Life satisfaction and quality of life of older New Zealanders with and without impaired vision: a descriptive, comparative study

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Published online: 21 August 2008
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Abstract A study involving older New Zealanders (aged 65+) explored levels of life satisfaction reported by groups with and without impaired vision as well as factors contributing to and detracting from quality of life (QOL). Those with impaired vision ($n = 135$) had a visual acuity of 6/24 (i.e., 20/80) or worse in the better eye with corrective lenses, or a field of vision not greater than 20° at its widest diameter and had a mean age of 82.3 (SD = 6.76). Those with no significant impairment of vision ($n = 425$) were able read newsprint and legally drive and had a mean age of 74 (SD = 6.49). Overall, those with impaired vision reported a significantly lower level of life satisfaction in comparison to their sighted peers. There was a significant interaction effect of vision status and age, such that those with impaired vision aged 85+ reported life satisfaction scores higher than those reported by their sighted peers. Family and friends emerged as most important contributors to QOL for the vision-impaired group, where good health was the primary contributor to those with sight. Detractors to QOL reported by those with impaired vision included poor vision, inability to drive and poor health. Those with no significant impairment of vision reported poor health, physical impairment and poor finances detracted from QOL. Results could enable ageing and rehabilitation service providers to design rehabilitation programmes addressing areas reported to be most important to older adults with and without impaired vision.

Keywords Ageing · Activities of daily living · Vision impairment

Introduction

Quality of life (QOL) is emerging as a central construct within many disciplines. QOL measures are particularly difficult to utilise in quantitative studies due to the contention and debate about defining QOL. More recently, QOL research has extended the traditional objective measures of health, wealth and social functioning to include subjective perceptions of well-being (Aberg et al. 2005; Good 2001). Because subjective dimensions of life are more commonly being recognised as important in the field of rehabilitation (Scherer and Cushman 2001) this paper focuses on subjective aspects of QOL so that assumptions are not made about the impact of impairment upon one's life: as Horowitz (2004) noted, for older people with impaired vision, reduced QOL is not inevitable. Life satisfaction (LS) is initially examined in this study, as it has been identified as a measurable, subjective dimension of QOL for older people (Chachamovich et al. 2006). Because the ideal multi-dimensional instrument for measuring QOL in older people has not yet been developed (Aberg et al. 2005; Chachamovich et al. 2006; Gough 1994), this paper further explores potential components for future development of QOL scales for older people with and without impaired vision. The use of open-ended questions provides a unique, cultural and disability subgroup perspective on relevant components of QOL.

Research has demonstrated clear links between impaired vision and depression, communication breakdown, psychological dysfunction, decreased well-being and QOL, mood and social relationships in those aged 65+

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(Carabellese et al. 1993; Crews and Campbell 2001; D'Argent-Molina et al. 1996; Heine and Browning 2002; Horowitz 2003; Horowitz et al. 2000; Stuen 1990; Williams et al. 1998). Links have also been drawn between vision impairment and lower levels of LS (Burmedi et al. 2002a, b).

Research linking impaired vision, age and LS include a study by Heyl and Wahl (2001) that found older people with impaired vision reported a lower score on overall LS in a study comparing them to their sighted peers. Davis et al. (1995) also found evidence of this and attributed this to lack of social support. Reinhardt (1996) used regression analysis to predict LS in older people with impaired vision. After controlling for social support, socio-economic status and physical functioning levels, significant vision impairment was found to be a predictor of low LS, as measured by the Life Satisfaction Index-A (Adams 1969).

Literature on ageing suggests that the majority of older people age with some diminished functioning, but little loss of satisfaction, happiness, independence and meaningful activity. This perspective is evident in the “successful ageing” literature where research has shown that older adults adapt to new situations and expectations of success (Freund and Baltes 1998). Heyl and Wahl (2001) found that both the vision impaired and sighted groups reported a decline in overall LS, however, several studies have found that LS actually improved with age in those aged 65+ (Hamarat et al. 2002; Hileras et al. 2001). Moreover, Diener (1984) found LS generally improves after about age 40. These researchers hypothesised that this apparent improvement is likely related to personality, resilience and improved coping mechanisms that come along with accumulated life experience.

