., Wallace, R. B., & Ostfeld, A. M. (1994). Association of visual impairment with mobility and physical function. *Journal of the American Geriatrics Society, 42*, 287-292.

Salvia, J., & Ysseldyke, J. I. (1978). *Assessment in special and remedial education.* Boston: Houghton Miflin.

Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships, 4*, 497-510.

Scherer, M. J., & Cushman, L. A. (2001). Measuring subjective quality of life following spinal cord injury: A validation study of the assistive technology device predisposition assessment. *Disability and Rehabilitation, 23*, 387-393.

Schneidert, M., Hurst, R., Miller, J., & Üstün, B. (2003). The role of environment in the International Classification of Functioning, Disability and Health (ICF). *Disability and Rehabilitation,* 25, 588-595.

Seccombe, K., & Ishii-Kuntz, M. (1991). Perceptions of problems associated with aging: Comparisons among four older age cohorts. *The Gerontologist, 31*, 527-522.

Siegert, R. J., Patten, D. M., & Walkey, F. H. (1987). Development of a brief social support questionnaire. *New Zealand Journal of Psychology* (16), 79-83.

Silverstone, B., & Horowitz, A. (1987). Issues of social support: The family and home care. In R. E. Dunkle & J. W. Schmidley (Eds.), *New issues in stroke: diagnosis, treatment, and rehabilitation* (pp. 169-185*).* New York: Springer.

Simons, C. M. (2002). *Proactive coping, perceived self-efficacy, and locus of control as predictors of life satisfaction in young, middle-aged, and older adults. Dissertation Abstracts International, 63(03)*, 1590B.

Smith, P. B. (1996). Preface. In P. E. Ponchillia & S. V. Ponchillia (Eds.), *Foundations of rehabilitation teaching with persons who are blind or visually impaired* (pp. ix). New York: American Foundation for the Blind.

Statistics New Zealand. (1992). *New Zealand classification of occupations 1990.* Wellington: Statistics New Zealand.

Statistics New Zealand. (1996). *New Zealand census of population and dwellings.* Wellington: Statistics New Zealand.

Statistics New Zealand. (1998). *New Zealand now 65 plus.* Wellington: Statistics New Zealand.

Statistics New Zealand. (2001a). *2001 Household disability survey.* Wellington: Statistics New Zealand.

Statistics New Zealand. (2001b). *New Zealand census of population and dwellings.* Wellington: Statistics New Zealand.

Statistics New Zealand. (2004). *Older New Zealanders-65 and beyond.* Wellington: Statistics New Zealand.

Statistics New Zealand. (2005, 7 February). *National population estimates: December 2004 quarter.* Retrieved 9 February, 2005, from www2.stats.govt.nz/domino/external/pasfull/pasfull.nsf

Stephens, D., Vetter, N., & Lewis, P. (2003). Investigating lifestyle factors affecting hearing aid candidature in the elderly. *International Journal of Audiology, 42* (Supplement 2), 2S33-38.

Strauss, H., M. (1966). *A study of reference group and social comparison processes among the blind.* (Doctoral dissertation, Columbia University, 1966). *Dissertation Abstracts International, 27(11),* 3939A.

Stucki, G., Ewert, T., & Cieza, A. (2003). Value and application of the ICF in rehabilitation medicine. *Disability and Rehabilitation, 24*, 932-938.

Stuen, C. (1990). Psychosocial consequences of vision loss among the elderly. In A. Johnson & M. Lawrence (Eds.), *Low vision ahead: Proceedings of the International Conference on Low Vision* (pp. 149-153). Melbourne: Association for the Blind, Victoria.

Stuen, C. (1999). *Family involvement: Maximizing rehabilitation outcomes for older adults with a disability anywhere along the rehabilitation road.* New York: Lighthouse International.

Suls, J., Marco, C. A., & Tobin, S. (1991). The role of temporal comparison, social comparison, and direct appraisal in the elderly's self-evaluations of health. *The Journal of Applied Social Psychology, 21*, 1125-1144.

Swagerty, G. L. (1995). The impact of age-related visual impairment on functional independence in the elderly. *Kansas Medicine, 96* (24-26).

Thomas, M., & Thomas, M. J. (1999). Rehabilitation notes: Understanding CBR. *Friday Meeting Transactions: Associate Publication of Asia Pacific Disability Rehabilitation Journal, 1* (1).

Tobachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: Harper Collins.

Tobin, M. J. (1995). Blindness in later life. *The British Journal of Visual Impairment, 13*, 69-75.

Travis, L. A., Boerner, K., Reinhardt, J. P., & Horowitz, A. (2004). Exploring functional disability in older adults with low vision. *Journal of Visual Impairment & Blindness, 98*, 534-545.

Ueda, S., & Okawa, Y. (2003). The subjective dimension of functioning and disability: What is it and what is it for? *Disability and Rehabilitation, 25*, 596-601.

Upton, L. R., Bush, B. A., & Taylor, R. E. (1998). Stress, coping, and adjustment of adventitiously blind male veterans with and without diabetes mellitus. *Journal of Visual Impairment & Blindness, 92*, 656-665.

Van Zandt, P. L., Van Zandt, S. L., & Wang, A. (1994). The role of support groups in adjusting to visual impairment in old age. *Journal of Visual Impairment & Blindness, 88*, 244-252.

Vaughan, C. E., & Hobson, S. (1990). Reducing late-life dependence resulting from declining visual acuity. *Journal of Visual Impairment & Blindness, 84*, 370-372.

Verbrugge, L. M., & Patrick, D. L. (1995). Seven chronic conditions: Their impact on US adults' activity levels and use of medical services. *American Journal of Public Health, 85,* 173-182.

Waddell, G. (2002). *Models of disability - using low back pain as an example.* London: Royal Society of Medicine.

Wahl, H., Oswald, F., & Zimprich, D. (1999). Everyday competence in visually impaired older adults: A case for person-environment perspectives. *Gerontologist, 39*, 140-149.

Wahl, H., Schilling, O., Oswald, F., & Heyl, V. (1999). Psychosocial consequences of age-related visual impairment: Comparison with mobility-impaired older adults and long-term outcome. *Journals of Gerontology, 54B*, 304-316.

Wallsten, S. M., Tweed, D. L., Blazer, D. G., & George, L. K. (1999). Disability and depressive symptoms in the elderly: The effects of instrumental support and its subjective appraisal. *International Journal of Aging & Human Development, 48*, 145-159.

Wang, J. J., Foran, S., & Mitchell, P. (2000). Age-specific prevalence and causes of bilateral and unilateral visual impairment in older Australians: The Blue Mountains Eye Study. *Clinical & Experimental Ophthalmology, 28*, 268-273.

Washington State Department of General Administration-ADA. (2001). *Low vision FAQ*. Retrieved 19 September, 2001, from http://www.washington.edu

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality & Social Psychology, 54*, 1063-1070.

Weigl, M., Cieza, A., Harder, M., Geyh, S., Amann, E., Kostanjsek, N., et al. (2003). Linking osteoarthritis-specific health-status measures to the International Classification of Functioning, Disability, and Health (ICF). *Osteoarthritis & Cartilage, 11*, 519-523.

Welsh, R. L. (1980). Visually impaired older persons. In R. L. Welsh & B. B. Blasch (Eds.), *Foundations of orientation and mobility* (pp. 420-428). New York: American Foundation for the Blind.

West, S. K., Munoz, B., Rubin, G. S., Schein, O. D., Bandeen-Roche, K., Zeger, S., et al. (1997). Function and visual impairment in a population based study of older adults: the SEE project. *Investigative Ophthalmology and Visual Science, 38*, 72-82.

Whitbourne, S. K. (1996). *The aging individual: Physical and psychological perspectives*. New York: Springer Publishing Company.

Wicks, W. (1996). *Voices from the crags and rocky perches: Older women with disabilities and work.* Paper presented at the 18th World Congress of Rehabilitation International, Auckland, New Zealand.

Williams, R. A., Brody, B. L., Thomas, R. G., Kaplan, R. M., & Brown, S. I. (1998). The psychosocial impact of macular degeneration. *Archives of Ophthalmology, 116*, 514-520.

Willits, F. K., & Crider, D. M. (1988). Health rating and life satisfaction in the later middle years. *Journals of Gerontology, 43B*, S172-S176.

World Health Organization. (1980). *International classification of impairments, disabilities and handicaps: A manual of classification relating to the consequences of disease (ICIDH)*. Geneva: World Health Organization.

World Health Organization. (1993). *The World Health Organization Quality of Life (WHOQOL)-BREF*. Retrieved 18 January, 2001 from http://www.who.int

World Health Organization. (2001). *International classification of functioning, disability and health (ICF)*. Geneva: World Health Organization.

Ybema, & Buunk, B. P. (1995). Affective responses to social comparison: A study among disabled individuals. *British Journal of Social Psychology, 34*, 279-292.

Appendix A

Extended glossary of terms

Extended Glossary of Terms

For the purposes of this study, the following explanations and descriptions of terms are provided. All effort has been made to use inclusive, current and preferred language related to disability. Terminology used in this study was determined through consultation with representatives of the Association of Blind Citizens of New Zealand Inc. (ABC), DPA-NZ, The National Assembly of People with Disabilities (DPA), students of the Michigan Commission for the Blind Training Center (MCBTC) who resided there August-November, 2002 and members of the support group for older people with impaired vision at The Geriatrics Center, University of Michigan, Ann Arbor, who met with me in December, 2002. Person-first language has been utilised throughout the thesis. Occasionally the term "disabled person" is used, as a reflection of the social construction of disability and the language endorsed by the New Zealand Disability Strategy, 2001.

Active recreation In this study this included bicycling, walking indoors and outdoors, jogging, exercising, bowls, fitness; hunting, camping and tramping, boating, swimming and travelling.

Activity The execution of a task or action by an individual (WHO, 2001).

Activities of daily living (ADL) These are tasks completed throughout the course of the day, which can include both basic activities of daily living (BADL) and more complex instrumental activities of daily living (IADL).

Activity limitation Difficulties an individual may have in executing activities (WHO, 2001).

Age-related macular degeneration (ARMD) A group of conditions that involves deterioration of the macula resulting in loss of sharp central vision. ARMD is the most common cause of decreased vision after age 60 in developed countries (Cassin & Solomon, 1997).

Age cohort A group of individuals who, because of similar year of birth, have similar life experiences (Matcha, 1997). In this study age cohorts are identified as "young-old" (cohort 1, aged 65-74), "middle-old" (cohort 2, aged 75-84) and "old-old (cohort 3, aged 85+).

Ageing A biological, psychological and social process constructed from expectations and beliefs of a particular culture or community (Matcha, 1997).

Alternative format Materials, usually in print, reformatted into Braille, large print, and audiocassette or computer disk to meet the needs of people with impaired vision and to comply with accessibility standards.

Basic activities of daily living (BADL) Activities usually performed daily for self-care and survival. In this study these included bathing, dressing, eating, toileting and transferring from chair to couch, car or wheelchair.

Blindness Functional defect. Inability to see (Cassin & Solomon, 1997).

Body functions Physiological functions of body systems (WHO, 2001).

Body structures Anatomical parts of the body such as organs, limbs and their components (WHO, 2001).

Capacity In relation to functioning, what one *can* do, as opposed to performance, which is what one *does* do (WHO, 2001).

Carroll, Thomas, S.J. Father Thomas Carroll (1909 - 1971) is known as "the father of blindness". He established a model of vision rehabilitation still utilised today. He emphasised the social and psychological impact of vision loss and identified 20 losses associated with the loss of vision.

Cataracts Opacity or cloudiness of the crystalline lens, which may prevent a clear image from forming on the retina. Surgical removal of the lens may be necessary if vision loss becomes significant. This is a leading cause of blindness and vision impairment around the world, especially in older people (Cassin & Solomon, 1997).

Caring for others In this study this included caring for children and caring for another adult.

Certified vision rehabilitation therapist (CVRT) See rehabilitation teacher.

Clothing care In this study this included pegging clothes on the line, operating a washing machine, operating a clothes dryer and ironing.

Communication In this study this included writing letters, using a computer, answering a telephone, making phone calls, taking messages, operating telephone service or answering machine, scheduling appointments, operating a television, operating a remote control, operating a video machine, operating a stereo and operating a radio.

Community activities In this study this included driving, using public transport, going to exercise or swim class, attending sports clubs, shopping, attending club meetings, going to movies, plays or concerts, going to sporting events, going to restaurants or cafes, volunteering, running errands, attending religious activities and renting videos.

Contextual factors Within the ICF, contextual factors include environmental and personal factors.

Diabetic retinopathy Spectrum of retinal changes accompanying diabetes mellitus, a leading cause of blindness and vision impairment in developed countries (Cassin & Solomon, 1997).

Disabled people Term used in relation to the social construction of disability in accordance with its usage in the New Zealand Disability Strategy, 2001.

Disability Any restriction or lack resulting from an impairment of ability to perform an activity in the manner or within the range considered normal for a human being (WHO, 1980). This definition evolved to become an umbrella term for impairments, activity limitations or participation restrictions (WHO, 2001).

Distance vision Reference point for measuring visual acuity, usually measured from 6 meters (20 feet) (Cassin & Solomon, 1997).

Environmental factors The physical, social and attitudinal environments in which people live and conduct their lives (WHO, 2001).

Functioning An umbrella term encompassing all body functions, activities and participation (WHO, 2001). In this study functioning generally referred to activity and independence.

Gender Related to sex roles, customs, attitudes and behaviours within a culture. In this study participants identified themselves by gender.

Glaucoma A group of diseases characterised by increased intraocular pressure resulting in damage to the optic nerve and retinal nerve fibres. This results in visual field defects. A leading cause of vision impairment, especially in older people (Cassin & Solomon, 1997).

Handling money In this study this included paying bills on time, maintaining a chequebook, using EFTPOS (electronic debit card), using credit cards and handling coins.

Handicap Any disadvantage for a given individual, resulting from impairment or a disability, that limits or prevents the fulfilment of a role that is normal (depending on age, sex and social and cultural factors) for that individual (WHO, 1980). This definition evolved into the term participation restriction (WHO, 2001).

Home management In this study this included making beds daily, changing linen on beds, dusting, sweeping, vacuuming, taking out rubbish, scrubbing bathroom and toilet, watering plants and caring for pets.

Impairment Any loss or abnormality of a psychological, physiological or anatomical structure or function (WHO, 1980). This definition evolved to problems in body function or structure such as a significant deviation or loss (WHO, 1998).

Instrumental support See practical support

Kitchen management In this study this included preparing vegetables; cooking on a stove, oven, microwave and barbeque; following recipes; setting table; washing dishes; canning, freezing and bottling; making shopping lists; putting away groceries, and shopping.

Manawatu Region in the lower North Island of New Zealand defined by the researcher, with the assistance of New Zealand Post and the RNZFB as the area covered by postal codes 5301-5600.

Marital status For demographic descriptions classifications were married, unmarried and widowed. These were reclassified for statistical analyses as married and unmarried/widowed, as a reflection of social support.

Near vision Reference point for measuring visual acuity, usually measured from 16 inches (40 cm) (Cassin & Solomon, 1997).

Normative ageing This refers to the ageing process and includes the expected changes in body systems, structures and function. In this study normative ageing does not generally encompass components of disease or pathological ageing.

Older In this study this referred to those aged 65+. Older cohorts refers to age cohorts 2 and 3.

Orientation and mobility The field dealing with systematic techniques by which blind and vision impaired persons orient themselves to their environments and move about independently (Blasch, Wiener & Welsh, 1997).

Outdoor and other home responsibilities In this study this included mowing grass, raking, gardening, household repairs, household maintenance, building a fire, chopping wood, carrying wood and car washing.

Participation Involvement in a life situation (WHO, 2001).

Participation restrictions Problems an individual may experience in involvement in life situations (WHO, 2001).

Peers In this study this referred to age-related peers; those who are aged 65+, or more specifically, those within the same age cohort.

Performance In relation to functioning, what one actually *does*, in comparison to capacity, which is what one *can* do (WHO, 2001).

Peripheral vision Side vision.

Personal factors These factors make up the particular background of an individual's life and living and are composed of features of the individual that are not part of a health condition. (WHO, 2001).

Personal management In this study personal management included medication management, setting alarm clock, brushing teeth, nail care, shaving, use of make-up and hair care.

Practical support Also referred to as instrumental support. This can include both formal agency support and informal support from family, friends and others.

Private household Participants in this study lived in private households, as opposed to hospitals, nursing homes, lodges or group homes.

Quiet recreation In this study this included reading, crafts, knitting and sewing.

Rehabilitation The process of restoring an individual to their previous life roles and former activities, specifically through the learning of adaptive skills for daily living.

Rehabilitation teacher (RT) A professional whose primary goal is to instruct persons with vision impairments to utilise adaptive skills to help them to cope with the demands of everyday life, primarily in the areas of communication, personal management, home management, leisure time, movement in familiar environments and low vision; other job roles include case management tasks, such as making referrals and advocating for clients' rights, and administrative tasks, such as educating the public about blindness (Ponchillia & Ponchillia, 1996). The official title for this profession was changed in 2004 by AER and ACVREP, the certifying body for vision professionals, to certified vision rehabilitation therapist (CVRT).

Royal New Zealand Foundation *of* the Blind Formerly known as the Royal New Zealand Foundation *for* the Blind. New Zealand's primary service provider for those who are blind, vision-impaired and deaf blind.

Rural Participants were classified as living in a rural centre if they lived in a town with a population of between 300 and 1, 000 and a rural area if they lived outside a town or city boundary.

Sighted In this study participants were classified as sighted if they could see well enough to legally have a driver's license, read newsprint, and were not eligible for RNZFB services.

Significant vision impairment Vision impairment to the degree that one is eligible for services from the RNZFB.

Social comparison How one perceives one's function in comparison to one's peers. In this study social comparisons of activity and independence were measured.

Social support The degree to which our basic needs are met through interactions with other people.

Subjective dimensions of functioning Includes satisfaction with social support, satisfaction with independence, perceived levels of activity and independence in comparison to one's peers and overall life satisfaction.

Urban Participants were classified as living in a main urban area if they were from a city with a population of 30,000 or more, a secondary urban area if they lived in a town or city with a population of between 10,000 and 29,000 and a minor urban area if they lived in a town with a population between 1,000 and 10,000.

Vision status This refers to the two categories of participants; those with impaired vision and those with sight.

Visual acuity The sharpness of vision related to the ability to distinguish detail often measured at specific distances (20 feet or 6 meters, and 16 inches or 40 cm) (Cassin & Solomon, 1997).

Visual field The area that can be seen when looking straight ahead, measured in degrees from the fixation point (Corn & Koenig, 1996).

