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Disability and Psychosocial Outcomes in Old Age

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Objective: This article explores psychosocial variables associated with illness and age-related losses during old age. **Method:** The study is cross-sectional and comprised 999 people aged 65 and older. The variables included health problems and limitations, self-perceptions of health, optimism, and quality of life. **Results:** In general, people aged 80+ years show high prevalence of health problems and disability, good self-perception of health, and quality of life. However, among the oldest age group, those in better health were more optimistic, but more problems meant lower self-perception of health, quality of life, and optimism. **Discussion:** This does not fully confirm the *disability paradox* (high disability and high optimism and self-perception of quality of life). The dual-process coping model helps to understand the results of our study: First is an attempt to avoid losses; afterward, people lower goals and standards to meet constraints and foster adaptation.

Keywords: *aging; disability; health perception; optimism; quality of life*

Policies and programs to prevent or delay disability among older people are needed to avert the predicted rise in chronic diseases associated with population aging. In developed regions, people aged 80 years and older constitute 3% of the population and are the fasted-growing segment of the

Authors' Note: Bristol is the lead center of the Medical Research Council Health Services Research Collaboration. We are grateful to the Office for National Statistics for conducting the field survey as part of the omnibus survey program. Professor Ann Bowling, Professor John Bond, and Professor Christina Victor are coinvestigators in this omnibus survey. C. P. and S. E. developed the study aim and design. S. A. undertook the analyses. C. P. coordinated writing of the article. All authors contributed to the final version. The work was funded by a Medical Research Council program grant. Please send correspondence to Dr. Constança Paúl, UNIFAI, ICBAS, University of Porto, Lg. Prof. Abel Salazar, 2, 4099-003 Porto, Portugal; e-mail: constancapaul@netcabo.pt.

aged population (World Health Organization, 2002). This age boundary is said to mark the transition from the third to the fourth age, which takes place when 50% of the people who have reached age 50 or 60 have died, which is between 80 and 85 years (Baltes & Smith, 2002).

The incidence and prevalence of a number of possibly life-changing, disability-provoking medical conditions increase with age (e.g., Verbrugge & Jette, 1994). There is considerable debate about whether this growing population of older adults will be characterized by a compression of morbidity, with disease and disability postponed to later ages (Fries, 1980), or whether people will simply live longer with greater burdens of disease and disability, corresponding to the expansion of morbidity hypotheses (Kramer, 1980). Data from the United Kingdom support the expansion theory, but if levels of disability are differentiated, then more recent cohorts of old people have lower levels of severe disability but high levels of poor self-perceived health (Jagger, 2000).

According to Verbrugge and Jette (1994), the disablement process includes pathology, impairment, and functional limitations and disability (i.e., difficulty performing activities in a domain of life typical for one's reference group). The process by which a person becomes disabled can be characterized as a set of interactions between dysfunction and psychological and environmental factors (Caplan & Schooler, 2003).

To adapt to the challenges of getting older, people have to cope with illness and age-related losses. The range of possible outcomes of the aging process is sufficiently large to include completely different trajectories in specific domains of functioning above and below a disability threshold. Evidence from the Berline Aging Study (Baltes & Mayer, 1999) shows accumulation of chronic problems in the fourth age (80+) and reduced potential to compensate for losses, owing to cognitive decline and higher levels of frailty.

With chronic diseases and irreversible losses in old age, there is a commonsense idea prevalent among younger health professionals that this should have a negative impact on subjective well-being. However, that some people maintain their well-being, despite disability, has been termed the *disability paradox* (Albrecht & Devlieger, 1999). In general, there is a considerable degree of stability in measures of life satisfaction, self-esteem, and depression during middle and later adulthood (Rothermund & Brandtstadter, 2003). On average, older people experience fewer negative emotions and have more positive ones than do younger people. There is a relatively low prevalence of virtually all the psychological disorders among older adults, including anxiety disorders and major depression (Carstensen, Isaacowitz, & Charles, 1999; Jeste et al., 1999).

In this study, we assume that the disablement process is a behavioral response of older people who are threatened by impairment or age-related loss. Despite higher disability and age-related losses during old age, some people succeed in keeping positive emotions. A deeper knowledge of the association between disability and psychosocial variables will help to formulate supportive strategies to increase well-being during old age.