There is compelling evidence that QOL and LS are negatively affected by living with impaired vision. There is also evidence that QOL and LS may improve with age, and that age can buffer the negative impact of a serious health-event, such as acquiring a severe vision-impairment (Wurm et al. 2008). However, what is not known is specifically, why impaired vision detracts from QOL, how increasing age, in combination with impaired vision, may affect QOL and LS and what specific factors will be identified by those with and without impaired vision that have positive and negative impacts on QOL.

Previous research on QOL for older people has often involved statistical correlations between variables and measures of well-being and multiple regressions. This has created only an incomplete picture and does not explain the variance in LS or the more personal and culture-specific responses to QOL. No identified previous research has explored the question about what contributes to and detracts from QOL for older-age groups using open-ended questions and comparing responses of vision impaired to

sighted older respondents. QOL has recently been summarised by Bowling and Gabriel (2004) as being comprised of psychological characteristics and outlook, health and functional status, personal and neighbourhood social capital, financial situation and independence. It is not known if these components are valued in similar ways by the age groups often used in research with older people (65–74; 75–84 and 85+), in a New Zealand context, or with those living with significant vision-impairment.

Rehabilitation is often targeted to improve activity and independence levels of blind and vision-impaired adults. In light of the growing evidence that aspects other than activity and independence are more closely related to QOL and LS (Good 2005b; Kim 1997), further research is needed so that rehabilitation goals can be reassessed carefully to ensure optimal outcomes.

The present study is designed to further research in this context by examining two ideas. Do older adults with impaired vision report a different level of LS compared to their sighted peers across three age groups? And further, this study used descriptive findings to identify factors affecting QOL for an older population, with and without impaired vision.

Methods

The study involved a questionnaire distributed to all those registered with the sole provider of vision rehabilitation services in New Zealand (NZ), the Royal New Zealand Foundation of the Blind (RNZFB) aged 65+ living in the community (non institutional homes) in the Manawatu region of the North Island of NZ ($N = 312$). Participants classified as having impaired vision had a visual acuity of 6/24 (i.e. 20/80) or worse in the better eye with corrective lenses, or a field of vision not greater than 20° at its widest diameter (RNZFB 2004). Participants with no significant impairment of vision were recruited through the voter registration roll. A total of 800 questionnaires were sent to randomly-selected registered voters, aged 65+ who lived in the community. Voter registration is mandatory in NZ and so this results in a representative sample. A total of 560 surveys were completed (50% response rate); 135 respondents had impaired vision (43% response) and 425 had no significant impairment of vision (not eligible for RNZFB registration and able to read newsprint and to legally drive) (53% response). This study received approval from the Massey University Human Ethics Committee.

Materials were made available in the format preferred by each individual (Braille, large print, cassette recording, electronic disc), and telephone and face-to-face assistance was offered to all participants. Demographic details of participants are provided in Table 1.

Table 1 Demographic details

	Vision impaired <i>N</i> = 135		Sighted <i>N</i> = 425	
	<i>n</i>	%	<i>n</i>	%
Age (years)				
65–74	16	12	242	57
75–84	68	50	150	35
85+	51	38	33	8
Gender				
Male	46	34	194	46
Female	89	66	231	54
Ethnicity				
New Zealander of European descent	121	90	383	91
New Zealander of Maori descent	5	4	15	4
New Zealander of Pacific Island descent	1	1	0	0
Other (includes European, Asian, Indian, Pacific Islander, Australian and North American)	8	6	23	5
Missing data	0	0	4	1
Size of community				
Urban area	125	93	347	82
Rural area	10	7	78	18
Current living situation				
Alone	68	50	139	33
With others	67	50	286	67
Marital status				
Married	56	41	274	65
Not-married	9	7	35	8
Widowed	70	52	115	27
Missing data	0	0	1	0.2
Occupation/former occupation				
Homemakers	44	34	100	24
Legislators, administrators, managers	4	3	14	3
Professionals	11	8	72	18
Associate professionals, technicians	9	7	16	4
Clerks	11	8	49	12
Service and sales workers	11	8	28	7
Agriculture and fishery workers	14	11	38	9
Trades workers	12	9	54	13
Plant and machine operators, assemblers	10	8	20	5
Elementary occupations	4	3	17	4
Missing data	5	4	17	4
Educational qualification				
No school qualification	59	45	155	37
School certificate passes	24	18	83	20
Matriculation/University entrance+	13	10	26	6
Trade apprenticeship, professional certificate or diploma	23	18	86	21
Government exams for public service	7	5	17	4
University qualification	5	4	47	11
Missing data	4	3	11	3

(Good 2005a, b)

Instruments used in the study

Demographics

The brief demographic questionnaire asked for details regarding date of birth, gender, ethnic identity, size of community, living situation, marital status, former occupation, income, education and impairment/health status. Questions were adapted from the New Zealand Census of Populations and Dwellings (Statistics New Zealand 2001). Coding was categorical.