Vision impairment Any degree of vision that is insufficient for an individual to perform ADL in the way that is usual for someone that age in that culture. For this study those classified with impaired vision were eligible for services from the RNZFB in that their visual acuity was not more than 6/24 in the better eye with corrective lenses, or they had limitations in field of vision, generally not greater than 20 degrees in the widest diameter.

Appendix B

Pilot study materials

Pilot study information sheet

Pilot study consent form

Pilot study questionnaire

Note: The Canadian Occupational Performance Measure, which was used in the pilot study, has not been included in this appendix as it can not be made publicly available due to copyright regulations.

Massey University

Information Sheet

(also available in Braille and on cassette)

Ageing and Vision Loss
Comparing levels of activity and independence of older persons experiencing vision loss with the wider, older population.

Who is doing this research?

My name is Gretchen Good. I am a Ph.D. student in the School of Health Sciences at Massey University in Palmerston North. My supervisors are Dr. Steve LaGrow and Dr. Fiona Alpass. I have worked as a teacher of those who are blind or vision impaired in the U.S. and here in New Zealand and have a vision impairment myself. I am interested in learning about the experience of growing older while living in the Manawatu, with and without vision loss. I have contacted you with the assistance of either the Royal New Zealand Foundation for the Blind or Age Concern.

Do you want this read to you?
Phone Gretchen Good 350-5799 ext. 2245

What is this research about?

This research aims to assess and survey people who are aged 65 and older living in their homes in the Manawatu.

I hope to find out about your daily activities and to discover which activities you prefer to do independently and with which you prefer or require assistance. I want to know what activities are most important for those in your age group.

One of the main goals is to discover what is typical daily life for this age group in this community. And to discover if life is significantly different for those experiencing new vision loss.

How did this research come about?

While working for the Royal New Zealand Foundation for the Blind, and for similar agencies in the U.S. as a young adult I had difficulty helping older clients establish goals for rehabilitation, as I did not understand enough about typical daily activities for an older age group, with or without vision loss. I hope to gain an understanding for myself and for my students about typical levels of activity and independence for this particular age group, to better inform rehabilitation planning and goal setting for those who lose vision after age 65.

What would I do if I offer to participate?

You are invited to participate by completing a questionnaire, and by completing an assessment measure about your daily activities. This can be conducted over the telephone, I can come to your home, or you can fill in the forms and return them to me or Age Concern, or the Royal New Zealand Foundation for the Blind. It should

take about one hour to fill in the forms, a bit longer if I do it with you over the telephone or in your home.

Issues of confidentiality and anonymity

On the questionnaire, survey and assessment, a code number will be used to identify you, and not your name. This will help to keep all information anonymous. My supervisors and I will be the only ones with access to the survey information and this will be locked away securely, with no need for your name to be attached to any of the assessments, surveys or questionnaires. If any research assistants are hired to help input data, they will sign an agreement to confidentiality. None of the information you provide will go to any agency, such as the Royal New Zealand Foundation for the Blind or Age Concern. They will, of course, be interested in the overall survey results, but none of your private information will be made available to anyone other than the researcher.

Your Rights as a Participant

You will be asked to complete a consent form before participating. It outlines your rights as a participant in this research.

- Your participation in this research is entirely voluntary. You have the right to decline any involvement.

- You can ask any questions about the research at any stage

- You can refuse to answer any particular questions and withdraw from the research at any time

- Your participation will remain confidential to the researcher. That is your information will be used in a way that you will not be identified and is given on the understanding that your name will not be used under any circumstances, unless you give permission. As far as possible, I will assure your anonymity and confidentiality.

- A summary of the findings will be available to you at the completion of the research, on request. Tick the box on the consent form if you would like a report of the research.

You will need to:

- Contact the researcher directly if you are interested in participating by phoning Gretchen Good at 350-5799 ext. 2245 or
- Sign a consent form with the Royal New Zealand Foundation for the Blind, or Age Concern, permitting me to phone you.
- Agree over the telephone, in writing, or in person, to what is stated in the consent form
- Participate by filling in the forms and returning them to the researcher or to Age Concern or the Royal New Zealand Foundation for the Blind. Or complete the survey over the telephone or in person, with help from the researcher.

This study has received approval from the Massey University Human Ethics Committee.

Thank you for considering this request.

Gretchen Good, Principal Researcher
350-5799 ext. 2245

Supervisors: Professor Steven J. LaGrow School of Health Sciences
350-5799 ext. 2248

Dr. Fiona Alpass, School of Psychology
350-5799 ext. 2040

Massey University

CONSENT FORM

Ageing and Vision Loss
Comparing levels of activity and independence of older persons experiencing vision loss with the wider, older population.

I have read, or had read to me, the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand I have the right to withdraw from the study at any time and to decline to answer any particular questions. I agree to provide information to the researcher on the understanding that my name will not be used without my permission. I understand that the information will be used only for this research and publications arising from this research project.

I also understand that my participation in this project will not affect any services I may receive from the Royal New Zealand Foundation for the Blind or Age Concern or any other agency.

I agree to participate in this study under the conditions set out in the information sheet.

Signed:_____

Name:_____

Date: _____

☐ **Tick here if you would like a summary of the research findings.**

Activity and Independence of those over 65
A Pilot Study

A research project conducted by Gretchen Good,
PhD student, Massey University.

Please read the following instructions carefully:

- All the information you give is in confidence and will be used only for the purposes of this study.
- Please try to answer every question.
- There are no right or wrong answers.
- This is in no way connected to any service you have or will receive from any social service agency.

Activity and Independence of those over 65
A Pilot Study
PART ONE

First I would like some general demographic background details from you.

For Office Use

1 Date of birth (day/month/year)

_____/_____/19_____ 1 ☐

Please tick the circle ❍ next to the answer which you believe gives the best description of your current situation.

2 Gender

❍ Male ❍ Female 2 ☐

3 Which ethnic group do you identify with? 3 ☐
(You may tick more than one circle) 4 ☐

❍ New Zealander of Maori descent
❍ New Zealander of European descent
❍ New Zealander of Pacific Island descent
❍ Other:_____

4 Which of the following best describes the area where you live? (Please tick one circle only). 5 ☐

❍	Main Urban Area:	A city with a population of 30,000 or more e.g: Palmerston North
❍	Secondary Urban Area:	A town/city with a population of between 10,000 & 29,000
❍	Minor Urban Area:	A town with a population of between 1,000 & 10,000
❍	Rural Centre:	A town with a population of between 300 & 1,000
❍	Rural Area:	Outside a town/city boundaries

Please tick the circle which you believe gives an accurate indication of your current situation. You can tick more than one circle.

5 What is your current living situation? 6

- ○ I live alone
- ○ I live with my spouse/partner
- ○ I live with my children
- ○ I live with other family members
- ○ I live with others who are not family
- ○ Other living situation: _____

6 Are you retired?

○ Yes ○ No 7

7 What has been your main occupation(paid or unpaid work)? 8

_____

8. What is your yearly income before tax?

- ○ $000 - $10,999
- ○ $11,000 - $25,999
- ○ $26,000 - $40,999
- ○ $41,000 - $55,999
- ○ More than $56,000

9

9 What is your highest educational qualification? 10

- ○ No school qualification
- ○ School certificate passes
- ○ School qualifications, University Entrance and above
- ○ Trade certificate or professional certificate or diploma
- ○ University degree, diploma, or certificate

10 Are you receiving services from any of these agencies? 11

- ❍ Age Concern 12
- ❍ Royal New Zealand Foundation for the Blind 13
- ❍ The Hearing Association
- ❍ Mental Health Services
- ❍ Specialist Health Services
- ❍ List other agencies:_____

_____

11 Does anyone assist you regularly with your daily activities? 14

- ❍ Spouse 15
- ❍ Son or daughter 16
- ❍ Other family
- ❍ Others who share your home
- ❍ Friends
- ❍ Agency workers / Paid assistance
- ❍ Neighbours
- ❍ Other:_____
- ❍ Nobody assists me

12 Do you have regular contact with any of these people? 17

- ❍ Family 18
- ❍ Friends 19
- ❍ Church group
- ❍ Sport/Recreation group
- ❍ Disability group
- ❍ Arts and Crafts group
- ❍ Political/Discussion groups
- ❍ Other:_____

13 Do you have any of the following disabilities?

○	Hearing loss	20
○	Psychiatric or psychological disability	21
○	Physical disability	22
○	Chronic illness or health related disability	
○	Vision loss	
○	Other:_____	

_____

14 **If you have a vision loss:**

A Are you a member of the RNZFB? ○ Yes ○ No 23

B How old were you when you lost significant vision? 24

_____

C What is the cause of your vision impairment? 25

_____

D How would you describe your vision? 26

_____

E Can you see newsprint? ○ Yes ○ No 27

F Can you see large print? ○ Yes ○ No 28

G Can you see well enough to have a drivers licence? ○ Yes ○ No 29

H What is your Visual acuity: (if known) 30

_____

15 In the past two years have you given up any of your activities or interests? 31 32 33

○ Yes ○ No

16 If so, what activities have you given up?

_____

_____

_____

17 Why did you give up these activities or interests? 34

_____

_____

Survey of Daily Activities

PART TWO

For the following daily activities, please tick as many boxes as are appropriate.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 Someone performs this activity for me
4 I do not perform this activity and no-one performs it for me
5 I would like to perform this activity better, faster or more independently

	1	2	3	4	5	Code	
Basic Activities of Daily Living							
Bathing self	○	○	○	○	○	35	
Dressing self	○	○	○	○	○	36	
Toileting self	○	○	○	○	○	37	
Transferring from chair to car/couch/wheelchair	○	○	○	○	○	38	
Eating	○	○	○	○	○	39	
Personal Management	1	2	3	4	5		
Medication management	○	○	○	○	○	40	
Setting alarm clock	○	○	○	○	○	41	
Brushing teeth	○	○	○	○	○	42	
Nail care	○	○	○	○	○	43	
Shaving	○	○	○	○	○	44	
Using make-up	○	○	○	○	○	45	
Care for Others	1	2	3	4	5		
Caring for children	○	○	○	○	○	46	
Caring for another adult	○	○	○	○	○	47	

For the following daily activities, please tick as many boxes as are appropriate.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 Someone performs this activity for me
4 I do not perform this activity and no-one performs it for me
5 I would like to perform this activity better, faster or more independently

	1	2	3	4	5	Code	
Home management							
Making beds	○	○	○	○	○	48	
Dusting furniture	○	○	○	○	○	49	
Sweeping floors	○	○	○	○	○	50	
Vacuuming carpets	○	○	○	○	○	51	
	1	2	3	4	5		
Taking out rubbish	○	○	○	○	○	52	
Scrubbing bathroom/toilet	○	○	○	○	○	53	
Watering plants	○	○	○	○	○	54	
Caring for pets	○	○	○	○	○	55	
Kitchen Management	1	2	3	4	5		
Preparing vegetables	○	○	○	○	○	56	
Cooking on stove top	○	○	○	○	○	57	
Cooking in oven	○	○	○	○	○	58	
Cooking in microwave	○	○	○	○	○	59	
Cooking outside on the BBQ	○	○	○	○	○	60	

For the following daily activities, please tick as many boxes as are appropriate.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 Someone performs this activity for me
4 I do not perform this activity and no-one performs it for me
5 I would like to perform this activity better, faster or more independently

	1	2	3	4	5	Code	
Following recipes	○	○	○	○	○	61	
Setting table for dining	○	○	○	○	○	62	
Washing dishes	○	○	○	○	○	63	
Loading dishwasher	○	○	○	○	○	64	
Operating dishwasher	○	○	○	○	○	65	
Canning/freezing/bottling fruits or vegetables	○	○	○	○	○	66	
Making shopping list	○	○	○	○	○	67	
Putting away groceries	○	○	○	○	○	68	

Outdoor Home Responsibilities	1	2	3	4	5		
Mowing grass	○	○	○	○	○	69	
Raking leaves	○	○	○	○	○	70	
Gardening - flowers	○	○	○	○	○	71	
Gardening - vegetables	○	○	○	○	○	72	
Gardening - pot plants	○	○	○	○	○	73	

For the following daily activities, please tick as many boxes as are appropriate.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 Someone performs this activity for me
4 I do not perform this activity and no-one performs it for me
5 I would like to perform this activity better, faster or more independently

	1	2	3	4	5	Code	
Household repairs	○	○	○	○	○	74	
Building fire in fireplace	○	○	○	○	○	75	
Chopping wood	○	○	○	○	○	76	
Carrying wood	○	○	○	○	○	77	
Changing car oil	○	○	○	○	○	78	
Washing car	○	○	○	○	○	79	
Laundry	1	2	3	4	5		
Pegging clothes on line	○	○	○	○	○	80	
Operating washer/dryer	○	○	○	○	○	81	
Ironing	○	○	○	○	○	82	
Communication/Electronics	1	2	3	4	5		
Using computer	○	○	○	○	○	83	
Answering telephone	○	○	○	○	○	84	
Making phone calls	○	○	○	○	○	85	
Taking phone messages	○	○	○	○	○	86	
Operating telephone answering service or machine	○	○	○	○	○	87	

For the following daily activities, please tick as many boxes as are appropriate.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 Someone performs this activity for me
4 I do not perform this activity and no-one performs it for me
5 I would like to perform this activity better, faster or more independently

	1	2	3	4	5		
Scheduling appointments	○	○	○	○	○	88	
Operating television	○	○	○	○	○	89	
Operating remote control	○	○	○	○	○	90	
Operating video machine	○	○	○	○	○	91	
Operating stereo	○	○	○	○	○	92	

Recreational Activities	1	2	3	4	5		
Reading	○	○	○	○	○	93	
Crafts	○	○	○	○	○	94	
Knitting	○	○	○	○	○	95	
Sewing	○	○	○	○	○	96	

Active	1	2	3	4	5		
Bicycling	○	○	○	○	○	97	
Walking/Jogging	○	○	○	○	○	98	
Exercising	○	○	○	○	○	99	
Bowls	○	○	○	○	○	100	
Fitness	○	○	○	○	○	101	
Hunting/Camping/Tramping	○	○	○	○	○	102	
Boating	○	○	○	○	○	103	
Swimming	○	○	○	○	○	104	
Travelling	○	○	○	○	○	105	

1	I perform this activity without assistance
2	I perform this activity with some assistance
3	Someone performs this activity for me
4	I do not perform this activity and no-one performs it for me
5	I would like to perform this activity better, faster or more independently

Community Activities	1	2	3	4	5	Code
Driving a car	○	○	○	○	○	106
Using public transportation	○	○	○	○	○	107
Going to exercise/swim class	○	○	○	○	○	108
Sports club	○	○	○	○	○	109
Shopping	○	○	○	○	○	110
Attending club meetings	○	○	○	○	○	111

	1	2	3	4	5	
Going to movies/plays/concerts	○	○	○	○	○	112
Going to restaurants / cafes	○	○	○	○	○	113
Volunteering	○	○	○	○	○	114
Running errands	○	○	○	○	○	115
Attending religious activities	○	○	○	○	○	116
Renting videos	○	○	○	○	○	117

Finances	1	2	3	4	5	
Paying bills on time	○	○	○	○	○	118
Maintaining chequebook	○	○	○	○	○	119
Using eftpos	○	○	○	○	○	120
Using credit cards	○	○	○	○	○	121
Making change	○	○	○	○	○	122

Any other Daily Activities that are very important to you?

	1	2	3	4	5		
	○	○	○	○	○	123	
	○	○	○	○	○	124	
	○	○	○	○	○	125	
	○	○	○	○	○	126	

Assessing levels of activity and independence

A Compared to two years ago my daily activity level is: 127 ☐

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

B Compared to others my age my daily activity level is: 128 ☐

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

C I would like my level of activity to be: 129 ☐

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

D Compared to two years ago my level of independence is: 130 ☐

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

E Compared to others my age, my level of independence is: 131 ☐

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

F I would like my level of independence to be: 132 ☐

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

Do you get the kind of support from others that you need?					133 ☐
Not at all	Not much	Moderately	A great deal	Completely	
○	○	○	○	○	

How do you rate your Quality of Life?					134 ☐
Very Poor	Poor	Neither poor nor good	Good	Very Good	
○	○	○	○	○	

How satisfied do you feel about your ability to give back in some way, to those who support you?					135 ☐
Not at all	Not Much	Moderately	A Great Deal	Completely	
○	○	○	○	○	

Please list the three things that contribute most to your quality of life:

_____

_____

_____

Frenchay Activities Index - PART THREE

Over the last four weeks how often have you performed the following activities?

0	Never
1	Less than one day a week
3	One to three days per week
4	Four to six days per week
7	Every day of the week

		0	1	3	4	7	Code	
1	Preparing main meals	○	○	○	○	○	136	
2	Washing up	○	○	○	○	○	137	
3	Washing clothes	○	○	○	○	○	138	
4	Light housework	○	○	○	○	○	139	
5	Heavy housework	○	○	○	○	○	140	
6	Local shopping	○	○	○	○	○	141	
7	Social outings	○	○	○	○	○	142	
8	Walking outside for more than 15 Minutes	○	○	○	○	○	143	
9	Actively pursuing hobby	○	○	○	○	○	144	
10	Driving a car	○	○	○	○	○	145	
11	Using public transport	○	○	○	○	○	146	
12	Outings	○	○	○	○	○	147	
13	Car rides	○	○	○	○	○	148	
14	Gardening	○	○	○	○	○	148	
15	Household maintenance	○	○	○	○	○	150	
16	Car maintenance	○	○	○	○	○	151	
17	Reading books (print, large print or tape-recorded)	○	○	○	○	○	152	
18	Reading mail, newspapers, magazines	○	○	○	○	○	153	
19	Using a typewriter or computer	○	○	○	○	○	154	
20	Paid or unpaid work	○	○	○	○	○	155	

In the past four weeks, to what extent have you experienced the following feelings and emotions?

	1 Very slightly or not at all	2 A little	3 Moderate	4 Quite a bit	5 Extreme	Code	
Interested	○	○	○	○	○	156	
Nervous	○	○	○	○	○	157	
Attentive	○	○	○	○	○	158	
Active	○	○	○	○	○	159	
Ashamed	○	○	○	○	○	160	
Excited	○	○	○	○	○	161	
Strong	○	○	○	○	○	162	
Scared	○	○	○	○	○	163	
Enthusiastic	○	○	○	○	○	164	
Irritable	○	○	○	○	○	165	
Inspired	○	○	○	○	○	166	
Determined	○	○	○	○	○	167	
Jittery	○	○	○	○	○	168	
Afraid	○	○	○	○	○	169	
Distressed	○	○	○	○	○	170	
Upset	○	○	○	○	○	171	
Guilty	○	○	○	○	○	172	
Hostile	○	○	○	○	○	173	
Proud	○	○	○	○	○	174	
Alert	○	○	○	○	○	175	

Thank you!