The aims of this study are twofold: first, to identify, among three age groups of old people, self-reported health problems and disability, perceived health condition, and optimism and quality of life; second, to explore the relation between reported health, disability, and psychosocial variables in old age.

Methods

Study Sample

Data were used from the Economic and Social Research Council/ Medical Research Council Health Services Research Collaboration Quality of Life Survey, a specially commissioned omnibus, cross-sectional survey of adults aged 65+ years who were living in private households in Great Britain and who had taken part in a previous omnibus survey. The omnibus survey used a sample frame derived from the postcode address file of small users, which includes all private addresses. For each of four consecutive omnibus surveys conducted quarterly over 12 months, a sample of 100 postal sectors were selected and stratified by region, local authority rented accommodation, and socioeconomic group. Within each sector, 30 addressees were selected randomly, and random procedures were used by trained interviewers to select one household. Of 12,000 addresses selected, 10,909 proved to be eligible private households, and from these, 6,711 adults were interviewed (a 62% response rate). Of these, 1,598 were aged 65 years and older and were invited to take part in the subsequent survey. Of these, 1,299 were available, agreed to a further interview, and were contacted 2 months later. A total of 999 interviews were completed, representing 77% response rate of those available and willing to take part. The survey was conducted in four equal waves during July, September, and November–December 2000 and February 2001. All waves provided approximately equal numbers of respondents. Participants were interviewed using a structured questionnaire format by trained interviewers using a laptop computer; more details were reported in previous study (Ayis, Gooberman-Hill, & Ebrahim, 2003). The age range of the sample was 65–97 years with a mean age of 73.2 (SD = 6.4); 48.2% of the sample were women. Our sample had fewer women than would be expected: In

the general population, about 58% of people older than 65 years are women. Selection bias may operate by excluding sicker women or the healthier women who are too busy to take part. Although such bias may make estimates of the prevalence of specific conditions unreliable, it is unlikely to have influence on associations between explanatory variables and outcomes. In addition, estimates of major outcomes, such as those involving long-standing illness and limiting long-standing illness, were in good agreement with those of the General Household Survey (see Ayis et al., 2003), which suggests that selection bias is unlikely to have an effect on our estimates. For the purpose of this study, the sample was divided into three age groups: Group 1, aged 65 to 69 ($M = 66.9$, $SD = 1.5$); Group 2, aged 70 to 79 ($M = 74.1$, $SD = 3.0$); and Group 3, aged 80 years and older ($M = 85.1$, $SD = 3.7$).

Measures

A range of questions was asked about demographics, quality of life, optimism–pessimism, psychological distress, loneliness, health perception, activities of daily living, use of aids and appliances, amenities of the local area, social activities, and social networks. All the variables entering into the analysis were recoded by dichotomizing those that report positive feelings on one side and those that report neutral and negative feelings on the other side, to better discriminate those with strong positive feelings. The variables used in this analysis were grouped into four areas.

Self-reported health problems and disability. This area comprised five questions:

1. "Number of health problems" (0–1, 2–3, 4–5, 6+). Dummy variables were employed with the number of health problems, where the group with no health problems was considered a reference group. This variable was obtained from responses to a checklist that asked participants whether they had ever been diagnosed with any listed common condition (e.g., cancer, diabetes, high blood pressure, stroke, asthma, osteoporosis, rheumatoid arthritis, depression).
2. "Do you have any long-standing illness, disability, or infirmity?" (yes = 1, no = 2).
3. "Does this illness or disability limit your ability to look after yourself in any way?" (yes = 1, no = 2).
4. "Does this illness or disability limit your participation in social activities?" (yes = 1, no = 2).
5. "I am now going to ask you whether or not you have any difficulty in doing any of the following activities?" (i.e., activities of daily living; yes = 1,

no = 2)—for example, "being able to walk at least 400 yards," "tie a bow in shoelaces," "see well enough to read a newspaper," "get on a bus."

Self-perception of health. This section included three questions:

1. "In general, compared with other people your age, would you say that your current health is . . . ?" (1 = *excellent*, 2 = *very good*, 3 = *good*, 4 = *fair*, 5 = *poor*). This variable was recoded by combining the answers *excellent*, *very good*, and *good* on one side and *fair* and *poor* on the other.
2. "Compared with how you expected your health to be at this time in your life, is your current health . . . ?" (1 = *better than you expected*, 2 = *the same as you expected*, 3 = *worse than you expected*). This variable was recoded by keeping *better than you expected* on one side and the latter two on the other.
3. "Please say whether you think the chances of living to be 100 years old are higher, about the same, or lower than other men/women of your age in Britain" (1 = *higher*, 2 = *about the same*, 3 = *lower*). This variable was recoded by keeping *higher* on one side the answers and *about the same* and *lower* on the other side.