The satisfaction with life scale

The Satisfaction With Life Scale (SWLS) (Diener et al. 1985) is a five-item scale of subjective well-being. The items require a response on a 7-point scale from strongly disagree to strongly agree. The questions are:

- In most ways my life is close to the ideal.
- The conditions of my life are excellent.
- I am satisfied with my life.
- So far I have achieved the important things I want in my life.
- If I could live my life over again I would change nothing.

The scale has reported internal consistencies of 0.85 and test–retest coefficients of 0.84, and has been validated using other independent LS measures including the Philadelphia Geriatric Morale Scale (Headey et al. 1993; Pavot and Diener 1993). Diener et al. (1985) obtained a Cronbach's alpha score of 0.87 for the SWLS. In the present study, an alpha of 0.84 was obtained. Scores can range from 5 to 35 with higher scores indicating a higher level of LS. This measure was found to be highly correlated with both the Life 3 (Andrews and Withey 1976) and the World Health Organization's WHOQOL-BREF one-item global scale (WHO 1993) ($r > 0.525$) with this population (Good 2005a). This measure has been successfully used in NZ with older, vision-impaired populations in NZ (Good et al. 2003). Other measure of well-being were less-suited to this analysis as the five-item SWLS is considered to be more robust than the one-item measures, and participants were reluctant to respond to the Positive and Negative Affect Scale, also used at the time of data collection.

Open-ended questions

Participants were asked to list three things that contributed to their QOL and three things that detracted from their QOL. Responses were coded into unique, mutually-exclusive categories after data had been collected and reviewed. Data was coded inductively and based on specific

observations rather than based on theory or general observations. Two research assistants worked simultaneously with the author in creation of the code book and in coding the data from the first 50 questionnaires, as a reliability measure. The author then completed the coding of all open-ended questions, eliminating concerns about intercoder reliability.

Social support questionnaire (SSQ)

The Social Support Questionnaire (SSQ) (Sarason et al. 1987) 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 0.90 to 0.93 (Siebert et al. 1987). In this study, alphas of 0.95 (part A) and 0.97 (part B) were obtained.

Results

Demographics

Demographic factors were examined and comparisons made between those with impaired vision and those with sight. There was no significant difference between the vision-status groups in terms of level of education: $\chi^2(5, n = 545) = 10.24, p = 0.069$, previous occupation $\chi^2(9, N = 538) = 15.19, p = 0.086$, or median income (Mann-Whitney $U = 15,776.5, p = 0.636$). The majority in both vision-status groups was 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 NZ European between the group with impaired vision and the sighted group $\chi^2(1, n = 504) = 0.018, p = 0.767$. There were no significant differences between the two groups in social support network size or social support satisfaction using two-way between-groups ANOVA [$F(1, 430) = 0.204, p = 0.652$] [$F(1, 363) = 3.82, p = 0.052$].

There were differences found between the vision-status groups on several demographic measures. Age was then used as a control. There were no significant differences between the vision status groups in proportions of males to females found in any of the three age groups [age

group 1: $\chi^2(1, N = 258) = 0.208, p = 0.649$; age group 2: $\chi^2(1, N = 218) = 3.58, p = 0.058$; age group 3: $\chi^2(1, N = 84) = 0.116, p = 0.734$. Nor were significant differences found between the vision-status groups in numbers of impairments or health conditions (other than vision) [age group 1: $t(14.82) = 1.21, p = 0.246$; age group 2: $t(206) = 0.147, p = 0.883$; age group 3: $t(79) = -0.310, p = 0.757$; in the proportion of those who lived in main urban areas: [age group 1: $\chi^2(1, N = 258) = 0.000, p = 1$; age group 2: $\chi^2(1, N = 218) = 1.97, p = 0.159$; age group 3: $\chi^2(1, N = 84) = 0.084, p = 0.772$]; marital status (married or unmarried/widowed) [age group 1: $\chi^2(2, N = 258) = 1.36, p = 0.564$; age group 2: $\chi^2(2, n = 217) = 2.08, p = 0.370$; age group 3: $\chi^2(2, N = 84) = 1.41, p = 0.683$]; nor in the proportion of those who lived alone or with others [age group 1: $\chi^2(1, N = 258) = 0.029, p = 0.769$; age group 2: $\chi^2(1, N = 218) = 4.58, p = 0.498$; age group 3: $\chi^2(1, N = 84) = 0.188, p = 0.664$].