Appendix C

Presentation of results of the pilot study

Good, G. (2000b, July). *Older, vision impaired and Kiwi: Older New Zealanders rate the importance of activities of daily living.* Poster session presented at the. *i*nternational conference of the Association for the Education and Rehabilitation of the Blind and Vision Impaired, Denver, CO.

Older, Vision Impaired and Kiwi

Older New Zealanders Rate the Importance of Activities of Daily Living

Author: Gretchen A. Good, Massey University, New Zealand

Massey University

Abstract:

The Kiwi attitude of "She'll be Right" is reflected in the levels of independence maintained by older, blind New Zealanders. Here a summary of responses regarding the importance of such daily activities as sport, gardening, cooking and home maintenance is portrayed. Also summarized are the problem areas of activities of daily living for this population of older, blind New Zealanders.

Background: This presentation of findings is derived from a study conducted in the Manawatu region of the North Island of New Zealand. This pilot study for a large, data driven survey is an assessment of levels of independence and activity for those aged 65+ living in the community. Self-reported levels of independence and activity, demographic details, measurements of positive and negative affect, degree of social and practical support, as well as quality of life were assessed. Problems of activities of daily living tasks were ranked with regard to importance. Findings reveal the degree of importance allocated to basic activities of daily living, social activities and recreational activities. Also revealed are reported items crucial to subjective quality of life for this population. This poster presentation is a summary of the findings relating to the information received from in-depth interviews with the 15 vision impaired research participants.

Method: A survey instrument was developed to determine levels of activity and independence for those aged 65+ who live in their own homes (as opposed to rest homes). Fifteen vision impaired participants, eligible for services from the Royal New Zealand Foundation for the Blind, were interviewed. As part of the survey participants were asked to identify daily living tasks which they would like to perform better, faster or more independently. With the use of the Canadian Occupational Performance measure, identified problem areas were ranked for importance. Participants were also asked to identify important aspects of their Quality of Life.

Discussion: This data was collected from vision impaired older people, not currently receiving rehabilitation services. It is interesting to note the areas that remain problematic after completion of a rehabilitation program. This data may give us pointers for developing standardized measures for assessment, goal setting and rehabilitation services for older blind Rehabilitation clients.

Overall respondents rated themselves as having a "good" quality of life. Some identified problem areas may be addressed by further Rehabilitation Services. However, many research participants indicate that blindness itself, one's attitude toward it, and one's acceptance of changes that accompany aging may have the biggest impact on perceived quality of life. Rehabilitation service providers may benefit from the knowledge of these factors. Further research is required to determine the impact of independent daily skill acquisition on independence, activity and quality of life for this population.

Summary of Results:

What contributes to Quality of Life for this population?
Responses :n = 55

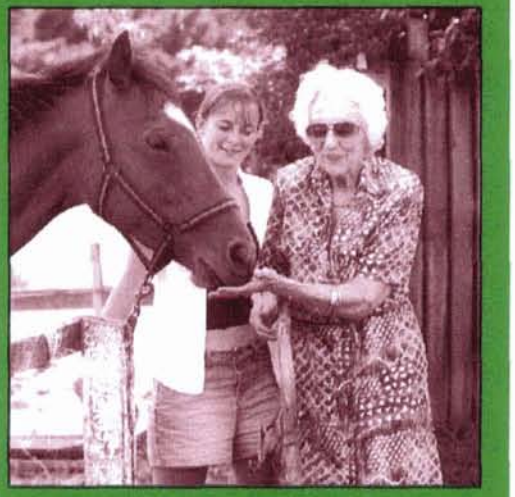
Hobbies: (gardening, crosswords, ham radio, music, reading) n=11
Family: (siblings, children, grand-children) n=8
Friends and Neighbors: n=6
Personal Attitude: n=6
No financial worries n=4
Able to stay in own home n=4
Visitors from voluntary agencies and churches n=3
Remaining health and vision n=2
Memories (pets, travel) n=2
Assistive aids n=2
Doing good turns for others n=1
Cultural background n=1
Having something to look forward to n=1
Being creative n=1
Being efficient n=1
Jim Reeves records n=1
Cigarettes n=1

What are the most important problem areas regarding daily living?
Responses n= 94

Reading and correspondence n= 14
Knitting, sewing and craft n=14
Travel and mobility n=9
Kitchen management n=9
Gardening n=8
Accessing visual entertainment n=6
Handling Social situations n=6
Active recreation (bowls, fitness, walking, dancing) n=5
Quiet recreation (piano, crosswords, playing cards, sketching) n=4
Home maintenance, carpentry, building n= 4
Shopping, handling money n=3
Clothing care n=3
Make-up nail, care n=3
Setting clocks and watches n=2
Cleaning & polishing n=2
Tuning radio n=1
Replacing Hearing Aid batteries n=1

What detracts from Quality of Life for this population?
Responses n = 20

Disappointment in others n=6
Blindness n=5
Physical disability n=4
Hearing loss n=2
Loneliness n=1
Inability to drive n=1
Weather n=1



Photos courtesy of
1. Terry Winn, (1999). Grandads, Grandmas, Nanas and Poppas. Hodder Moa Beckett: Auckland.

2. Royal New Zealand Foundation for the Blind.

3. Jack Shortt, Palmerston North

4-6 John Hilkie, Palmerston North

Appendix D

Results of pilot study disseminated to participants

Massey University

July 2001

Dear

Thank you for participating in the research I conducted last year. I certainly appreciate the time you gave to be interviewed and to fill in my questionnaire. It was interesting for me to learn about your life stories and the activities and lifestyles of people in your age range living in the Manawatu. The data have been analyzed and I have enclosed a report for your interest. I will continue with the study over the next year and will be distributing the revised questionnaire, which you helped me to pilot, to hundreds of people aged 65+ who live in the Manawatu region. I thank you again for helping me with my study and hope you find the results interesting. Please feel free to contact me if you have any comments or questions. It is my hope that the final research results will assist in developing rehabilitation programmes for people in your age range who experience vision loss.

Regards

Gretchen Good
Ph.D. Student, School of Health Sciences
Massey University
Phone 354-9772

Activity and Independence of those over 65: A Pilot Study

This research involved a survey of people aged 65+, living in their homes in the Manawatu region. I investigated daily activity levels and levels of independence aiming to determine which daily activities are most important for this age group as a whole and specifically for those who are vision impaired. In identifying the differences in activity and independence between these groups I hope to find out how people in this age group, who experience vision loss, can better be assisted to set and reach rehabilitation goals.

Research Questions

The research questions were:

1. Do older New Zealanders with an identified vision impairment function differently from others their age in terms of activity and independence?

2. Within which specific functional activities of daily living domains do these differences lie?

3. Do these differences affect overall Quality of Life?

Method for this pilot study

Thirty participants assisted with this study. Fifteen had an identified vision impairment and fifteen did not. The survey consisted of demographic questions, questions

relating to quality of life, social support, daily activities, affect (emotional response), and problem identification.

Results

1. **Do older New Zealanders with an identified vision impairment function differently from others their age in terms of activity and independence?**

- Yes. Participants with a vision impairment reported more difficulties with complex activities of daily living, although in terms of basic activities of daily living (bathing, dressing, eating) there seem to be little difference in independence levels.

2. **Within which specific functional activities of daily living domains do these differences lie?**

- Between the two groups, differences were reported in degree of difficulty with daily activities, problems in daily activities, types of housework undertaken, and mode of transport used.

Those with a vision impairment reported more difficulties in the specific areas of personal management, home management, kitchen management, outdoor home responsibilities, communications and electronics, quiet recreational activities, community activities and money handling.

When asked about problem areas in daily living those with a vision impairment listed problems in reading and correspondence, knitting, sewing and craft, travel and mobility, kitchen management and gardening as the top

problem areas. Those without vision impairment mentioned fewer problem areas and the top listed problem was lack of time.

Those with a vision impairment performed more light housework, although those without a vision impairment performed more heavy housework.

And finally, those with a vision-impairment used public transportation more often.

3. Do these differences affect overall Quality of Life?

- Apparently not to any great degree. Overall, both groups reported that they had a "good" quality of life.

Those with a vision impairment listed hobbies, family, friends and neighbours and personal attitude as important contributors to quality of life. Those without a vision impairment also listed attitude and family as their top contributing factors to quality of life but added health and activity as well.

When asked about factors that detract from quality of life, those with a vision impairment cited disappointment in others, vision loss and physical disability as the most significant factors. Those without an identified vision impairment listed only disability- rather than relationship related issues as important factors, which detract from quality of life.

Discussion

There are notable differences in activity and independence between the two groups of participants. But there were also differences in demographics, which will be controlled for, in the upcoming, larger study. Vision impaired participants reported more difficulties in areas of instrumental activities of daily living. These activities generally require a greater complexity of ability and it makes sense that those with vision loss would encounter more difficulty in areas such as outdoor home responsibility and community activity.

Overall respondents rated themselves as having a "good" quality of life. It was interesting to note the factors listed as contributing to or detracting from Quality of Life for each group but the responses are so varied that it is difficult to draw any conclusions from the data.

These data will assist in the development of the large survey I will be conducting over the next 12 months. The upcoming study aims to further identify the impact of vision loss on independence, activity and quality of life for older, vision impaired New Zealanders. It is my hope that this study will assist in developing improved services for older, vision impaired rehabilitation clients.

Appendix E

Main study questionnaire and materials

Invitation to participate in the main study for all participants

Main study information sheet for those contacted through the RNZFB

Main study information sheet for those contacted through the electoral roll

Main study consent forms

Main study questionnaire (blue cover sent to those from the electoral roll, gold cover sent to those from the RNZFB)

Book mark/details to request results

Reminder notice

Massey University

Invitation to Participate

Hello. My name is Gretchen Good and I am a PhD student at Massey University. I am conducting research with people aged 65+ who live in the Manawatu. I hope you will participate by filling in the enclosed survey and returning it to me. Or by phoning me and then we can fill in the forms together.

Attached are more details about the study and the survey. I hope you will consider participating in my research.

Massey University

Information Sheet

(also available in Braille and on cassette)

Ageing and Vision Loss

Do you want this read to you?
Phone Gretchen Good 350-5799 ext. 2245

Who is doing this research?

My name is Gretchen Good. I am a Ph.D. student in the School of Health Sciences at Massey University in Palmerston North. My supervisors are Professor Steve LaGrow and Dr. Fiona Alpass. I have worked as a teacher of those who are vision impaired in the U.S. and here in New Zealand and have a vision impairment myself. I am interested in learning about the experience of growing older while living in the Manawatu, with and without vision loss. I have contacted you with the assistance of the Royal New Zealand Foundation for the Blind.

What is this research about?

This research aims to assess and survey people who are aged 65 and older living in their homes in the Manawatu. I hope to find out about your daily activities and to discover which activities you prefer to do independently and with which you prefer or require

assistance. I want to know what activities are most important for those in your age group.

One of the main goals is to discover what is typical daily life for this age group in this community and to discover if life is significantly different for those experiencing vision loss.

How did this research come about?

While working for the Royal New Zealand Foundation for the Blind and for similar agencies in the U.S. as a young adult I had difficulty helping older clients establish goals for rehabilitation. I did not understand enough about typical daily activities for an older age group, with or without vision loss. By doing this research I hope to gain an understanding for myself and for my students about typical levels of activity and independence for this particular age group, to better inform rehabilitation planning and goal setting for those who are vision impaired and aged 65+.

What would I do if I offer to participate?

You are invited to participate by completing a questionnaire about your daily activities. This can be conducted over the telephone, I can come to your home, or you can fill in the forms and return them to me in the envelope provided. It should take about one hour to fill in the forms, a bit longer if I do it with you over the telephone or in your home.

Issues of confidentiality and anonymity

On the questionnaire, a code number will be used to identify you, and not your name. This will help to keep all information anonymous. My supervisors and I will be the only ones with access to the survey information and this will be locked away securely,

with no need for your name to be attached to the questionnaire. If any research assistants are hired to help input data, they will sign an agreement to confidentiality. None of the information you provide will go to any agency, such as the Royal New Zealand Foundation for the Blind or Age Concern. They will, of course, be interested in the overall survey results, but none of your private information will be made available to anyone other than the researcher.

Your Rights as a Participant

- It is assumed that filling in the questionnaire implies consent. You have the right to decline to answer any questions.

- Your participation in this research is entirely voluntary. You have the right to decline any involvement.

- You can ask any questions about the research at any stage

- You can refuse to answer any particular questions and withdraw from the research at any time

- Your participation will remain confidential to the researcher. That is, your information will be used in a way that you will not be identified and is given on the understanding that your name will not be used under any circumstances, unless you give permission. As far as possible, I will assure your anonymity and confidentiality.

- A summary of the findings will be available at the completion of the research, through the Foundation for the Blind. You can also request results by contacting the researcher.

If you choose to participate you will need to:
Complete the questionnaire on your own or with the assistance of someone who usually assists you with your mail, and return it to Gretchen Good in the stamped envelope provided.

Or

If you would like me to assist in completing the questionnaire, telephone the researcher and I will complete the questionnaire with you over the telephone or in person. I can be reached at 350-5799 ext. 2245

Thank you for considering this request.

Gretchen Good, Principal Researcher
350-5799 ext. 2245

Supervisors: Professor Steven J. La Grow School of Health Sciences
350-5799 ext. 2248

Dr. Fiona Alpass, School of Psychology
350-5799 ext. 2081

This study has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/118.

Massey University

Information Sheet

Activity, Independence and Life Satisfaction

of those aged 65+ in the Manawatu

Who is doing this research?

My name is Gretchen Good. I am a Ph.D. student in the School of Health Sciences at Massey University in Palmerston North. My supervisors are Dr. Steve LaGrow and Dr. Fiona Alpass. I have worked as a teacher of those who are vision impaired in the U.S. and here in New Zealand and have a vision impairment myself. I am interested in learning about the experience of growing older while living in the Manawatu, with and without vision loss. I have contacted you through the electoral roll.

What is this research about?

This research aims to assess and survey people who are aged 65+ who live in the Manawatu. I hope to find out about your daily activities and to discover which activities you prefer to do independently and with which you prefer or require assistance. I want to know what activities are most important for those in your age group.

One of the main goals is to discover what is typical daily life for this age group in this community and to discover if life is significantly different for those experiencing vision loss.

How did this research come about?

While working for the Royal New Zealand Foundation for the Blind and for similar agencies in the U.S. as a young adult I had difficulty helping older clients establish goals for rehabilitation. I did not understand enough about typical daily activities for an older age group, with or without vision loss. By doing this research I hope to gain an understanding for myself and for my students about typical levels of activity and independence for this particular age group, to better inform rehabilitation planning and goal setting for those who are vision impaired and aged 65+.

What would I do if I offer to participate?
You are invited to participate by completing a questionnaire about your daily activities. This can be conducted over the telephone, I can come to your home, or you can fill in the forms and return them to me in the envelope provided. It should take about one hour to fill in the forms, a bit longer if I do it with you over the telephone or in your home.

Issues of confidentiality and anonymity

On the questionnaire, a code number will be used to identify you, and not your name. This will help to keep all information anonymous. My supervisors and I will be the only ones with access to the survey information and this will be locked away securely, with no need for your name to be attached to the questionnaire. If any research assistants are hired to help input data, they will sign an agreement to confidentiality. None of the information you provide will go to any agency, such as the Royal New Zealand Foundation for the Blind or Age Concern. They will, of course, be interested in the overall survey results, but none of your private information will be made available to anyone other than the researcher.

Your Rights as a Participant

- It is assumed that filling in the questionnaire implies consent. You have the right to decline to answer any questions.
- Your participation in this research is entirely voluntary. You have the right to decline any involvement.
- You can ask any questions about the research at any stage
- You can refuse to answer any particular questions and withdraw from the research at any time
- Your participation will remain confidential to the researcher. That is, your information will be used in a way that you will not be identified and is given on the understanding that your name will not be used under any circumstances, unless you give permission. As far as possible, I will assure your anonymity and confidentiality.
- A summary of the findings will be available at the completion of the research. You can request results by contacting the researcher.

If you choose to participate you will need to:

Complete the questionnaire and return it to Gretchen Good in the stamped envelope provided.

Or

If you would like assistance in completing the questionnaire, telephone the researcher and I will complete the questionnaire with you over the telephone or in person. I can be reached at 06-350-5799 ext. 2245

This study has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/118.

Thank you for considering this request.

Gretchen Good, Principal Researcher
350-5799 ext. 2245

Supervisors: Professor Steven J. LaGrow School of Health Sciences
350-5799 ext. 2248

Dr. Fiona Alpass, School of Psychology
350-5799 ext. 2081

Massey University

CONSENT FORM

Ageing and vision loss: comparing levels of life satisfaction, activity and independence of older persons experiencing vision loss with the wider, older population.

I have read, or had read to me, the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I understand I have the right to withdraw from the study at any time and to decline to answer any particular questions.

I agree to provide information to the researcher on the understanding that my name will not be used without my permission.

I understand that the information will be used only for this research and publications arising from this research project.

I also understand that my participation in this project will not affect any services I may receive from the Royal New Zealand Foundation for the Blind or Age Concern or any other agency.

I agree to participate in this study under the conditions set out in the information sheet.

Signed:_____

Name:_____

Address:

_____

_____

_

_____

_

I would like the survey sent to me : (please circle one)
Yes **No**

Would you like the researcher to assist you with the survey? (please circle one)
Yes **No**

My telephone number_____

Activity, Independence and Life Satisfaction of Adults Aged 65+ in the Manawatu Region.

A research project conducted by Gretchen Good,
PhD student, Massey University.

Please read the following instructions carefully:

- All the information you give is in confidence and will be used only for the purposes of this study.
- Please try to answer every question but you may decline to answer any if you choose.
- Please be careful not to skip any pages.
- There are no right or wrong answers.
- This is in no way connected to any service you have or will receive from any social service agency.
- The survey is comprehensive and appears long, however, I have used a large print size to make the text easier to read.
- I suggest that you plan to answer the questions over a few sittings. You will find a bookmark inside the front cover to help you mark your place, as you progress through the survey. Each part of the survey is printed in a different colour to help you monitor your progress.

Activity, Independence and Life Satisfaction of Adults Aged 65+ in the Manawatu Region.

A research project conducted by Gretchen Good
PhD student, Massey University

Please read the following instructions carefully:

- All the information you give is in confidence and will be used only for the purposes of this study.
- Please try to answer every question but you may decline to answer any if you choose.
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- I suggest that you plan to answer the questions over a few sittings. You will find a bookmark inside the front cover to help you mark your place as you progress through the survey. Each part of the survey is printed in a different colour to help you monitor your progress.