Psychological aspects on optimism–pessimism. This area included two questions:

1. "In uncertain times I always expect the best" (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, 5 = *strongly agree*).
2. "Things never work out the way I want them to" (1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, 5 = *strongly agree*). Both items were recoded by combining *agree* and *strongly agree* on one side and the other categories on the other side.

Quality of life. These variables were dichotomized by keeping those that report positive feelings on one side and those that report neutral and negative feelings on the other side:

1. "Again, thinking about the good and bad things you have mentioned that make up your quality of life, which of the answers on this card best describes the quality of your life as a whole?" (1 = *so good it could not be better*, 2 = *very good*, 3 = *good*, 4 = *alright*, 5 = *bad*, 6 = *very bad*, 7 = *so bad that could not be worse*); for this study, *good quality of life* corresponds to those who answer any of the first three answers.
2. "Thinking about the things you have done in your life and the things you would like to have done, which statement on the card best applies to you?" (1 = *I have done none of the things I wanted in life*, 2 = *I have done few of*

the things I wanted in life, 3 = *I have done some of the things I wanted in life*, 4 = *I have done most of the things I wanted in life*, 5 = *I have done everything I wanted in life*). The variable *done things wanted in life* corresponds to the latter two answers: having done most or everything wanted in life versus all the others.

3. "I would like you to think about your current living conditions and your financial situation. Compared with what you had when you were in your forties, which of these statements best applies to you?" (1 = *I am a lot worse off*, 2 = *I am a little worse off*, 3 = *I am neither worse nor better off*, 4 = *I am a little better off*, 5 = *I am a lot better off*). The variable *well off compared to forties* combined the fourth and fifth answers on one side and the other three answers on the other.
4. "Compared with those around you (those like yourself and who you compare yourself with), which statements best applies to you?" (1 = *I am a lot worse off*, 2 = *I am a little worse off*, 3 = *I am neither worse nor better off*, 4 = *I am a little better off*, 5 = *I am a lot better off*). The variable *well off compared to others* combined the fourth and fifth answers on one side and the others answers on the other side.
5. "And compared with what you expected you would have at this time in your life when you were in your forties, would you say you had . . . ?" (1 = *more than you expected*, 2 = *about the same as you expected*, 3 = *less than you expected*). The variable *well off compared to expected* corresponds to those who answered *more than you expected* versus all the others.

Data Analysis

The logistic regression model was first used to investigate the association between age groups and self-reported health problems (health problems ≥ 4) and disability (long-standing illness, limitation of self-care, limitation in social participation, difficulties in activities of daily living). The model was used with the health problems and disability as outcomes and age group as an explanatory variable to establish the frequency of health problems and disability across age groups adjusting for gender.

Associations between self-perception of health, psychological aspects (optimism–pessimism), quality of life (outcomes), and a set of selected potential explanatory variables, which were all categorical, were then explored using logistic regressions. Although age was originally reported as being continuous, its distribution deviated from normal, and we used a categorical form with two dummy variables used as indicators for two age groups, 70–79 and 80+. The 65–69 group was used as a reference group.

The explanatory variables included age, gender, number of health problems, long-standing illness, limitations in self-care and social participation, and activities of daily living. Because of high correlations between health and

disability variables, we included them one at a time in the model. For each dependent variable, we had separate models with age, gender, and one of the explanatory variables. Adjustment was made for all the variables included in the models.