The group with impaired vision ($M = 82.3, SD = 6.76$) was significantly older than the sighted group ($M = 74, SD = 6.49; t(558) = 12.86, p = 0.000$). The effect size was large ($\eta^2 = 0.228$).

In summary, there were no statistically significant demographic, impairment or social-support differences between the group with impaired vision and the group with no significant impairment of vision, except for age. Therefore, for the analyses of variance (ANOVA) the sample was divided into three age-groups as a measure of control. Age group 1 included those aged 65–74; age group 2, 75–84; age group 3, age 85+.

Of those with impaired vision, 84% ($n = 108$) had lost vision after age 65, and 81% had lost vision within the past 10 years, meaning late-life onset of vision impairment is primarily what is being investigated in this study.

A two-way between-groups ANOVA was conducted to explore the relationship between vision status, age and satisfaction with life as measured by the Satisfaction With Life Scale (SWLS).

Participants were divided into the three age-groups. The main effect of age on satisfaction with life was not statistically significant [$F(2, 471) = 2.31, p = 0.100$]. There was a highly significant main effect for vision status on LS [$F(1, 471) = 13.57, p = 0.000$]. The effect size was small (partial $\eta^2 = 0.028$). The mean satisfaction with life 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 [$F(2, 471) = 5.40, p = 0.005$]. The effect size was small (partial $\eta^2 = 0.022$). 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-groups 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 groups 2 and 3 ($M = 19.58, SD = 6.96; M = 24.49, SD = 5.76$), respectively, where those in age group 3 had a higher level of LS. Age group 1 of those with impaired vision ($M = 18.73, SD = 9.16$) did not differ significantly from age group 2, nor did it differ significantly from age group 3. This is likely explained by the higher standard-deviation in the younger age group. Details of the ANOVA are shown in Table 2.

In summary, the group with impaired vision did report a lower score in LS. Upon further analysis, however, there was an interaction effect of age and vision status on LS such that group with impaired vision in the oldest age group demonstrated no significant difference in LS in comparison to their sighted peers, as had been observed at the younger age groups.

Vision impairment clearly has a negative relationship with well-being. What is still unknown is just which aspects of living with a vision impairment is related to lower LS or QOL. Within this study 500 participants provided 1,412 responses to the question "What contributes to your quality of life?". There were 39 coded-response categories with three or more responses. There were 119 vision-impaired respondents and 381 sighted respondents. In general, the sighted group reported that good health (40% of respondents), family (excluding spouse) (39%), spouse (23%), friends (21%), attitude (17%), and independence (17%) contributed to QOL. The vision-impaired group reported that family (excluding spouse) (43%), friends (30%), good health (19%),

Table 2 Main and interaction effects of age and vision status on satisfaction with life

Satisfaction with life*									
Age group	65–74			75–84			85–100		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
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									
		<i>df</i>	<i>M</i> ²		<i>F</i>		<i>p</i>		<i>Eta</i> ²
Age		2	96.09		2.31		0.100		0.010
VI/sighted		1	562.97		13.57		0.000*		0.028
Interaction effect age by vision status		2	223.99		5.40		0.005*		0.022

(Good 2005a)

* $p \leq 0.05$

independence (18%), attitude (17%) and spouse (13%) contributed to QOL. The group of participants with sight reported that their health and spouse contributed to their QOL in significantly greater proportions than their vision-impaired peers mentioned these factors, although a similar proportion of those with impaired vision who had a spouse also reported them to be important contributors to their QOL, and when the three age groups were examined, the youngest of those with impaired vision also mentioned their spouse/partner as an important contributor to QOL.

Unique responses about what contributes to QOL for this NZ population, not found in previous QOL studies, included fitness and exercise, rural living, food, gardening, television, radio, talking books and telephones, animals, ability to get around, music, social clubs, sleep, kindness from others and clean living.