Activity, Independence and Life Satisfaction of Adults
Aged 65+ in the Manawatu Region
PART ONE

First I would like some general background information about you and your health.

Please tick the circle ✓ next to the answer which you believe gives the best description of your current situation or write details in the space provided.

For Office Use

1 What is your date of birth (day/month/year)?

_____/_____/19_____

2 Are you:

◯ Male ◯ Female

3 Which ethnic group do you identify with?
(You may tick more than one circle)

◯ New Zealander of European descent
◯ New Zealander of Maori descent
◯ New Zealander of Pacific Island descent
◯ Other: (please specify) _____

4 Which of the following best describes the area where you Live? (Please tick one circle only).

◯	Main Urban Area:	A city with a population of 30,000 or more e.g: Palmerston North
◯	Secondary Urban Area:	A town/city with a population of Between 10,000 & 29,000
◯	Minor Urban Area:	A town with a population of Between 1,000 & 10,000
◯	Rural Centre:	A town with a population of Between 300 & 1,000
◯	Rural Area:	Outside a town/city boundaries

Please tick the circle ✓ which you believe gives an accurate indication of your current situation or write details in the spaces provided.

5 What is your current living situation?

For Office Use

13 ☐

- ◯ I live alone
- ◯ I live only with my spouse/partner
- ◯ I live only with my child(ren)
- ◯ I live with my spouse/partner and (child)ren
- ◯ I live with others who are family members
- ◯ I live with others who are not family members
- ◯ Other living situation: (please describe)

_____

6 Are you? ☐

- ◯ Married
- ◯ Not married
- ◯ Widowed

7 If you are widowed, please state length of time. ☐☐☐

_____years.

8 Throughout your career what has been your main occupation (paid or unpaid work)? e.g. homemaker, teacher, builder ☐

_____

9 Do you consider yourself retired from the occupation mentioned in the previous question? ☐

◯ Yes ◯ No

19

For Office Use

10 What is the total income that you received from all sources, including benefits, before tax or anything was taken out of it, in the past 12 months? (Please specify the approximate dollar amount.)

20 ☐☐☐

$ _____ per year

11 What is your highest educational qualification?

23 ☐

- ◯ No school qualification
- ◯ School certificate passes
- ◯ Matriculation or University Entrance and above
- ◯ Trade, apprenticeship certificate or professional certificate or diploma
- ◯ Government exams for public service
- ◯ University degree, diploma, or certificate

12 The following questions focus on long-term health or disability conditions you may have. Long term conditions are those that you have had for six months or more, or something that is likely to last for at least six months. Please tick the circle ✓ to indicate if you have any of the following long-term conditions.

For Office Use

24

- ◯ Difficulty seeing
- ◯ Hearing loss
- ◯ Cancer
- ◯ Diabetes
- ◯ Stroke
- ◯ Arthritis or rheumatism
- ◯ Psychiatric or psychological disability
- ◯ Physical disability
- ◯ Epilepsy
- ◯ Asthma or other respiratory condition
- ◯ Angina or other heart trouble
- ◯ High blood pressure or hypertension
- ◯ Chronic liver trouble
- ◯ Bowel disorders
- ◯ Hernia or rupture
- ◯ Chronic kidney or urinary tract conditions
- ◯ Hepatitis
- ◯ Osteoporosis
- ◯ Frequently confused, disoriented or forgetful
- ◯ Other Chronic illness or health related disability (Please specify) _____

43

_____

13 Do any of the health problems you ticked in the last question cause you difficulty with or stop you doing:

	Yes	No	For Office Use
Everyday activities that people your age can usually do?	○	○	44 ☐
Communicating, mixing with others or socialising?	○	○	☐
Any other activity that people your age can usually do?	○	○	☐

_____

14 Have you fallen in the last 12 months but had no injury?	○	○	☐
15 Have you fallen in the last 12 months and been injured?	○	○	☐
16 Are you afraid of falling?	○	○	49 ☐

Activity, Independence and Life Satisfaction of Adults Aged 65+ in the Manawatu Region

PART TWO

This section is about your social networks and the types of practical and social support you have.

For each question please tick the circle ✓ next to the answer which you believe gives the best description of your current situation or write details in the space provided.

For Office Use

17 Have you received services from any of these agencies? (Please tick as many boxes as apply) 1

- ○ Age Concern
- ○ Royal New Zealand Foundation for the Blind
- ○ The Hearing Association
- ○ Mental Health Services
- ○ Specialist Health Services
- ○ Senior Citizens
- ○ Arthritis Foundation
- ○ Home help organisation
- ○ Other agencies (please list)

_____

_____

18 What rehabilitation or disability support services have you received? For example, a visit from the fieldworker from the Arthritis foundation, exercise classes, etc.

_____

_____

Approximately how many hours of rehabilitation services have you received in the past year?

_____ hours

14

19 Do any of these people assist you regularly (2 or more Hours per week) with your daily activities? Tick as many as apply.

For Office Use

15

- ◯ Spouse
- ◯ Son or daughter
- ◯ Other family
- ◯ Others who share your home
- ◯ Friends
- ◯ Agency workers / Paid assistance
- ◯ Neighbours
- ◯ I pay for lawn-mowing, gardening or other service
- ◯ Other: _____
- ◯ Nobody assists me

Approximately how many hours of assistance per week do you receive in total? _____ hours

20 Do you have regular contact with any of these people? (one or more contacts per week) Tick as many as apply.

- ◯ Family
- ◯ Friends
- ◯ Church group
- ◯ Sport/Recreation group
- ◯ Disability group
- ◯ Arts and Crafts group
- ◯ Political/Discussion/Service groups
- ◯ Neighbours
- ◯ Social group (RSA widows support group, friendship clubs, Probus, etc.)
- ◯ Marae
- ◯ Other: (please list) _____

37

The following questions ask about people who give you help or support. Each question has TWO parts.

Part One Think of all the people you know, but not yourself, who you can count on for help or support in the way described in the question. If you have no support for a question, tick the circle beside the words 'no one'.

Part Two Tick the circle to indicate how satisfied you are with the overall support you have for each question area. Do this for all questions, even where you have ticked 'no one'.

Completed Example

Who do you know who you can trust with information that you would like to be kept quiet?

(Please write the initials of the people who give you help or support; if no-one, then tick the circle.)

◯ No One		5	
1	KB	6	
2	AB	7	
3	AJ	8	
4		9	

How satisfied are you with the support that these people provide to you? (Please tick one circle.)

◯ 1	◯ 2	◯ 3	◯ 4	◯ 5	✓ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

For each question, please enter the answers that come closest to your personal situation.

For Office Use

38

22a Who can you really count on to take your mind off your worries when you feel distressed? (Please write the initials of the people who give you help or support; if no-one, then tick the circle.)

◯ No One	5 _____
1 _____	6 _____
2 _____	7 _____
3 _____	8 _____
4 _____	9 _____

22b How satisfied are you with the support that these people provide to you? (Please tick one circle.)

◯ 1	◯ 2	◯ 3	◯ 4	◯ 5	◯ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

23a Who can you really count on to help you feel more relaxed when you are under pressure or tense? (Please write the initials of the people who give you help or support; if no-one, then tick the circle.)

◯ No One	5 _____
1 _____	6 _____
2 _____	7 _____
3 _____	8 _____
4 _____	9 _____

43

23b How satisfied are you with this support? (Please tick one circle)

◯ 1	◯ 2	◯ 3	◯ 4	◯ 5	◯ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

For Office Use
44

24a Who do you feel you can be totally yourself with?
(Please write the initials of the people who give you help or support; if no-one, then tick the circle.)

◯ No One

1 _____ 5 _____

2 _____ 6 _____

3 _____ 7 _____

4 _____ 8 _____

9 _____

24b How satisfied are you with this support?

◯ 1 very satisfied	◯ 2 fairly satisfied	◯ 3 a little satisfied	◯ 4 a little dis-satisfied	◯ 5 fairly dis-satisfied	◯ 6 very dis-satisfied

25a Who can you really count on to care about you, regardless of what is happening to you? (Please write the initials of the people who give you help or support; if no-one, then tick the circle.)

◯ No One

1 _____ 5 _____

2 _____ 6 _____

3 _____ 7 _____

4 _____ 8 _____

9 _____

49

25b How satisfied are you with this support?

◯ 1 very satisfied	◯ 2 fairly satisfied	◯ 3 a little satisfied	◯ 4 a little dis-satisfied	◯ 5 fairly dis-satisfied	◯ 6 very dis-satisfied

For Office Use 50

26a Who can you really count on to help you feel better when you are feeling generally down in the dumps?

(Please write the initials of the people who give you help or support; If no-one, then tick the circle.)

◯ No One

1 _____ 5 _____

2 _____ 6 _____

3 _____ 7 _____

4 _____ 8 _____

9 _____

26b How satisfied are you with this support?

◯ 1 very satisfied	◯ 2 fairly satisfied	◯ 3 a little satisfied	◯ 4 a little dis-satisfied	◯ 5 fairly dis-satisfied	◯ 6 very dis-satisfied

27a Who can you count on to help you feel better when you are really upset? (Please write the initials of the people who give you help or support; if o-one, then tick the circle.)

◯ No One

1 _____ 5 _____

2 _____ 6 _____

3 _____ 7 _____

4 _____ 8 _____

9 _____

55

27b How satisfied are you with this support?

◯ 1 very satisfied	◯ 2 fairly satisfied	◯ 3 a little satisfied	◯ 4 a little dis-satisfied	◯ 5 fairly dis-satisfied	◯ 6 very dis-satisfied

For Office Use
56

28 Thinking about your relationship with other people, would you say you... (please tick one circle).

- ○ I have plenty of friends and am never lonely.
- ○ Although I have friends, I am occasionally lonely.
- ○ I have some friends but am often lonely.
- ○ I am socially isolated and feel lonely.

SURVEY OF DAILY ACTIVITIES
PART THREE

For the following daily activities, please use the rating scale below AND tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

For Office Use

29 Basic Activities of Daily Living

	1	2	3	4	5	
Bathing	○	○	○	○	○	1 ☐
Dressing	○	○	○	○	○	☐
Toileting	○	○	○	○	○	☐
Transferring from chair to Car/couch/wheelchair	○	○	○	○	○	☐
Eating	○	○	○	○	○	☐

How satisfied are you with your level of independence in this area of Basic Activities of Daily Living?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

6 ☐

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

For Office Use

30 Personal Management

	1	2	3	4	5	
Medication management	○	○	○	○	○	7
Setting alarm clock	○	○	○	○	○	
Brushing teeth	○	○	○	○	○	
Nail care	○	○	○	○	○	
Shaving	○	○	○	○	○	
Using make-up	○	○	○	○	○	
Haircare	○	○	○	○	○	

How satisfied are you with your level of independence in this area of Personal Management?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	14
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied	

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

For Office Use

31 Care for Others

	1	2	3	4	5	
Caring for children	○	○	○	○	○	15 ☐
Caring for another adult	○	○	○	○	○	☐

How satisfied are you with your level of independence in this area of Caring for Others?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	17 ☐
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied	

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

For Office Use

32 Home Management

	1	2	3	4	5	
Making beds daily	○	○	○	○	○	18
Changing linen on beds	○	○	○	○	○	
Dusting furniture	○	○	○	○	○	
Sweeping floors	○	○	○	○	○	
Vacuuming carpets	○	○	○	○	○	
Taking out rubbish	○	○	○	○	○	
Scrubbing bathroom/toilet	○	○	○	○	○	
Watering plants	○	○	○	○	○	
Caring for pets	○	○	○	○	○	

How satisfied are you with your level of independence in this area of Home Management?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied	27

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one Performs it for me

33 Kitchen Management

	1	2	3	4	5	For Office Use
Preparing vegetables	○	○	○	○	○	28
Cooking on stove top	○	○	○	○	○	
Cooking in oven	○	○	○	○	○	
Cooking in microwave	○	○	○	○	○	
Cooking outside on the BBQ	○	○	○	○	○	
Following recipes	○	○	○	○	○	
Setting table for dining	○	○	○	○	○	
Washing dishes	○	○	○	○	○	
Loading dishwasher	○	○	○	○	○	
Operating dishwasher	○	○	○	○	○	
Canning/freezing/bottling fruits or vegetables	○	○	○	○	○	
Making shopping list	○	○	○	○	○	
Putting away groceries	○	○	○	○	○	
Shopping	○	○	○	○	○	

How satisfied are you with your level of independence in this area of Kitchen Management?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

42

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one Performs it for me

34 Outdoor and Other Home Responsibilities

	1	2	3	4	5	For Office Use
Mowing grass	○	○	○	○	○	43
Raking leaves	○	○	○	○	○	
Gardening – flowers	○	○	○	○	○	
Gardening – vegetables	○	○	○	○	○	
Gardening – pot plants	○	○	○	○	○	
Household repairs	○	○	○	○	○	
Household maintenance (i.e. changing a lightbulb)	○	○	○	○	○	
Building fire in fireplace	○	○	○	○	○	
Chopping wood	○	○	○	○	○	
Carrying wood	○	○	○	○	○	
Washing car	○	○	○	○	○	

How satisfied are you with your level of independence in this area of Outdoor and Other Home Responsibilities?

○ 1 very satisfied	○ 2 fairly satisfied	○ 3 a little satisfied	○ 4 a little dis-satisfied	○ 5 fairly dis-satisfied	○ 6 very dis-satisfied

54

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

35 Laundry

	1	2	3	4	5	For Office Use
Pegging clothes on line	○	○	○	○	○	55 ☐
Operating washing machine	○	○	○	○	○	
Operating a clothes dryer	○	○	○	○	○	
Ironing	○	○	○	○	○	

How satisfied are you with your level of independence in this area of Laundry Responsibilities?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	59 ☐
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied	

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

36

For Office Use

60

Communication/Electronics	1	2	3	4	5
Writing letters	❍	❍	❍	❍	❍
Using computer	❍	❍	❍	❍	❍
Answering telephone	❍	❍	❍	❍	❍
Making phone calls	❍	❍	❍	❍	❍
Taking phone messages	❍	❍	❍	❍	❍
Operating answering service or Machine	❍	❍	❍	❍	❍
Scheduling appointments	❍	❍	❍	❍	❍
Operating television	❍	❍	❍	❍	❍
Operating remote control	❍	❍	❍	❍	❍
Operating video machine	❍	❍	❍	❍	❍
Operating stereo	❍	❍	❍	❍	❍
Operating a radio	❍	❍	❍	❍	❍

How satisfied are you with your level of independence in this area of Communications/Electronics?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

73

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

37 Quiet Recreation

	1	2	3	4	5
Reading	○	○	○	○	○
Crafts	○	○	○	○	○
Knitting	○	○	○	○	○
Sewing	○	○	○	○	○

For Office Use
1 ☐

How satisfied are you with your level of independence in this area of Quiet Recreation?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

5 ☐

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

38 Active Recreation

	1	2	3	4	5
Bicycling	○	○	○	○	○
Walking indoors	○	○	○	○	○
Walking outdoors	○	○	○	○	○
Jogging	○	○	○	○	○
Exercising (i.e. aerobics)	○	○	○	○	○
Bowls	○	○	○	○	○
Fitness	○	○	○	○	○
Hunting/Camping/Tramping	○	○	○	○	○
Boating	○	○	○	○	○
Swimming	○	○	○	○	○
Travelling	○	○	○	○	○

For Office Use
6 ☐

How satisfied are you with your level of independence in this area of Active Recreation?

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6
very satisfied	fairly satisfied	a little satisfied	a little dis-satisfied	fairly dis-satisfied	very dis-satisfied

17 ☐

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one performs it for me

For Office Use

18

39 Community Activities	1	2	3	4	5
Driving a car	○	○	○	○	○
Using public transportation	○	○	○	○	○
Going to exercise/swim class	○	○	○	○	○
Sports club	○	○	○	○	○
Shopping	○	○	○	○	○
Attending club meetings	○	○	○	○	○
Going to movies/plays/concerts	○	○	○	○	○
Going to sporting events	○	○	○	○	○
Going to restaurants / cafes	○	○	○	○	○
Volunteering	○	○	○	○	○
Running errands	○	○	○	○	○
Attending religious activities	○	○	○	○	○
Renting videos	○	○	○	○	○

How satisfied are you with your level of independence in this area of Community Activities?

○ 1 very satisfied	○ 2 fairly satisfied	○ 3 a little satisfied	○ 4 a little dis-satisfied	○ 5 fairly dis-satisfied	○ 6 very dis-satisfied

31

For the following daily activities, please use the rating scale below AND Tick ONLY one box for each question.

1 I perform this activity without assistance
2 I perform this activity with some assistance
3 I perform this activity with lots of assistance
4 Someone performs this activity for me
5 Does not apply, OR I do not perform this activity and no-one Performs it for me

For Office Use

40 Finances

	1	2	3	4	5	
Paying bills on time	○	○	○	○	○	32
Maintaining chequebook	○	○	○	○	○	
Using eftpos	○	○	○	○	○	
Using credit cards	○	○	○	○	○	
Handling coins	○	○	○	○	○	

How satisfied are you with your level of independence in this area of Financial Activities?

○ 1 very satisfied	○ 2 fairly satisfied	○ 3 a little satisfied	○ 4 a little dis-satisfied	○ 5 fairly dis-satisfied	○ 6 very dis-satisfied	37

41 Are there any other Daily Activities that are very important to you that have not been listed above? (List up to 3 activities.)

For Office Use

38 ☐

Activity: _____

1	2	3	4	5
○	○	○	○	○

How satisfied are you with your level of independence with this activity that you have listed in 41? ☐

○ 1 very satisfied	○ 2 fairly satisfied	○ 3 a little satisfied	○ 4 a little dis-satisfied	○ 5 fairly dis-satisfied	○ 6 very dis-satisfied

42

Activity: _____

1	2	3	4	5
○	○	○	○	○

☐

How satisfied are you with your level of independence with this activity that you have listed in 42? ☐

○ 1 very satisfied	○ 2 fairly satisfied	○ 3 a little satisfied	○ 4 a little dis-satisfied	○ 5 fairly dis-satisfied	○ 6 very dis-satisfied

43

Activity: _____

1	2	3	4	5
○	○	○	○	○

☐

How satisfied are you with your level of independence with this activity that you have listed in 43? ☐

○ 1 very satisfied	○ 2 fairly satisfied	○ 3 a little satisfied	○ 4 a little dis-satisfied	○ 5 fairly dis-satisfied	○ 6 very dis-satisfied

43 ☐

Survey of Daily Activities, continued

Over the last four weeks how often have you performed the following activities?