Results

Self-Reported Health Problems and Disability

The prevalence of people having four or more health problems increased with age from 14% in the 65–69 group to 37% in the 80+ group (Table 1). The oldest group was 3.7 times more likely to report four or more illnesses (OR = 3.7, 95% CI = 2.4, 5.7) than the group of people aged 65–69. The prevalence of long-standing illness was very high in all three groups, ranging between 60% and 66%. Limitations in self-care increased with age, from 19% in the youngest group to 36% in the oldest. Similarly, limitations in social participation increased with age. Reports of social limitations increased from 35% to 53% and were more common than reports of limitations in self-care. Having difficulty in at least one activity of daily living was common, with 45% of people aged 65–69 reporting this and with numbers rising to 60% of those 70–79 and to 86% of those 80 years and older. Almost all the activities of daily living were more difficult for the oldest age group, although these varied according to item. For instance, only 5% of people reported difficulties in being able to count well enough to manage money, whereas 70% reported having difficulties in going shopping and carrying heavy bags. After controlling for gender, age did not have any relationship with the odds of long-standing illness (OR = 1.1, 95% CI = 0.8, 1.5, for the group aged 70–79 years; OR = 1.3, 95% CI = 0.9, 1.9, for the group aged 80+ years). By contrast, reported limitations in self-care were 2.3 times (95% CI = 1.4, 3.9) more likely in the oldest group than in the youngest group. Limitations in participation in social activities were also more likely in the oldest group than in the youngest group (OR = 2.1, 95% CI = 1.3, 3.4). Difficulties in activities of daily living were 10.3 times more likely (95% CI = 5.5, 19.3) in the oldest group than in the youngest group.

Self-Perception of Health

When asked to compare their health with their peers, more than two thirds of respondents rated their health as *good*, *very good*, or *excellent* (Table 2). This showed a slight decrease with age, although one not reaching statistical

(text continues on page 733)

Table 1
Associations Between Age Groups and a Range of Self-Reported Health Problems and Disability

	Health Problems (≥ 4)		Do You Have Any Long-Standing Illness, Disability, or Infirmity? (Yes)		Limitation of Self-Care (Yes)		Limitation in Social Participation (Yes)		Difficulties in Activities of Daily Living (Yes)	
	n (%)	Adjusted OR, 95% CI	*n* (%)	Adjusted OR, 95% CI	*n* (%)	Adjusted OR, 95% CI	*n* (%)	Adjusted OR, 95% CI	*n* (%)	Adjusted OR 95% CI
65–69	47 (14)	1	203(60)	1	39 (19)	1	70 (35)	1	155 (45)	1
70–79	118 (24)	2 (1.4, 2.8)*	303 (62)	1.1(0.8, 1.5)	82 (27)	1.5 (1.0, 2.4)*	134 (44)	1.5 (1.0, 2.1)*	292 (60)	1.8 (1.3, 2.4)*
80 +	62 (37)	3.7 (2.4, 5.7)*	110 (66)	1.3 (0.9, 1.9)	39 (36)	2.3 (1.4, 3.9)*	58 (53)	2.1 (1.3, 3.4)*	142 (86)	10.3 (5.5, 19.3)
Gender (W)	120 (25)	0.8 (0.6, 1.0)	309 (64)	0.8 (0.6, 1.1)	90 (29)	0.7 (0.5, 1.0)	127 (41)	1.1 (0.8, 1.5)	367 (77)	0.4 (0.3, 0.6)*

Note: Odds ratio (OR) adjusted for gender. CI = confidence interval.
*$p < .05$.

Table 2
Associations Between Self-Perception of Health and a Range of Health and Disability Variables

	Health Compared Others		Health Compared Expected		Chance to Live to Be 100 Years	
	Excellent, Very Good, Good	Adjusted OR, 95% CI	Better	Adjusted OR, 95% CI	Higher	Adjusted OR, 95% CI
Age/gender						
65–69	$n = 265$ (78%)	1	84 (25)	1	32 (10)	1
70–79	344 (71)	0.7 (0.5, 0.9)*	147 (30)	1.3 (1.0, 1.8)	90 (18)	2.1 (1.4, 3.2)*
80+	110 (73)	0.8 (0.5, 1.2)	66 (39)	2 (1.3, 2.9)*	41 (20)	2.4 (1.4, 4)*
Women	363 (76)	1	138 (29)	1	81 (17)	1
Men	366 (71)	0.8 (0.6, 1.0)	159 (31)	(0.8, 1.5)	74 (14)	0.8 (0.6, 1.2)
Health problems						
No	206 (90)	1	87 (37)	1	46 (18)	1
1	244 (81)	0.8 (0.3, 1.9)	96 (32)	0.9 (0.5, 1.4)	46 (15)	0.7 (0.4, 1.3)
2–3	242 (66)	0.2 (0.08, 0.4)*	94 (26)	0.7 (0.5, 1.1)	57 (15)	0.7 (0.4, 1.2)
4–5	36 (47)	0.1 (0.04, 0.2)*	19 (25)	0.5 (0.3, 0.9)*	5 (7)	0.5 (0.2, 0.9)*
6+	1 (6)	0.04 (0.02, 0.1)*	1 (6)	0.5 (0.2, 1.1)	1 (6)	0.4 (0.1, 1.0)
Long-standing illness						
Yes	374 (61)	0.1 (0.08, 0.2)*	154 (25)	0.5 (0.4, 0.7)*	80 (13)	0.6 (0.4, 0.8)*
No	353 (93)		143 (38)		75 (20)	