Respondents ($N = 409$) provided 966 responses to the question “What detracts from your QOL?”. Respondents included 115 with impaired vision and 294 without impaired vision. Unique-coded response categories were established ($N = 27$). Those with no impairment of vision provided 677 responses including, poor health (35%), physical impairment (19%), poor finances (17%), family difficulties (15%), and age (13%) were primary detractors from QOL. Those with impaired vision provided 289 responses. Poor vision (81% of respondents), inability to drive (24%), poor health (21%), hearing loss (20%), mobility problems (16%) and physical impairment (13%) were the primary detractors for the vision-impaired group.

Those with impaired vision reported in significantly greater proportions that poor vision, inability to drive and hearing loss detracted from their QOL. Those with sight reported in significantly greater proportions that poor health and finances detracted from QOL.

Other factors mentioned by both groups included lack of confidence, lack of energy, miserable people, weather and inability to garden. Unique detractors to QOL mentioned by those with sight included finances, family worries, ageing, disappointment in others and the current state of the world.

Within each age group, the factors mentioned most often, which contribute to and detract from QOL are listed in Tables 3 and 4. Emerging patterns show health is valued in greater proportions by those with no significant impairment of vision in the older age groups and poor health is disproportionately viewed as a detractor from QOL. Those with impaired vision clearly identified relationships as important to QOL and identified their impairment, as a detractor from QOL, although it is still not clear what aspect of life with impaired vision is perceived as negative.

Table 3 Factors contributing to QOL by age group (identified by >20% respondents)

Age	Vision impaired <i>n</i> = 14	<i>n</i>	%	Sighted <i>n</i> = 218	<i>n</i>	%
65–74	Family	4	29	Family	88	40
	Friends	4	29	Good health	92	42
	Partner/spouse	4	29	Spouse	61	28
	Good health	4	29	Friends	43	20
	<i>n</i> = 61			<i>n</i> = 136		
75–84	Family	31	51	Good health*	52	38
	Friends*	21	34	Family	45	33
				Friends	33	24
	<i>n</i> = 44			<i>n</i> = 27		
85+	Family	16	36	Family	13	48
	Good health	9	20	Good health	11	41

* Proportionally greater than reported by other impairment-group using Standard Error of Proportions (SEP) significant at 0.05

Table 4 Factors detracting from QOL by age-group (identified by >20% respondents)

Age	Vision impaired <i>n</i> = 13	<i>n</i>	%	Sighted <i>n</i> = 155	<i>n</i>	%
65–74	Impaired vision*	10	77	Poor health	53	34
	Independence*	4	31	Finances	41	26
	Mobility	4	31			
	<i>n</i> = 59			<i>n</i> = 113		
75–84	Impaired vision*	47	80	Poor health	40	35
	Inability to drive*	18	30			
	Poor health	15	25			
	<i>n</i> = 43			<i>n</i> = 26		
85+	Impaired vision*	36	84	Poor health*	11	42
	Impaired hearing*	13	30	Mobility	6	23
				Poor vision	6	23

* Proportionally greater than reported by other impairment group using Standard Error of Proportions (SEP) significant at 0.05

Discussion

Life satisfaction is a “conscious cognitive judgment of one’s life in which the criteria for judgment are up to the person” (Pavot and Diener 1993, p. 164). LS is a subjective dimension of QOL that is known to be reliably measurable and is more commonly being recognised as important in the field of rehabilitation.

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 LS in general, have produced scores for older adults that were about 24 on the SWLS (Pavot et al. 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 et al. (1988) who found a mean score of 20 in their sample.

Thus, overall, the findings related to LS are supportive of earlier studies that link vision impairment with lower reported levels of LS and similar measures of well being (Bazargan et al. 2001; Branch et al. 1989; Carabellese et al. 1993; Gillman et al. 1986; Heine and Browning 2002; Reinhardt 1996; Upton et al. 1998; Williams et al. 1998).

However, it was unexpected to find that those with sight reported similar levels of LS in all three age-groups and that a higher level of LS was found in the oldest group with impaired vision. No similar findings have been found in other studies. Previous studies tell us that LS has been found to increase with age, but no study has previously investigated older age groups, and the difference that impaired vision can make in LS. Others have also found that older age groups have higher levels of LS (Hamarat et al. 2002; Hileras et al. 2001). Hamarat et al. found that among healthy, active adults, aged 45+, the oldest old reported LS at least as good as, and better than the younger age groups. These authors attributed this result to resilience of those who have coping resources, which are adequate throughout life, and remain so after age 75. They also surmised that LS, 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 significant differences across age groups were found within the group with impaired vision, or while no such differences were found within the sighted group. It is possible that the explanation lays in another hypothesis of Hamarat et al. that is, that flexibility and cognitive adjustments in coping increase LS and further, that 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. Perhaps we should not expect to find pronounced differences in LS between those with and without impaired vision in the oldest of older adults.