Code	
1	Never
2	Less than one day a week
3	One to three days per week
4	Four to six days per week
5	Every day of the week

44	1	2	3	4	5
Preparing main meals	❍	❍	❍	❍	❍
Washing up dishes	❍	❍	❍	❍	❍
Washing clothes	❍	❍	❍	❍	❍
Light housework	❍	❍	❍	❍	❍
Heavy housework	❍	❍	❍	❍	❍
Local shopping	❍	❍	❍	❍	❍
Social outings	❍	❍	❍	❍	❍
Walking outside for more than 15 Minutes	❍	❍	❍	❍	❍
Actively pursuing hobby	❍	❍	❍	❍	❍
Driving a car	❍	❍	❍	❍	❍
Talking on the telephone	❍	❍	❍	❍	❍
Using public transport	❍	❍	❍	❍	❍
Outings	❍	❍	❍	❍	❍
Car rides	❍	❍	❍	❍	❍
Gardening	❍	❍	❍	❍	❍
Household maintenance	❍	❍	❍	❍	❍
Car maintenance	❍	❍	❍	❍	❍
Reading books (print, large print or tape-recorded)	❍	❍	❍	❍	❍
Reading mail, newspapers, Magazines	❍	❍	❍	❍	❍
Using a typewriter or computer	❍	❍	❍	❍	❍
Paid or volunteer work	❍	❍	❍	❍	❍

For Office Use

1

21

For Office Use
22

45 In the past five years have you given up any of your activities or interests?

◯ Yes ◯ No

If so, what activities have you given up? Please tick as many circles as are appropriate.

◯ Going out at night
◯ Taking baths
◯ Driving
◯ Cooking
◯ Walking outside
◯ Gardening
◯ Sewing/knitting/crafts
◯ Travel
◯ Sport/golf/bowls
◯ Independent shopping
◯ Dancing
◯ Social activities
◯ Sexual activities
◯ Visual entertainment (movies, plays, sports events)
◯ Reading
◯ Other (please specify)_____

39

46 If you have stopped doing any of these activities, in general,why did you stop?
(tick as many circles as appropriate)

For Office Use
1

- ◯ physical difficulties (i.e. can't do or too cold to go outside)
- ◯ lack of companion for activites
- ◯ lack of confidence
- ◯ poor vision
- ◯ poor hearing
- ◯ poor health
- ◯ lack of transport
- ◯ not interested in doing this any longer
- ◯ too busy
- ◯ other reasons? _____

_____

10

Activity, Independence and Life Satisfaction of Adults
Aged 65+ in the Manawatu Region.
PART FOUR

In this segment you will be asked questions about your satisfaction With your activity and independence levels, social contacts, memory and your life in general. For each question please tick the circle which most accurately describes your current situation.

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1

47 Activity

A Compared to two years ago my daily activity level is:

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

☐

B Compared to others my age my daily activity level is:

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

☐

C I would like my level of activity to be:

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

3 ☐

For Office Use

4

48 Independence

A Compared to two years ago my level of independence is:

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

B Compared to others my age, my level of independence is:

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

C I would like my level of independence to be:

Much Higher	Slightly Higher	Same	Slightly Lower	Much Lower
○	○	○	○	○

49 Memory

A Compared to two years ago my memory is:

Much Better	Slightly Better	Same	Slightly Worse	Much Worse
○	○	○	○	○

B Compared to others my age my memory is:

Much Better	Slightly Better	Same	Slightly Worse	Much Worse
○	○	○	○	○

C I would like my memory to be:

Much Better	Slightly Better	Same	Slightly Worse	Much Worse
○	○	○	○	○

9

50 Quality of Life

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10

A How do you rate your Quality of life:

Very Poor	Poor	Neither poor nor good	Good	Very Good
○	○	○	○	○

B Please list the three things that contribute most to your quality of life:

1. _____
2. _____
3. _____

C Please list the three things that detract most from your quality of life:

1. _____
2. _____
3. _____

22

The following questions concern satisfaction with life. There are five statements with which you may disagree or agree. Using the 1-7 scale below, please indicate your agreement with each item by ticking the appropriate circle.	
1	Strongly Disagree
2	Disagree
3	Slightly Disagree
4	Neither Agree or Disagree
5	Slightly Agree
6	Agree
7	Strongly Agree

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23

	1	2	3	4	5	6	7
51 In most ways my life is close to the ideal	○	○	○	○	○	○	○
52 The conditions of my life are excellent	○	○	○	○	○	○	○
53 I am satisfied with my life	○	○	○	○	○	○	○
54 So far, I have achieved the important things I want in my life	○	○	○	○	○	○	○
55 If I could live my life over again I would change nothing	○	○	○	○	○	○	○

56 How do you feel about your life as a whole? Please tick only one circle

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Delighted	**very satisfied**	**Mostly satisfied**	**Mixed, about equally Satisfied and Dis-satisfied**	**Mostly dis-satisfied**	**Very dis-satisfied**	**Terrible**

28

Activity, Independence and Life Satisfaction of Adults
Aged 65 + in the Manawatu region.
PART FIVE

For Office Use

57A **Do you have difficulty seeing?**

◯ Yes ◯ No

29 ☐

If <u>no</u>, thank you for completing this survey. Please turn to the last page of this booklet for mailing instructions.

If <u>yes</u>, please complete the remianing questions.

57B If you do have difficulty seeing
How old were you started having real problems seeing?
_____ years old

☐☐

57C How long ago did your seeing problems begin to interfere with daily activities?
_____years ago

☐☐

58 What is the cause of your problems with seeing?

◯ Macular degeneration
◯ Cataracts
◯ Diabetic retinopathy
◯ Glaucoma
◯ Trauma
◯ Don't know
◯ Other: _____

☐
☐

35

For Office Use

59 Please tick the box which **best** describes your vision. 36

- ◯ Can see nothing
- ◯ Blurry, dark, dull
- ◯ Fluctuating
- ◯ Cannot see kerbs
- ◯ Can see people but cannot recognise faces
- ◯ Peripheral (side) vision only – can walk around safely but can not read
- ◯ Can see in the distance but not near
- ◯ Other (please describe)_____

_____

60 A Can you see newsprint?

◯ Yes ◯ No

B Can you see large print?

◯ Yes ◯ No

C Can you see well enough to legally have a drivers licence?

◯ Yes ◯ No

D Can you see well enough to identify the food on your plate or to see playing cards in your hand? (mid-range function)

◯ Yes ◯ No

E Can you see well enough to identify a familiar face across the room?

◯ Yes ◯ No

F What is your Visual acuity?: (if known)

(i.e 6/60) _____

43

61 Is your sight impairment stable or are you continuing to lose vision? 44

○ Stable ○ Continuing to lose vision

62 How much of the time do you worry about your eyesight?

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

63 How often does your problem with seeing limit your everyday activity and independence?

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

64 How often does your problem with seeing limit your satisfaction with life?

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

47

For Office Use

65 How often do other physical problems limit your satisfaction with life? 48

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

66 How often does lack of social support limit your quality of life?

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

67 Which most limits your life satisfaction?

◯ Vision impairment
◯ Other health/disability concerns
◯ Social support
◯ My finances
◯ None
◯ Other, (please specify) _____

_____

_____

68 Are you a member of the Foundation for the Blind?

◯ Yes ◯ No 51

Do you have any other comments you would like to make about your activity, independence, life satisfaction or any other aspect of this survey?

Questionnaire Final Page

Thank you for your time in completing this survey.

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

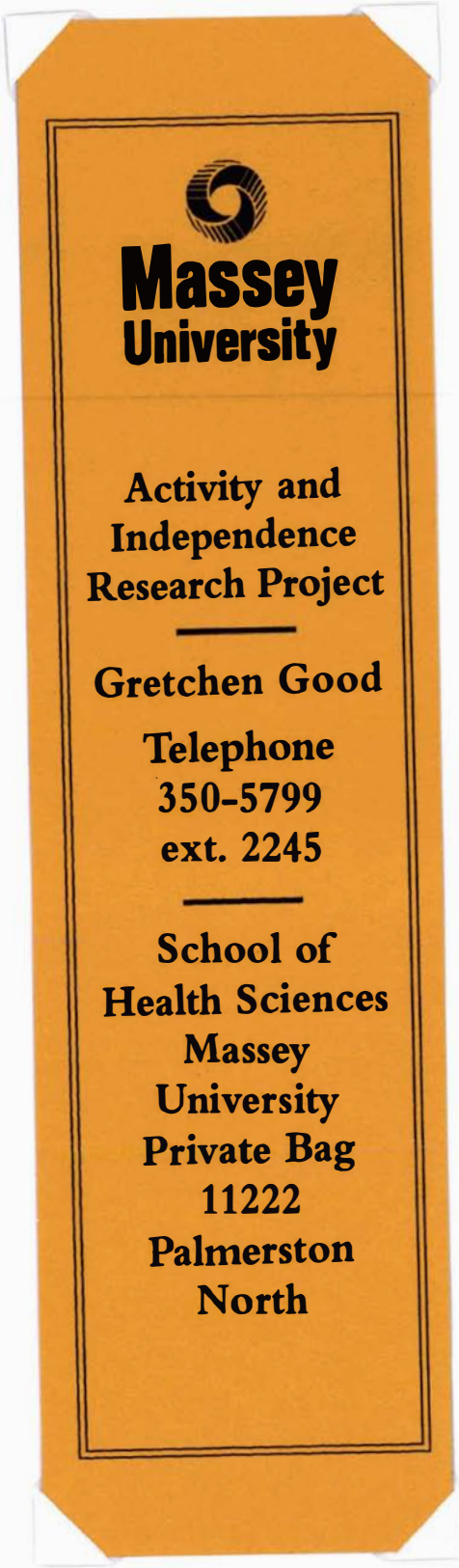
- **Check to see that you have not skipped any pages**
- **Double check to make sure you have entered all the information that you intended to**

If you have any queries related to any aspects of this research, please do not hesitate to contact the researcher.

Gretchen Good
Massey University
School of Health Sciences
Private Bag 11222
Palmerston North

Telephone:
06-350-5799 ext. 2245

Bookmark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Activity, Independence and Life Satisfaction of Adults Aged 65+

Dear Sir or Madam

Recently a questionnaire was mailed to you. This questionnaire is part of important research to better understand daily life for people in your age group in this community. If you have already returned the questionnaire please accept my sincere thanks. If not, I am still keen to receive your reply.

If you would like assistance with the forms or if you need a new form please call me on (06) 350-5799 ext. 2245 and I will be happy to fill them in with you, or I could get another one in the mail to you today. Alternatively, a brief message explaining why you may not want to participate would also greatly assist in this research process.

Sincerely

Gretchen Good, PhD Student **06-350-5799 ext. 2245**

Appendix F

Table of means and standard deviations for ANOVA

Appendix F: Table of means and standard deviations for ANOVA

Dependent variable	Age cohort						Significant main effect for age	Vision status				Significant main effect for vision status	Significant interaction effect for age & vision status
	1		2		3			Vision impaired		Sighted			
	M	*SD*	*M*	*SD*	*M*	*SD*		*M*	*SD*	*M*	*SD*		
Social support network size	2.72	2.04	2.25	1.99	2.16	1.52		2.27	2.01	2.52	1.95		
Social support satisfaction	5.73	0.61	5.53	0.99	5.48	0.87		5.33	1.16	5.71	0.64		
Activity	3.10	0.61	2.85	0.76	2.58	0.80	*	2.56	0.69	3.05	0.71	*	
Independence	2.73	0.37	2.51	0.55	2.10	0.69	*	2.05	0.69	2.70	0.38	*	
Domestic FAI subscale	3.39	1.13	3.32	1.17	3.14	1.16		3.13	1.17	3.39	1.39		
Work/leisure FAI subscale	3.25	0.76	2.98	0.87	2.69	0.94		2.63	0.85	3.20	0.80	*	
Outdoor/mobility FAI subscale	2.83	0.73	2.49	0.80	2.18	0.81	*	2.19	0.76	2.73	0.77	*	
Recently relinquished activities	3.02	2.82	4.64	3.13	5.78	3.65	*	6.23	3.45	3.36	2.80	*	*
Satisfaction with independence	5.72	0.50	5.29	0.99	5.04	1.06		4.67	1.16	5.70	0.54	*	*
Satisfaction with life	24.55	6.34	22.60	7.14	23.91	6.19		21.26	7.22	24.50	6.32	*	*

* $p \leq .05$

Appendix G

Table of sources of social support for those with impaired vision and those with sight

Appendix G: Sources of social support reported by those with impaired vision and those with sight

Source of support	Vision impaired group $n \geq 132$		Sighted group $n \geq 409$		Proportion difference
	n	%	*n*	%	
Friends	83	61.5	339	79.8	+18.3*
Sport/recreation group	15	11.1	110	25.9	+14.8*
Neighbours	64	47.4	253	59.5	+12.1*
Disability group	10	7.4	7	1.6	-5.8
Family	112	83.0	373	87.8	+4.8
Other	2	1.5	26	6.1	+4.6
Political/ /service groups	2	1.5	23	5.4	+3.9
Social group	38	28.1	134	31.5	+3.4
Arts and crafts group	7	5.2	29	6.8	+1.6
Church group	35	25.9	114	26.8	+0.9
Marae	1	0.7	6	1.4	+0.7

* $p \leq .05$ significant for a difference of proportions

Appendix H

Calculation for a significant difference in proportions between two groups

The confidence interval calculation used to find the significance in a difference of proportions was derived from Moore & McCabe (1999).

$$2 \times \sqrt{0.5 \times 0.5/N1 + 0.5 \times 0.5/N2}$$

This formula provides a conservative test for the significance in the difference of two proportions at .05.

Using this formula, a difference of 9.8% is significant in comparing proportions of all those with impaired vision ($N = 135$) and all those with sight ($N = 425$).

A difference of 25.8% is significant in comparing proportions of those with impaired vision in age cohort one ($n = 16$) and those with sight in age cohort one ($n = 242$).

A difference of 14.6% is significant in comparing proportions of those with impaired vision in age cohort two ($n = 68$) and those with sight in age cohort two ($n = 150$).

A difference of 22.3% is significant in comparing proportions of those with impaired vision in age cohort three ($n = 51$) and those with sight in age cohort three ($n = 33$).

Appendix I

Sources of practical or instrumental support reported by those with impaired vision and those with sight

Appendix I: Sources of practical or instrumental support reported by those with impaired vision and those with sight

Source of support	Vision impaired group $n \geq 130$		Sighted group $n \geq 405$		Proportion difference
	n	%	*n*	%	
Son or daughter	55	40.7	47	11.1	-29.6*
Agency/paid assistance	49	36.3	49	11.5	-24.8*
Paid gardening, lawns service	69	51.1	135	31.8	-19.3*
Other family	19	14.1	7	1.6	-12.5*
Neighbours	21	15.6	13	3.1	-9.3*
Friends	17	12.6	14	3.3	12.5*
Spouse	46	34.1	129	30.1	-4.0
Others who share your home	4	3.0	5	1.2	-1.8
Other	1	0.7	5	1.2	+0.5

* $p \leq .05$ significant for a difference of proportions

Appendix J

Sources of agency support reported by those with impaired vision and those with sight

Appendix J: Sources of agency support reported by those with impaired vision and those with sight

Agency	Vision Impaired Group $n \geq 134$		Sighted Group $n \geq 331$		Proportion difference
	n	%	*n*	%	
RNZFB	125	93.3	0	0	-93.3*
Home Help Organisation	67	50.0	66	19.9	-30.1*
Age Concern	19	14.2	20	6.0	-8.2
Hearing Association	24	17.9	38	11.5	-6.4
Senior Citizens Centres	11	8.2	11	3.3	-4.9
Arthritis Foundation	8	6.0	12	3.6	-2.4
Mental Health Services	4	3.0	6	1.8	-1.2
Other Agency	13	9.7	29	8.8	-0.9
Specialist Health Services	23	17.2	57	17.2	0

* $p \leq .05$ significant for a difference of proportion

Appendix K

Frequency of daily activity

Table K1: Differences in proportions of participants with impaired vision and those with sight who reported that they performed activities never or less than one day per week

Activity	Vision impaired group $n \geq 114$		Proportions of those who perform task never or less than one day per week	Sighted group $n \geq 316$		Proportions of those who perform task never or less than one day per week	Proportion difference
	M	*SD*		*M*	*SD*		
Driving a car	1.45	1.21	87.5	3.46	1.52	26.1	-61.4*
Reading mail, newspapers, magazines	2.85	1.72	46.0	4.47	1.16	9.2	-36.8*
Using typewriter or computer	1.53	1.25	86.6	2.15	1.57	67.4	-19.2*
Local shopping	2.35	1.10	48.4	2.96	1.12	29.3	-19.1*
Actively pursuing a hobby	2.54	1.66	52.6	3.13	1.48	35.1	-17.5*
Household maintenance	1.61	1.17	84.6	2.25	1.28	68.4	-16.2*
Heavy housework	1.87	1.33	73.3	2.46	1.35	57.6	-15.7*
Paid or volunteer work	1.44	1.11	86.4	1.92	1.25	71.5	-14.9*
Using public transport	1.80	1.17	76.7	1.47	0.95	91.2	.+14.5*
Walking outside for >15 minutes	3.16	1.56	36.2	3.69	1.44	22.3	-13.9*
Gardening	2.63	1.45	45.8	3.02	1.30	33.2	-12.6*
Light housework	3.04	1.65	39.5	3.39	1.46	29.3	-10.2*
Preparing main meals	3.39	1.73	35.2	3.76	1.53	25.8	-9.4
Social outings	2.42	1.05	52.9	2.62	1.06	44.1	-8.8
Car maintenance	1.35	1.08	92.2	1.77	1.12	84.6	-7.6
Washing clothes	3.07	1.29	25.4	3.07	1.42	32.1	+6.7
Reading books (any format)	3.55	1.66	30.6	3.82	1.49	24.4	-6.2
Car rides	2.53	0.90	47.1	2.92	1.37	41.0	-6.1
Washing up dishes	4.06	1.54	19.5	4.15	1.40	15.7	-3.8
Talking on the telephone	3.85	1.32	16.4	4.05	1.27	13.1	-3.3
Outings/errands	2.58	0.97	39.5	2.78	1.13	38.8	-0.7

1=never 2=less than one day per week 3=one to three days per week 4=four to six days per week 5=every day of the week

* $p \leq .05$ significant for a difference of proportions.

Table K2: Significant differences in proportions of participants with impaired vision and those with sight who reported that they performed activities never or less than one day per week by age cohort

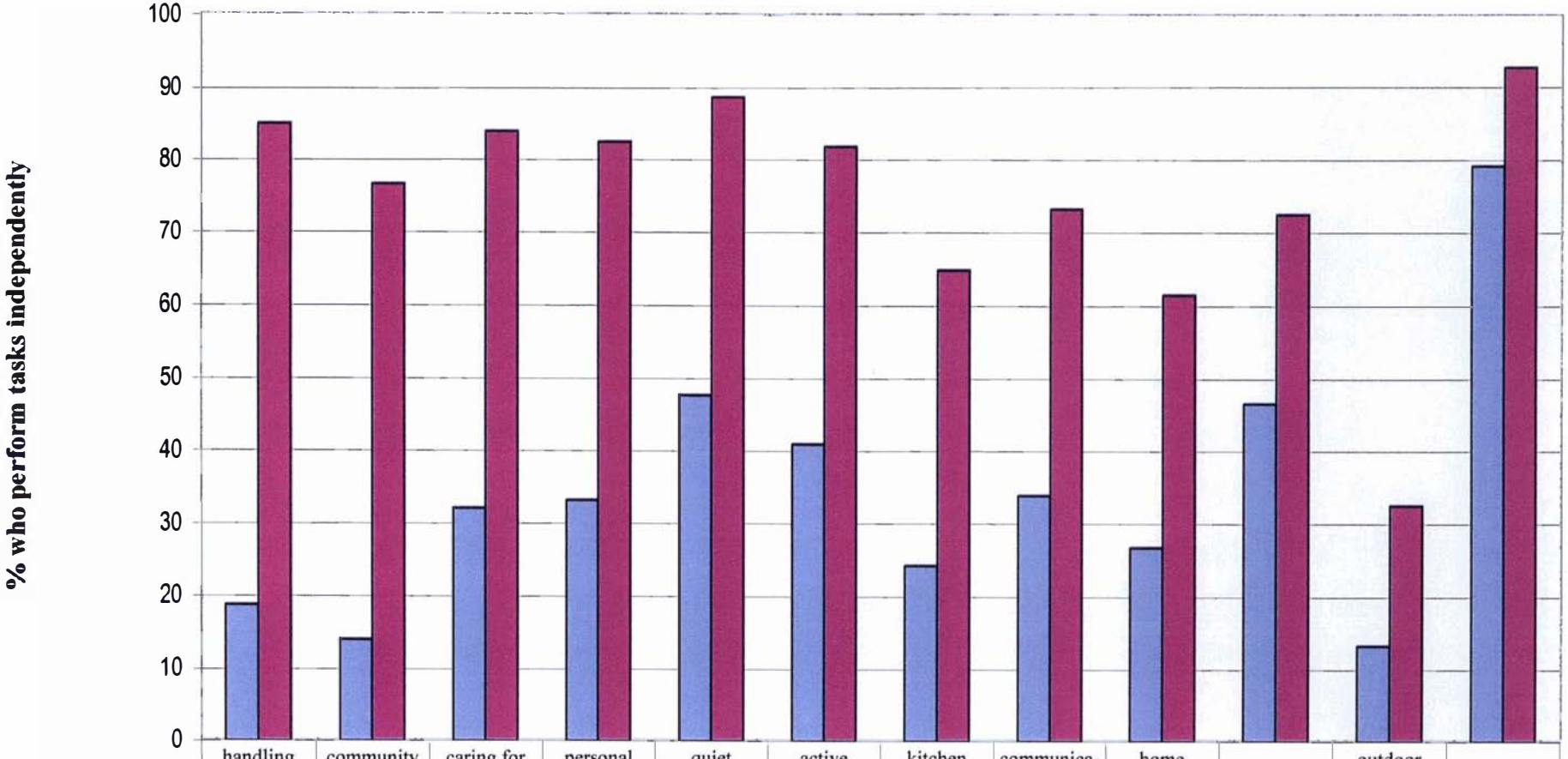
Activity	Vision impaired group		Proportion of those who perform task never or less than one day per week	Sighted group		Proportions of those who perform task never or less than one day per week	Proportion difference
Age cohort 1	*N* = 14-16			*N* = 211 - 242			
	M	*SD*		*M*	*SD*		
Driving a car	1.67	1.45	69.3	3.8	1.344	17.4	-51.9
Reading mail, newspapers, magazines	2.93	1.75	53.3	4.55	1.038	6.0	-47.3
Gardening	2.53	1.64	60.0	3.13	1.24	30.8	-29.2
Car rides	3.43	0.65	64.3	3.12	1.34	35.6	-28.7
Household maintenance	1.47	1.06	93.3	2.38	1.258	65.5	-27.7
Paid or volunteer work	1.13	1.13	93.3	2.06	0.83	66.5	-26.8
Age cohort 2	*N* = 55-66			*N*= 121-142			
	M	*SD*		*M*	*SD*		
Driving	1.4	1.11	88.3	3.16	1.60	34.1	-54.2
Reading mail, newspapers, magazines	2.86	1.68	45.3	4.38	1.30	12.8	-32.5
Using a typewriter or computer	1.31	0.93	93.2	1.91	1.42	72.7	-20.5
Age cohort 3	*N* = 42-48			*N* = 22-31			
Reading mail, newspapers, magazines	2.8	1.79	48.9	4.29	1.29	16.1	-32.8

1=never 2=less than one day per week 3=one to three days per week 4=four to six days per week 5=every day of the week
All differences are significant at .05.

Appendix L

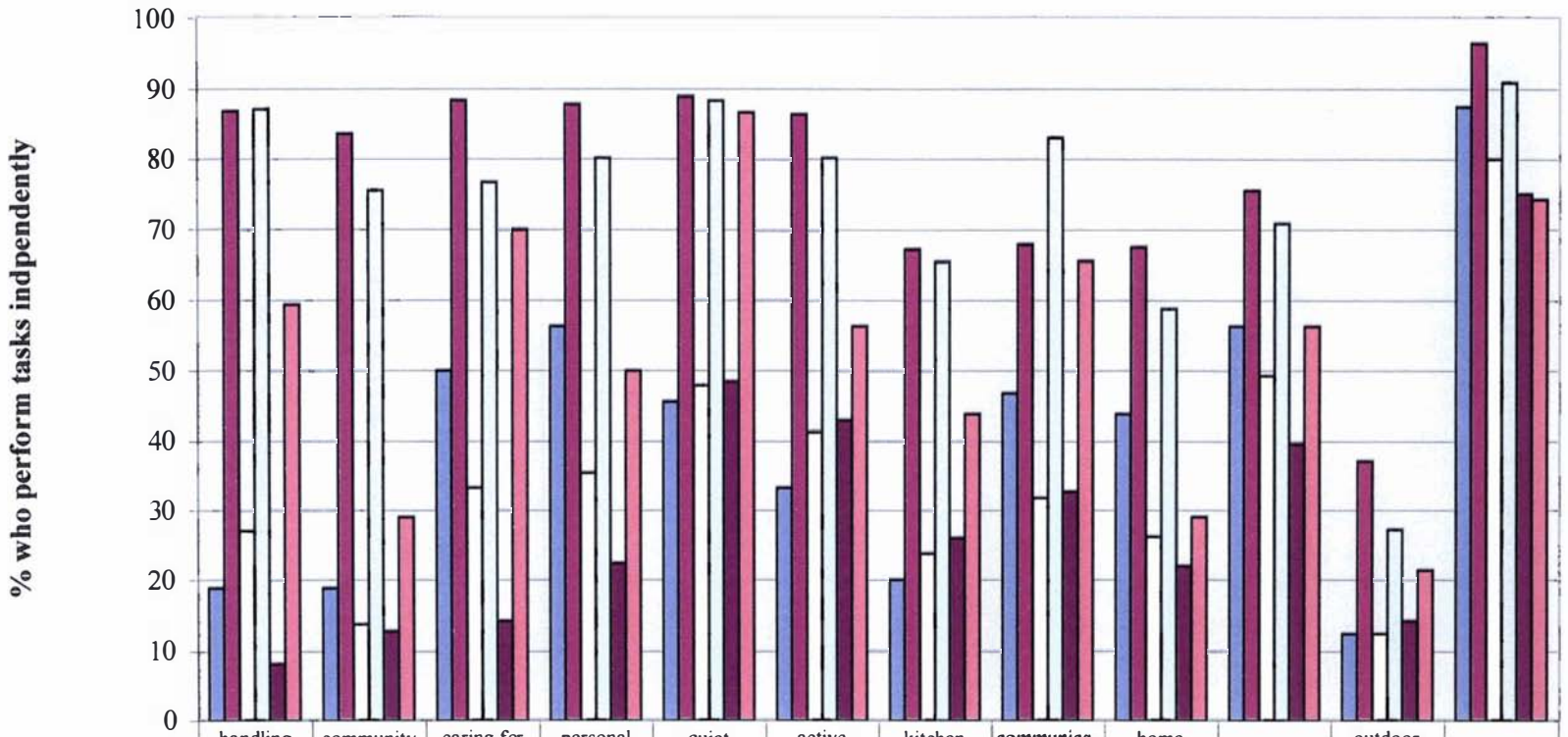
Independence subscale scores

Table L1: Independence subscales and percentage of those with impaired vision and with sight who perform tasks independently in descending order of proportion difference between groups



	handling money	community activitiy	caring for others	personal management	quiet recreation	active recreation	kitchen management	communica-tions	home management	clothing care	outdoor work	BADL
vision impaired	18.8	14.0	32.0	33.1	47.7	40.9	24.2	33.8	26.7	46.5	13.2	79.1
sighted	84.9	76.6	83.9	82.4	88.6	81.8	64.8	73.1	61.5	72.4	32.4	92.8

Table L2: Independence subscales and percentage of those with impaired vision and with sight who perform tasks independently by age cohort and vision status

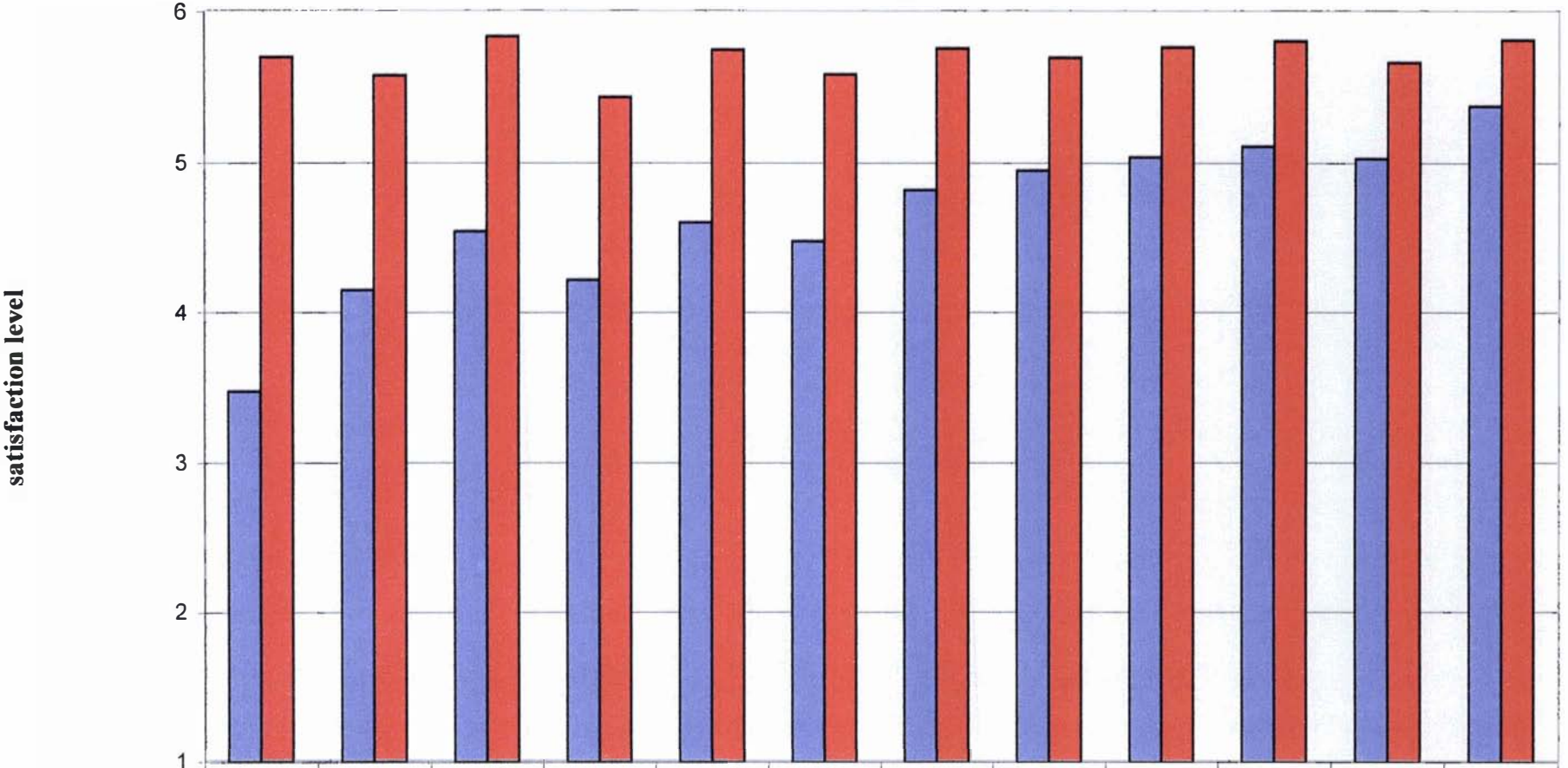


	handling money	community activitiy	caring for others	personal management	quiet recreation	active recreation	kitchen management	communica-tions	home management	clothing care	outdoor work	BADL
v.i. 65-74	18.8	18.8	50.0	56.3	45.5	33.3	20.0	46.7	43.8	56.3	12.5	87.5
sighted 65-74	86.9	83.6	88.5	87.9	89.0	86.4	67.2	67.9	67.5	75.5	37.1	96.5
v.i. 74-85	27.0	13.8	33.3	35.4	47.8	41.3	23.8	31.8	26.2	49.2	12.5	80.0
sighted 74-85	87.2	75.5	76.7	80.1	88.4	80.1	65.5	83.0	58.8	70.9	27.2	90.9
v.i. 85+	8.2	12.8	14.3	22.4	48.4	42.9	26.0	32.7	22.0	39.6	14.3	75.0
sighted 85+	59.4	29.0	70.0	50.0	86.7	56.3	43.8	65.6	29.0	56.3	21.4	74.2

Appendix M

Satisfaction with independence

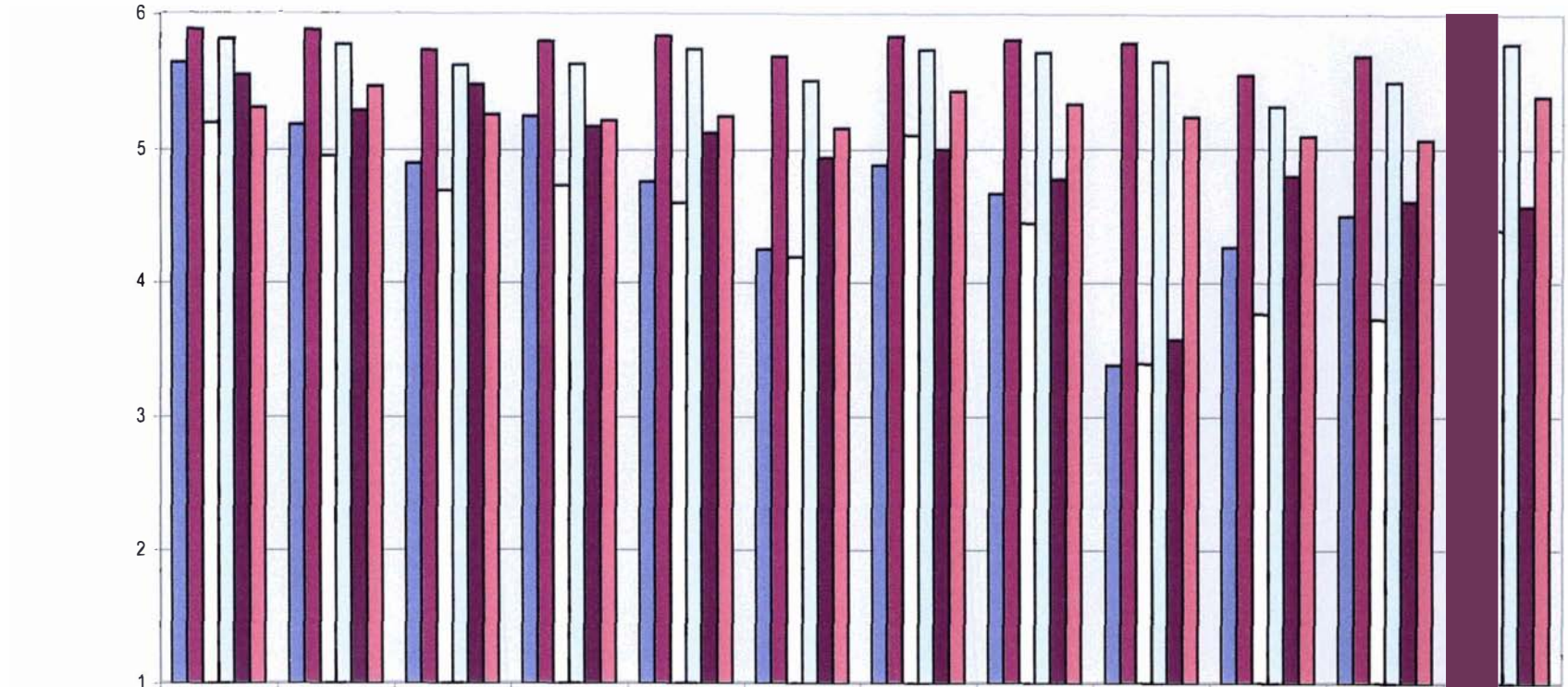
Table M1: Satisfaction with domains of independence by vision status in descending order of mean difference between groups



	quiet recreation	community activities	handling money	active recreation	communica-tions	outdoor work	kitchen management	home management	clothing care	personal management	caring for others	BADL
vision impaired	3.47	4.15	4.54	4.22	4.6	4.48	4.82	4.95	5.04	5.11	5.03	5.38
sighted	5.7	5.58	5.84	5.44	5.75	5.59	5.76	5.7	5.77	5.81	5.67	5.82

1 = very dissatisfied, 6 = very satisfied

Table M2: **Satisfaction with domains of independence by age cohort and vision status**



	BADL	personal management	caring for others	home management	kitchen management	outdoor work	clothing care	communica-tions	quiet recreation	active recreation	community activities	handling money
v.i. 65-74	5.64	5.19	4.90	5.25	4.75	4.25	4.88	4.67	3.38	4.27	4.50	5.06
sighted 65-74	5.89	5.89	5.74	5.80	5.84	5.69	5.84	5.82	5.79	5.56	5.70	5.92
v.i.75-84	5.20	4.95	4.69	4.72	4.60	4.19	5.11	4.45	3.40	3.77	3.73	4.39
sighted 75-84	5.82	5.78	5.63	5.64	5.75	5.51	5.74	5.72	5.66	5.33	5.51	5.79
v.i. 85+	5.55	5.29	5.48	5.17	5.13	4.94	5.00	4.78	3.57	4.80	4.61	4.57
sighted 85+	5.31	5.47	5.26	5.22	5.25	5.16	5.44	5.34	5.25	5.10	5.06	5.40

1 = very dissatisfied, 6 = very satisfied

Appendix N

Poster presentations of daily problems reported by those with impaired vision and analyses of responses of what contributes to and detracts from QOL

Good, G., La Grow, S.J. & Alpass, F. (July 2002). *Daily living problems identified by older, vision impaired New Zealanders and their sighted peers.* Poster session presented at the International conference of the Association for the Education and Rehabilitation of the Blind and Vision Impaired, Toronto, Canada.