In a study that examined the links between physical health, social comparisons and LS, Frieswijk et al. (2004) found that social comparisons had a greater and independent association with LS than frailty did in older people. This finding is similar to what was found by Good (2005a), in that subjective components of functioning (i.e. social comparisons) were more closely associated with LS than more objective measures (i.e. health or functioning).

As with the current study, 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.

Components of QOL identified by those with and without impaired vision and by the three age-groups often identified in gerontological research, did not reflect what has been found in European countries. Functional status and finances were not identified the current study as they have been consistently in other research (Walker 2005). The subgroup with impaired vision identified relationships with great frequency, while their sighted peers identified health more consistently as a component of QOL. The finding of independence as important to this population is relatively unique in QOL studies. Other studies have found religion/spirituality and financial security themes emerging from data, but these themes did not emerge from this population to any great degree. Components of QOL may need to be broadened to include some identified in this study, such as transport and hearing concerns.

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 finding that the oldest age group with impaired vision reported a relatively high LS score perhaps is as a result of resiliency and accumulated flexibility and skills for coping. This result could also be explained by social comparison theories developed by Festinger (1954) and recently applied in studies relating to older people (Frieswijk et al. 2004). At this age (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 level of LS. At age 85+, 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 LS. People with impaired vision, especially at the oldest age groups, may be more flexible, adapted to dependence, have been compelled by need 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. Time since onset of impairment of vision would seem a logical explanation for the relatively high level of LS at the oldest age, however, even among those age 85+, the average time since onset was 5 years.

There was not a significant main effect for age on LS, but there was an interaction effect of age and vision status on LS, such that at the older age groups there was a lower LS score for the sighted group, but for the group with impaired vision, there were higher LS scores at the older

age groups. Although the practical effects found were relatively small, and possibly explained by the relatively large variance, the effect of vision and the interaction effect of age and vision on LS is an important finding. This could be explained by the evidence that those with sight experience a steady increase, with age, of impairments. Those with impaired vision do not demonstrate this pattern.

Limitations to this study include the use of cross-sectional, rather than longitudinal data, which limits inferences that can be made regarding causality. Generalisability of the findings may be limited, especially as criteria for vision rehabilitation services are less restrictive in NZ than in other parts of the world. Not all people eligible for RNZFB services do register, however this is the only avenue for vision rehabilitation services in the country, and so the vision-impaired sample may represent RNZFB clients, but not necessarily all of those who are older and living with impaired vision. Sample sizes of groups varied significantly, and there was a particularly low number of sighted participants in the youngest age cohort, however, sample sizes represented the general age structure of age groups in NZ and in RNZFB registration statistics. Few participants were able to report their visual acuity and therefore, analysis of the influence of degree of vision loss on QOL was limited. Alternative explanations of these results could be related to skewed scales, unequal group sizes, 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.

Vision impairment clearly has a negative impact on QOL and LS. Ageing does not seem to have such an obvious impact on QOL and LS, and the effects of ageing upon well-being appear to differ for those with impaired vision in comparison to those with sight. Varied aspects of daily living have positive and negative impacts on older people, and those with impaired vision reported that different aspects of life impact QOL, in comparison to their sighted peers. Inability to drive, hear and see is what those with impaired vision reported frequently detract from QOL, and good relationships, good health, independence and a positive attitude contribute most to life. Older people with no significant impairment of vision emphasised finances, ageing and the current state of the world as detractors from QOL. These identified factors could be further utilised in the development of QOL measures for older people, and for those who have impaired vision. Services to older people could be informed by this study. Alternative modes of transport, assistance for hearing loss and methods for cultivating, maintaining and appreciating relationships could be prioritised, as they are the factors that are viewed as important to QOL for this population.

Acknowledgments This paper is based primarily on doctoral research, conducted under the supervision of Professor Steven J. La Grow and Dr. Fiona M. Alpass, of Massey University, Palmerston North, New Zealand. Thanks to Wayne State University's Institute of Gerontology in Detroit, Michigan, USA and to Drs. Peter Lichtenberg, Catherine Lysack and Tom Jankowski who provided supervision and support to the author, who was a 2006 post-doctoral fellow at the IOG.

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