Good, G., La Grow, S.J. & Alpass, F. *Life satisfaction of older vision impaired New Zealanders.* Poster session presented at the 11th International Mobility Conference (IMC-11). Stellenbosch, South Africa.

Daily Living Problems Identified By Older, Vision-Impaired New Zealanders And Their Sighted Peers

Gretchen A. Good
S.J. La Grow
Fiona M. Alpass

Massey University

ABSTRACT

This presentation of findings is derived from three studies conducted in the Manawatu region of the North Island of New Zealand. The first is a study on peer role models for blind women over the age of 80; the second, a pilot study assessing levels of independence and activity of those aged 65+; and, the third, a large, data driven survey of older New Zealanders. Findings reveal the levels of activity and independence of older people, and highlighted in this poster are the identified problem areas, which result in barriers to participation and activity limitation for both sighted and blind older research participants.

BACKGROUND

A broader understanding of daily problems encountered by older people within a community and the differences in problems related to activity, independence and life satisfaction for those who have experienced vision loss, will enable us to better understand the rehabilitation needs of this client group. Often, when providing Rehabilitation Teaching services, a client will report that they do not perform daily living activities independently. Knowing when to encourage them toward independence or to accept that they may not wish to attain independence in this area can be difficult. This data will assist us in a knowing the independence levels that we may expect to find with older people in general and in comparison to those who are vision impaired. Then we can target problems which most negatively affect life satisfaction for those who have experienced vision loss. And we can assist individuals to set more appropriate, realistic goals for rehabilitation.

METHOD

Three studies were conducted to identify daily living problems of older, vision impaired people and their sighted peers. Instruments used in the first two studies were structured interviews, goal setting exercises and the Canadian Occupational Performance Measure. In the third study, the impact of the identified areas of difficulty is explored by measuring satisfaction with independence in specific areas of daily living. A postal survey was conducted and data from 50 vision impaired and 50 sighted older individuals is examined.

SUMMARY OF RESULTS

Results of the first two studies indicate that problems reported most often by the older, vision impaired groups are as follows:

Problems Reported Most Often by Older, Vision Impaired Groups

(descending order of reported responses:)

- Reading and writing
- Knitting, sewing and craft
- Gardening
- Kitchen management
- Mobility
- Active recreation
- Home management
- Personal management
- Handling social situations
- Shopping and handling money
- Visual entertainment

In the third study the problem areas identified in the first two studies were more thoroughly examined. Comparisons were made between sighted and vision impaired groups.

Areas of Daily Living which are Least Satisfying in Relation to Independence:

Vision Impaired Group	Sighted Group
quiet recreation	active recreation
active recreation	outdoor home responsibilities
community activities	quiet recreation
caring for others	communications
outdoor home responsibilities	community activities
handling money	clothing care

Difference in Satisfaction with Independence between Vision Impaired and Sighted Groups:

Activity Area	Mean Difference
Quiet recreation	1.61*
Community activities	0.99*
Caring for others	0.92*
Handling money	0.88*
Active recreation	0.78*
Outdoor responsibilities	0.77*
Kitchen management	0.70*
Home management	0.70*
Clothing care	0.63*
Personal management	0.61*
Communications	0.55*
Basic activities of daily living	0.23

Scale:
1 = very satisfied,
6 = very dissatisfied

*statistically significant

What Most Detracts from Quality of Life for these Two Groups:

Vision Impaired Group		Sighted Group	
vision loss	72%	poor health	8%
inability to drive	24%	physical disability	8%
poor health	20%	housework	6%
hearing loss	20%	finances	6%
physical disability	10%	absent family	6%

DISCUSSION

Patterns emerge when asking people about problems in activities of daily living, and yet a somewhat different pattern emerges when enquiring about the effects of such disabilities. The three studies show that problems reported most often by those who are vision impaired (written communication, for example) are not necessarily reported to impact on quality of life, or satisfaction as much as other areas (such as inability to drive, or hear).

Comparing difficulties reported by the sighted group, to those of the vision impaired group, reveal that both groups report problems with recreation, outdoor activities and community activities. Caring for others and handling money emerge as unique to the vision impaired group. Understanding the difficulties encountered by older people in general and highlighting those which are unique to those experiencing vision loss may help us gain a better understanding of how to approach the unique rehabilitation needs of those experiencing vision loss after age 65.

Photo: by Gary Freeman, Courtesy of the M.I.L.K. Collection

LIFE SATISFACTION OF OLDER, VISION IMPAIRED NEW ZEALANDERS

Gretchen A. Good, Steven J. LaGrow, Fiona Alpass
Massey University, Palmerston North, NEW ZEALAND

Abstract

This presentation is taken from a series of studies related to quality of life and life satisfaction as reported by older New Zealanders with and without vision loss. Do vision impaired older people report a different level of overall quality of life and life satisfaction compared to their sighted peers? What is reported to contribute to and detract from quality of life for sighted and vision impaired older New Zealanders? Results were gathered over a three-year period through survey measures and interviews. Results indicate that vision impaired people report a significantly lower quality of life and level of life satisfaction. The results of this study will assist service providers, older people, educators and policy makers to develop a greater understanding of how vision loss impacts on the quality of life of our growing older population. This information will also be used to identify the link between activity and independence and quality of life and level of life satisfaction for this population.

Massey University

I. BACKGROUND

A broader understanding of daily problems encountered by older people within a community and the differences in problems related to activity, independence and life satisfaction for those who have experienced vision loss, will enable us to better understand the rehabilitation needs of this client group. Often, when providing Rehabilitation Teaching services, a client will report that they do not perform daily living activities independently. Knowing when to encourage them toward independence or to accept that they may not wish to attain independence in this area can be difficult. This data will assist us in a knowing the independence levels that we may expect to find with older people in general and in comparison to those who are vision impaired. Then we can target problems which most negatively affect life satisfaction for those who have experienced vision loss. And we can assist individuals to set more appropriate, realistic goals for rehabilitation.

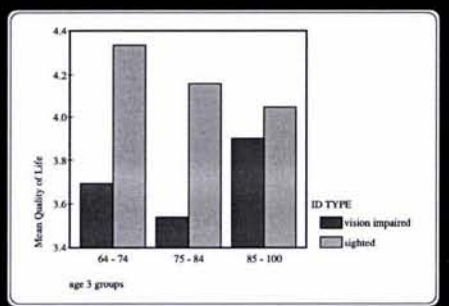
II. METHOD

Two studies were conducted to identify activity, independence, and life satisfaction levels of older, vision impaired people and their sighted peers. Instruments used in the first study were structured interviews, goal setting exercises and the Canadian Occupational Performance Measure. Fifteen registered members of the Royal New Zealand Foundation for the Blind participated and 15 non-vision impaired people, aged 65+ were recruited through a senior citizens club, Age Concern, and through snowballing methods. In the second study, the impact of the identified areas of difficulty is explored by measuring satisfaction with independence in specific areas of daily living. Measures of overall subjective quality of life and life satisfaction were taken as well. A postal survey was conducted and data from 140 vision impaired and 454 sighted older individuals is examined.

III. SUMMARY OF RESULTS

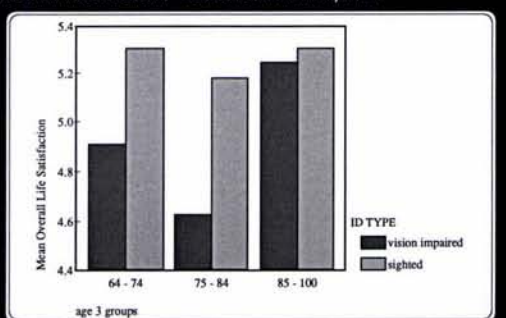
Quality of Life

There was no significant difference in reported quality of life between the groups in the first, smaller study. In the second, larger study, the difference was significant. The vision impaired group rated their overall QOL at 3.65 and the sighted group rated QOL as 4.23 on a scale of 1-5; 1=very poor, 5= very good).



Life Satisfaction

In study two, a question related to overall life satisfaction revealed a significantly lower level of life satisfaction for the vision impaired group. The vision impaired group reported more "mostly satisfied" responses and the sighted group reported more "very satisfied" responses. The mean for the vision impaired group was 4.89 and for the sighted group, 5.24 on a scale of 1, "terrible", to 7, "delighted". The sighted group was also significantly more likely to agree with the statement; "I am satisfied with my life".



Problem Identification

In the first study, when asked to rate the importance of problem areas in daily living, the vision impaired group listed problems in reading and correspondence, knitting, sewing and craft, travel and mobility, kitchen management and gardening. In contrast, the sighted group reported fewer problems in all of these areas and listed "lack of time" as their primary difficulty.

Satisfaction with Independence

In the second study the problem areas identified were more thoroughly examined, in relation to degree of satisfaction or dissatisfaction with independence. Comparisons were made between sighted and vision impaired groups. The vision impaired group reported significantly lower levels of satisfaction with independence in every area of activity of daily living.

Areas Of Daily Living Which Are Least Satisfying, In Relation To Independence: (domains of least satisfaction listed first)

Vision Impaired Group	Mean Level of Satisfaction	Sighted Group	Mean Level of Satisfaction
Quiet recreation	3.57	Active recreation	1.58
Community activities	2.90	Outdoor home responsibilities	1.42
Active recreation	2.84	Community activities	1.42
Outdoor home responsibilities	2.55	Caring for others	1.34
Handling money	2.51	Home management	1.30
Communications/electronics	2.46	Quiet recreation	1.29
Kitchen management	2.21	Communications/ electronics	1.26
Home management	2.07	Kitchen management	1.25
Clothing care	1.99	Clothing care	1.24
Caring for others	1.97	Handling money	1.17
Personal management	1.95	Personal management	1.19
Basic activities of daily living	1.68	Basic activities of daily living	1.18

1=very satisfied
6=very dissatisfied

Difference In Satisfaction With Independence Between Vision Impaired And Sighted Groups (listed in descending order of difference)

Domain	Mean Difference
Quiet recreation	2.28*
Community activities	1.48*
Handling money	1.34*
Active recreation	1.26*
Communication and electronics	1.19*
Outdoor responsibilities	1.13*
Kitchen management	.97*
Home management	.77*
Personal management	.76*
Clothing care	.75*
Caring for others	.63*
Basic activities of daily living	.50*

1= very satisfied
6=very dissatisfied
*statistically significant

What Most Detracts From Quality of Life For These Two Groups? (listed in descending order of number of responses to this open-ended question)

Vision Impaired Group (n=137)		Sighted Group (=n=435)	
Vision loss	n=94	Poor health	n=106
Inability to drive	n=25	Physical disability	n=55
Poor health	n=24	Finances	n=54
Hearing loss	n=24	Family concerns	n=43
Mobility difficulty	n=20	Ageing	n=38
Physical disability	n=15	Disappointment in others	n=34
Loss of independence	n=14	Current state of the world	n=31

What Most Contributes to Quality of Life? (listed in descending order of number of responses to this open-ended question)

Vision Impaired Group		Sighted Group	
Family	n=61	Health	n=156
Friends/companions	n=27	Family	n=153
Health	n=26	Partner/relationship	n=89
Independence	n=21	Friends/companions	n=84
Attitude	n=20	Attitude	n=65

IV. DISCUSSION

Patterns emerge when asking people about problems in activities of daily living, and yet a somewhat different pattern emerges when enquiring about the effects of such disabilities. The studies show that problems reported most often by those who are vision impaired (written communication, for example) are not necessarily reported to impact on quality of life, or satisfaction as much as other areas (such as inability to drive, or handle money).

Comparing Quality of life and life satisfaction levels reported by the sighted group, to those of the vision impaired group, reveal that both groups similarly report high levels but this is significantly lower for the vision impaired group when a large sample is examined. And although both groups report mostly high levels of satisfaction with independence in areas of daily activity, satisfaction with independence is significantly lower for those who are vision impaired in all domains. Understanding the practical difficulties encountered by older people in general and highlighting those which are unique to those experiencing vision loss is important. But it perhaps even more important to determine which of these areas are likely to have the most impact on life satisfaction, satisfaction with independence and overall quality of life. This knowledge may help us gain a better understanding of how to approach the unique rehabilitation needs of those experiencing vision loss after age 65.

Photo: by Gary Freeman, Courtesy of the M.I.L.K. Collection

LIFE SATISFACTION OF OLDER, VISION IMPAIRED NEW ZEALANDERS

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ABSTRACT

Two studies related to Quality of Life and Life Satisfaction of older New Zealanders with and without vision loss are presented. Vision impaired older people report a lower level of overall quality of life and life satisfaction. Qualitative differences in what contributes to and detracts from quality of life are highlighted.

1. BACKGROUND

A broader understanding of daily problems encountered by older people within a community and the differences in problems related to activity, independence and life satisfaction for those who have experienced vision loss, will enable us to better understand the rehabilitation needs of this client group. Often, when providing Rehabilitation Teaching services, a client will report that they do not perform daily living activities independently. Knowing when to encourage them toward independence or to accept that they may not wish to attain independence in this area can be difficult. This data will assist us in a knowing the independence levels that we may expect to find with older people in general and in comparison to those who are vision impaired. Then we can target problems that most negatively affect life satisfaction for those who have experienced vision loss. And we can assist individuals to set more appropriate, realistic goals for rehabilitation.

2. METHOD

Two studies were conducted to identify activity, independence, and life satisfaction levels of older, vision impaired people and their sighted peers. Instruments used in the first study were structured interviews, goal setting exercises and the Canadian Occupational Performance Measure. Fifteen registered members of the Royal New Zealand Foundation for the Blind participated and 15 non-vision impaired people, aged 65+ were recruited through a senior citizens club, Age Concern, and through snowballing methods. In the second study, the impact of the identified areas of difficulty is explored by measuring satisfaction with independence in specific areas of daily living. Measures of overall subjective quality of life and life satisfaction were taken as well. A postal survey was conducted and data from 137 vision impaired and 454 sighted older individuals is examined.

3. SUMMARY OF RESULTS

3.1 Quality of Life

There was no significant difference in reported quality of life between the groups in the first, smaller study.

In the second, larger study, the difference was significant. The vision impaired group rated their overall QOL at 3.65 and the sighted group rated QOL as 4.23 on a scale of 1-5; 1=very poor, 5=very good).

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3.2 Life Satisfaction

In study two, a question related to overall life satisfaction revealed a significantly lower level of life satisfaction for the vision-impaired group. The vision impaired group reported more "mostly satisfied" responses and the sighted group reported more "very satisfied" responses. The mean for the v.i. group was 3.1 and for the sighted group, 2.7 on a scale of 1, "delighted", to 7, "terrible". The sighted group was also significantly more likely to agree with the statement; "I am satisfied with my life".

3.3 Problem Identification

In the first study, when asked to rate the importance of problem areas in daily living, the vision impaired group listed problems in reading and correspondence, knitting, sewing and craft, travel and mobility, kitchen management and gardening. In contrast, the sighted group reported fewer problems in all of these areas and listed "lack of time" as their primary difficulty.

3.4 Satisfaction with Independence

In the second study the problem areas identified were more thoroughly examined, in relation to degree of satisfaction or dissatisfaction with independence. Comparisons were made between sighted and vision impaired groups. The vision impaired group reported significantly lower levels of satisfaction with independence in every area of activity of daily living.

Table 1. Areas of daily living which are least satisfying, in relation to independence (domains of least satisfaction listed first)

Vision Impaired Group		Sighted Group	
	Mean Level of Satisfaction		Mean Level of Satisfaction
Quiet recreation	3.57	Active recreation	1.58
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Outdoor home responsibilities	2.55	Caring for others	1.34
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Domain	Mean difference
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Clothing care	.75*
Caring for others	.63*
Basic activities of daily living	.50*

1= very satisfied
6=very dissatisfied
*statistically significant

Table 3. What most detracts from Quality of Life for these two groups (listed in descending order of number of responses to this open-ended question)

Vision impaired group (n=137)		Sighted group (n=435)	
Vision loss	n=94	Poor health	n=106
Inability to drive	n=25	Physical disability	n=55
Poor health	n=24	Finances	n=54
Hearing loss	n=24	Family concerns	n=43
Mobility difficulty	n=20	Ageing	n=38
Physical disability	n=15	Disappointment in others	n=34
Loss of independence	n=14	Current state of the world	n=31

Table 4. What most contributes to Quality of Life (listed in descending order of number of responses to this open-ended question)

Vision impaired group		Sighted group	
Family	n=61	Health	n=156
Friends/companions	n=27	Family	n=153
Health	n=26	Partner/relationship	n=89
Independence	n=21	Friends/companions	n=84
Attitude	n=20	Attitude	n=65

4. DISCUSSION

Patterns emerge when asking people about problems in activities of daily living, and yet a somewhat different pattern emerges when inquiring about the effects of such disabilities. The studies show that problems reported most often by those who are vision impaired (written communication, for example) are not necessarily reported to impact on quality of life, or satisfaction as much as other areas (such as inability to drive, or handle money).

Comparing Quality of life and life satisfaction levels reported by the sighted group, to those of the vision impaired group, reveal that both groups similarly report high levels but this is significantly lower for the vision impaired group when a large sample is examined. And although both groups report mostly high levels of satisfaction with independence in areas of daily activity, satisfaction with independence is significantly lower for those who are vision impaired in all domains. Understanding the practical difficulties encountered by older people in general and highlighting those which are unique to those experiencing vision loss is important. But it perhaps even more important to determine which of these areas are likely to have the most impact on life satisfaction, satisfaction with independence and overall quality of life. This knowledge may help us gain a better understanding of how to approach the unique rehabilitation needs of those experiencing vision loss after age 65.

Appendix O

Selection of assessment instruments

Good, G.A. (1999, July). *Independent living skills of older individuals: A review of assessment instruments.* Poster presented at the Rehabilitation Teaching: The Next Century Conference, Kalamazoo, MI.

Good, G.A. (2001a). Ageing, vision loss and quality of life: Are we asking the right questions? In S. J. La Grow (Ed.), *New Zealand Rehabilitation Association 2001 Conference* (pp. 21-26). Wellington: NZRA.

Independent living skills of older individuals: A review of assessment instruments

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Abstract

Older people are the fastest growing population in New Zealand and the majority of those living with disability are over the age of 65. In a time when financial resources are dwindling for direct assistance to those living with disabilities, strategies for teaching independent living skills have become increasingly important. An integral component in planning goals for and evaluating effectiveness of rehabilitation is the use of appropriate assessment instruments. A number of tools for assessment are currently in use throughout New Zealand and abroad for the assessment of independent living skills for older individuals. In this review 26 assessment tools were critiqued in terms of their purpose, usefulness within a home setting, suitability for use with older people and for their usefulness for researching independent living skill levels of the general older population and of subgroups including those who have impaired vision. This review provides information about which tools may be most appropriate for use in practice, in assessing effectiveness of interventions, in programme evaluations, in research, disability service provision and in policy writing.

Background

Why assess?

Rehabilitation Teachers assess daily functioning for purposes of:

- Screening
- Placement
- Program Evaluation and
- Planning Individual Interventions

Formal or informal evaluation?

Most rehabilitation practitioners use informal agency developed assessments. These tools are often useful and of good quality. Yet they lack formal proof of validity, reliability and precision. Developing one's own instrument is time-consuming, meticulous and an expensive process if done correctly.

Norm-referenced or criterion referenced measures?

Norm referenced measures are often used to determine a distribution of scores for comparison purposes. These work well in screening, placement decisions and for programme evaluations.

Criterion referenced measures are suggested for individual programme planning and offer a method of comparing performance.

ADLs (activities of daily living) or IADLs (instrumental activities of daily living)?

The original ADL concept was developed by sociologist S.C. Katz and colleagues in 1963 as a method to measure ability and potential for recovery of frail, institutionalised older people. Katz's ADL measures involve six fundamental abilities: eating, continence, getting in and out of bed, getting to the toilet, dressing oneself, and bathing.

Instrumental Activities of Daily Living measures were developed in the late 1960s and measure more complex functions that become impaired at an earlier, less serious stage than ADL impairments. IADLs such as the ability to use the phone, or the ability to find and use public transportation, combine cognitive aspects with physical aspects of functioning. IADL impairments are much more common and more appropriate to assess when working with people living in their own homes who wish to retain independence.

Method

For this study, 26 assessment instruments were reviewed. They were selected through a review of literature and through recommendation of rehabilitation teachers, occupational therapists and test librarians.

Instruments selected for secondary review:

Comprehensive functional assessment instrument

- Functional Independence Measure

ADL Instruments

- Barthel Index
- Katz Index of ADL
- Kenny Self-Care Evaluation
- Klein-Bell ADL Scale
- Time-Care Profile
- Scale for Instrumental ADL
- Northwick Park Index
- Assessment of Motor and Processing Skills (AMPS)
- Medical Rehabilitation Follow Along
- Canadian Occupational Performance Measure
- Frenchay Index of Activities

Functional assessment instruments designed for use with elderly population

- Older Adults Resources and Services Multidimensional Functional Assessment Questionnaire
- Rapid Disability Rating Scale

Results

The Canadian Occupational Performance Measure and the Frenchay Activities Index have been selected for use in my research as they most closely match the criteria for selection initially established.

- appropriate for use with older populations
- appropriate for use in a home setting
- suitable for use with those who have impaired vision, other impairments or no impairments
- established reliability and validity
- sensitive to change

The COPM (1991) has been the measure incorporated into OT training in New Zealand in recent years. Its format is a semi-structured interview with the client or a proxy respondent. The purpose is to identify problem areas from the client's perspective. It seems an ideal tool for goal setting and for measuring changes in performance over the course of rehabilitation intervention. It can be used across all disability groups and all developmental levels. Reliability and validity have been established. A significant weakness of this measure is that the disability classifications do not include sensory disabilities.

The Frenchay Activities Index was recommended by three New Zealand OTs as being the most appropriate tool for my study. It is useful in assessing needs in a client's home and extends to activities within the community. It was designed for use with stroke patients and its data collection method is a brief, self-report questionnaire. As it was designed for use with stroke patients and with a focus on more complex activities it addresses the importance of reintegration into former roles and environments, which is a major objective of both stroke and vision rehabilitation. The questionnaire is intended to give an objective measure of actual activities undertaken by a person in the recent past. The distinction of questioning of what DO you do? Rather than What CAN you do? Is difficult to find within other measures. Validity, reliability and sensitivity have been established for this measure and it was tested on 976 acute stroke patients, a relatively large number of participants. It is questionable as to how widely this test is currently being used, but it may prove suitable for the needs of this researcher.

Conclusion

Measurements of Instrumental ADLs are relatively new and assessing and teaching independence skills to older people in the community is a field yet to mature. There is a need to continue to develop, standardise and improve assessment technology.

The two selected assessment measures will be used in a pilot study of vision impaired and sighted older people to determine points of variance in functioning between the two groups. The measures will be further evaluated on their sensitivity to such factors as age, gender, social economic standing and living situation. These results will be used in the development of a large, data driven survey to determine norms and ranges of functioning among older people to determine gaps in functioning between sighted and vision impaired groups in order to better tailor rehabilitation programmes for this population.

Ageing, Vision Loss and Quality of Life:

Are We Asking the Right Questions?

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Abstract

The elderly are the fastest growing population in New Zealand and the majority of those living with disability are over the age of 65. In a time when financial resources are dwindling for direct assistance to those living with disabilities, strategies for teaching independent living skills have become increasingly important. What we do not yet know is the impact of improved activity and independence levels upon quality of life. A number of tools for assessment are currently in use throughout New Zealand and abroad for the assessment of quality of life, life satisfaction and well being. In this review assessment tools are critiqued in terms of their purpose, suitability for use with an older population and for their usefulness for researching the impact of independence and activity of the general older population and of subgroups including those who are newly vision impaired, This review provides information about which tools may be most appropriate for use in practice, in assessing effectiveness of interventions, in service evaluations, in research, disability service provision and in policy writing

Ageing, Vision Loss and Quality of Life: Are We Asking the Right Questions?

Quality of life is emerging as a central construct within many disciplines, including those of the social sciences, economics, and medicine. Its attraction is that it offers an alternative to some traditional views about how to measure success. It directs attention onto the positive aspects of people's lives, thus running counter to the deficit orientation of these disciplines. And it extends the traditional objective measures of health, wealth, and social functioning to include subjective perceptions of wellbeing (Australian Centre on Quality of Life, 2001).

Quality of Life in Relation to Disability and Rehabilitation

Society's concern for the general welfare and well-being of people is justification enough for evaluating quality of life (Borthwick-Duffy, 1989 p. 351). And quality of life for people with disabilities and for the increasingly ageing population has been a major focus of research in recent years. And nowhere else is the rate of quality of life instrument development and refinement intensifying as it is within the field of rehabilitation and disability.

Not only is it important to examine quality of life issues for those older people living in institutions, but also for those with disabilities, who seek, through rehabilitation, to gain greater access to life connected to their local communities (O'Conner, 2001). Rehabilitation of vision impaired individuals, as for those who are physically impaired, is directed at optimising functional capabilities and quality of life. Rehabilitation is a multifaceted process that involves assessment, evaluation of function within the context of lifestyle, attitudes and psychological wellbeing. Rehabilitation attempts to solve functional problems through adaptations and coping strategies. Rehabilitation goals are defined in terms of what matters most in a person's life. Thus, within rehabilitation research, we are recognising that the challenge is to develop rehabilitation processes that will enhance quality of life, determine which approach is most appropriate for an individual and improve services.

Defining Quality of Life

Quality of life (QOL) has been defined in many ways. As a construct it has been designed to include varying dimensions. Dimensions of quality of life may include physical and sexual activity, social and leisure activity, work, income, cognition, self-esteem, interpersonal relationships, emotional adaptation, anxiety, stress, symptoms and overall satisfaction with life (Garcia & McCarthy, 2000 p. 22). Others include residential environment, community involvement, and stability (Borthwick-Duffy 1989 p. 354). Still others have defined QOL domains as the following: material well being, health, productivity, intimacy, safety, community, and emotional well being. Some argue that the same dimensions of life quality are meaningful for most people, but the relevance of specific operational criteria used to define the dimensions may differ according to individual skill and ability.

Quality of life criteria have been divided into the objective and subjective. Each axis has been comprised of several domains, which define the total construct. Objective domains may include culturally relevant measures of objective well being. Subjective domains may comprise domains satisfaction weighted by their importance to the individual (Deakin, 2000, Australian Centre on Quality of Life, 2001).

It is clear that as a concept and construct, quality of life is complex. For the purposes of research and measurement it is important to clearly define the area of quality of life under investigation. One broad distinction is that between general QOL and Health Related QOL. Health related quality of life is conceptualised as those aspects of life quality or function impacted by one's health status. "Quality of life relates to the adequacy of material circumstances as well as to people's feelings about these circumstances. It recognizes that individual responses to the physical, mental and social effects of illness on daily living influence the extent to which personal satisfaction with life circumstances can be achieved and that health is generally acknowledged as being one of the most important determinants of overall quality of life." (Garcia & McCarthy 2000 p. 22).

Health theorists agree that the following five domains should be addressed when measuring health related quality of life: biological, psychological, interpersonal, social and economic experiences (Rosenblatt & Attkisson, 1993).

The Problem of Measurement

It is certainly debatable as to how to determine quality of life and whether or not disability actually impacts on subjective quality of life. For example, despite many years of assumptions about disability and its impact on QOL, there is evidence that vision impairment has a negative effect on functional activity but not upon emotional wellbeing if measured subjectively (ASOEG Unwelt 2001).

There is also evidence that quality of life measures are particularly difficult to utilise in data-based quantitative studies due to the contention and debate about defining quality of life. Many QOL measures discriminate against older, disabled individuals. Theories of quality of life often equate independence and activity, impairment and disability, with one's quality of life. An example of this is found in the work of McEwen, Mayo and Wood-Dauphinee (2000) who attempted to infer quality of life from performance-based assessments in those who have experienced stroke. "The overall aim of this study was to identify observable impairments and disabilities that could be used to infer quality of life" (p. 456). In the development of another quality of life questionnaire, the only measure used was of visual functioning, thus equating severity of disability with quality of life. (Wu, Coleson, Holbrook, & Jabs, 1996). This tendency to equate basic health and Activities of Daily Living scores with quality of life has been countered in a discussion article entitled 'There is more to life than putting on your pants'. This article emphasises the need to look beyond simple treatment, health and functional issues to examine social, leisure, and productive activities that make life satisfying (McEven et al, 2000, p. 461).

It is difficult to draw conclusions and to summarise reports regarding quality of life because the construct has not been clearly defined. Studies frequently focus on limited aspects of the broad concept. Also, other terms have been used to describe outcomes, sometimes referred to as quality of life, including "adjustment", "adaptation", and "success". This suggests that these concepts are not necessarily distinguishable in the literature (Borthwick-Duffy, 1989, p.351).

Quality of life criteria have been described as almost researcher specific. This does not always lead to problems in interpreting results of single studies, but does make it difficult to compare and summarise research findings. This does result in a dilemma for the research field: To standardise measures of life quality and develop a universal definition would oversimplify what is an extremely complex and personal phenomenon. "Criterion measures can be a reflection of the investigator's view...even though quality is often precisely defined in individual research studies, these findings support the notion that quality of life is a subjective concept, and that its interpretation may be 'in the eye of the beholder.'"(Borthwick-Duffy, 1989, p. 352-353).

Considering all the complexities and controversy in measuring quality of life, why try? Because there is value in understanding how people combine their feelings into some overall evaluation of the value of life. It is important to find out what aspects of life are more important than others and to find how different domains and value criteria relate to feelings about life as a whole. It is important to know how parts of life add together, or are isolated and compartmentalised (Andrews & Withey, 1976 p. 10). Having determined the importance of continuing to attempt to define and measure quality of life, what follows is a review of some of the most frequently used measures, and an assessment for their appropriateness for use in a proposed study to be conducted by the author, investigating effects of vision loss and ageing.

Review of Popular Measures

The WHOQOL-BREF (The WHO Quality of Life Abbreviated Questionnaire) was developed to meet the need for a short, health-related quality of life questionnaire. It has 24 facets and looks at four dimensions of quality of life: physical health, psychological, social relationships and environment. . This measure has been well tested and has good psychometric properties. This instrument is longer than others are and although it is used widely, the areas assessed are very general and not specific to the needs of the proposed survey. It is not targeted to an older population nor to those with disabilities. Its focus appears to be on health and medical issues, as opposed to disability-related QOL.

The SF-36 (and shorter versions now available) is the most widely used health status instrument worldwide and is commonly used to infer quality of life. This is a generic health measure and health concepts assessed are: 1) limitations in physical activities because of health problems 2) limitations in social activities because of health problems; 3) limitations in usual role activities because of physical health problems 4) bodily pain 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems 7) vitality (energy and fatigue); and 8) general

health perceptions. This measure has good psychometric properties, however, the results must be machine scored and the questionnaire does not contain age specific questions, which is most important for surveying older people. The questions address issues of illness and not disability, making it unsuitable for the proposed survey.

The Comprehensive Quality of Life Scale –Adult (Com Qol – A-5) was one of several measures developed in Australia for use with any population sub-group so that the QOL of any group could be norm-referenced back to the general population. Each objective and subjective axis is composed of 7 domains: 1) material well-being 2) health 3) productivity 4) intimacy 5) safety 6) place in community and 7) emotional well-being. There are problems with internal consistency of scales and lower than desirable test-retest coefficients. This questionnaire is valuable in that it examines satisfaction, has been developed for use in Australia/New Zealand and is brief. It does, however, emphasise productivity and seems to be geared toward a working age population as opposed to a retired population.

Scales of psychological well being were also reviewed. For the purposes of the proposed study, it was determined that well being was not the construct under investigation and that "these measures cover short-term psychological states rather than lasting traits and describe human psychological responses in adapting to the environment" (Garcia & McCarthy 1995 p. 17).

Selected Measures for Survey of Older Vision Impaired People

The task of finding a quality of life measure, appropriate for an older population, suitable for those with vision impairments and which assesses perceived quality of life without assuming that one's quality of life is determined by the presence or absence of disability posed a real challenge. Based on a review of quality of life literature, this researcher has chosen to use a combination of questions from quality of life measures and to focus on one aspect of quality of life, life satisfaction. Life satisfaction is a cognitive measure rather than affective, and therefore likely to indicate less transient states. Life satisfaction measures also suit the nature of the proposed study, a comparison of two groups of older people, one with vision impairments and one without. Life satisfaction is, in part, determined by comparisons made with standards (i.e. others around them or what they were like in the past) and the author wishes to determine if impairment is creating a disability, or restricting participation for people and most importantly, if this handicap is related to life dissatisfaction. "Life satisfaction generally refers to a personal assessment of one's condition, compared to a reference standard, or to one's aspirations" (Garcia & McCarthey 1995 p. 22). As the proposed research is to examine norms, ranges and normative, rather than criterion referenced data and utilises theories of social comparison, life satisfaction measures are most appropriate to this study.

The Satisfaction with Life Scale (SWLS) (Diener) is a 5-item scale to measure life satisfaction as a cognitive and judgmental process. This takes five minutes to complete, is appropriate for survey research and is based on self-reported evaluative criteria. It is designed around the idea that one must ask research participants for an overall judgment of

References

Andrews, F.M. & Withey, S.B., 1976). *Social Indicators of Well-Being: Americans' Perceptions of Life Quality*. New York: Plenum Press.

Australian Centre on Quality of Life (2001) .http://acqol.deakin.edu.au/introduction/index.htm

ASOEG Unwelt (2001). Environment-related competencies: Age related Vision Impairment. The Department of Social and Environmental Gerontology.

Borthwick-Duffy, S.A. (1989). Quality of life: The residential environment. In W.E. Kiernan & R.L. Schalock (Eds.), *Economics, Industry, and Disability: A Look Ahead* (pp. 351-363). Baltimore: Paul H. Brookes Publishing Co.

Deakin University, School of Psychology. Quality of Life measures and references (2000).

Garcia, P. & McCarthy, M. (1995). Measuring health. A step in the development of city health profiles. Copenhagen: World Health Organization Regional Office for Europe.

McEwen, S., Mayo, N. & Wood-Dauphinee, S. W. (2000). Inferring quality of life from performance-based assessments. *Disability and Rehabilitation: 22*: 10 456-463.

O'Conner, B. (2001-10-27). The Institute of Disability Studies. http://acqol.deakin.edu.au/introduction/perspectives/oconnor.htm

Rosenblatt & Attkisson (1993). In M.J. Atkinson & S. Zibin (1996) Quality of Life Measurement Among Persons with Chronic Mental Illness: A Critique of Measures and Methods. Ottawa: Health Canada.

Wu, A.W., Coleson, L.C., Holbrook, J., and Jabs, D.A. (July 1996). Measuring visual function and quality of life in patients with cytomegalovirus retinitis. The Journal of the American Medical Association.

their life in order to measure the concept of life satisfaction. It has good reliability and validity ratings and is comprised of five quick global scales.

Life 3 (Andrews & Withey, 1976) is a one-item question designed to gauge global life satisfaction. This has been used successfully in New Zealand research with older, disabled populations.

A single quality of life subjective question from the WHOQOL-BREF will also be used and was successfully used in piloting the proposed research. Participants are also asked to list three things, which contribute to and detract from quality of life.

Measures of social support will also be used, as a dimension of quality of life. The Social Support Questionnaire (SSQ) (Sarason, Sarason, Shearin & Pierce, 1983) assesses network size and perceived social support. The measure is comprised of six items. First respondents list people they count on for support in a particular circumstance and then they rate their satisfaction with the support they currently receive. This measure has proven reliability and validity. It has been used widely and in New Zealand and it appears to be one of the best social support scales (Garcia & McCarthy 1995 p. 20). Along with the SSQ, a global question regarding social support as well as questions specifically related to support offered within the Manwatu region.

Conclusion

In attempting to learn about quality of life for individuals or groups, it is clear that there is much work to be done in developing and standardising appropriate measures. In this brief review of some quality of life, life satisfaction, social support and well being measures I have outlined criteria for selecting measures for my proposed study and determined that measures of general or health related quality of life do not meet the needs for this survey. Instead, several dimensions of quality of life have been determined to be most important to examine, and measures of social support and life satisfaction have been selected for use.

Andrews & Withey (1976, p. 5) say of quality of life that "the more usual meaning is related to the environment and to the external circumstances of an individual's life....but they form only a limited aspect of the sum of satisfaction that make life worthwhile".