(continued)

Table 2 (continued)

	Health Compared Others		Health Compared Expected		Chance to Live to Be 100 Years	
	Excellent, Very Good, Good	Adjusted OR, 95% CI	Better	Adjusted OR, 95% CI	Higher	Adjusted OR, 95% CI
Limited self-care						
Yes	48 (30)	0.2 (0.2, 0.4)*	21 (13)	0.4 (0.2, 0.6)*	15 (9)	0.6 (0.3, 1.2)
No	327 (72)		133 (29)		65 (14)	
Limited social participation						
Yes	105 (41)	0.3 (0.2, 0.5)*	51 (20)	0.8 (0.5, 1.2)	28 (11)	0.8 (0.4, 1.3)
No	269 (76)		102 (29)		52 (15)	
Difficulties in activities of daily living						
Yes	427 (64)	0.1 (.07, 0.2)*	179 (27)	0.5 (0.4, 0.7)*	99 (15)	0.6 (0.4, 0.9)*
No	294 (93)		113 (36)		56 (18)	

Note: Odds ratio (OR) adjusted for age group and gender. CI = confidence interval.
*$p < .05$.

significance. To assess the effect of age on the self-perception of health, we controlled for gender. Reporting good health compared with others was negatively associated with age, particularly in the group 70–79 years old (OR = 0.7, 95% CI = 0.5, 0.9). Besides age, the other variables associated with self-perception of good health as compared with others were the number of health problems reported, which showed a graded inverse association. Long-standing illness (OR = .10, 95% CI = .08, .20), limitations in self-care (OR = 0.2, 95% CI = 0.2, 0.4) and in social participation (OR = 0.3, 95% CI = 0.2, 0.5), and difficulties in activities of daily living (OR = .10, 95% CI = .07, .20) were also strongly inversely associated with self-perceived good health.

Better-than-expected health during old age was reported by 25% of the group 65–69 years old and by 39% of people 80+ years old. Reporting better health than expected was 2 times more likely for the group 80+ years (OR = 2.0, 95% CI = 1.3, 2.9) than it was for the 65–69 age group. Reporting better health compared to expected was negatively associated with having four to five health problems (OR = 0.5, 95% CI = 0.3, 0.9), long-standing illness (OR = 0.5, 95% CI = 0.4, 0.7), difficulties in activities of daily living (OR = 0.5, 95% CI = 0.4, 0.7), and limitations in self-care (OR = 0.4, 95% CI = 0.2, 0.6).

Participants' estimates of their chances of living to be 100 years old, when compared with others, showed an increase with age; those aged 80+ years were 2.4 times (95% CI = 1.4, 4.0) more likely than those aged 65–69 years to report that they thought that they would live to 100 years of age. Expecting to live to be 100 years old was negatively associated with having four to five health problems (OR = 0.5, 95% CI = 0.2, 0.9), long-standing illness (OR = 0.6, 95% CI = 0.4, 0.8), and difficulties in activities of daily living (OR = 0.6, 95% CI = 0.4, 0.9).

Psychological Variables (Optimism–Pessimism)

Regarding responses to the item "In uncertain times I always expect the best" (Table 3), there was an increased prevalence of optimism from 49% in the 65–69 group to 62% in the 80+ group (OR = 1.7, 95% CI = 1.2, 2.5). Having six or more health problems was negatively associated with a positive outlook on life (OR = 0.4, 95% CI = 0.2, 0.8).

The item "Things never work out the way I want them to" showed that optimism decreased with age from 63% in the age group 65–69 years old to 46% in the group 80+ years (OR = 0.5, 95% CI = 0.4, 0.8). This item was negatively associated with having six or more health problems (OR = 0.3, 95% CI = 0.1, 0.6). Long-standing illness (OR = 0.6, 95% CI = 0.4, 0.8), limited self-care (OR = 0.5, 95% CI = 0.3, 0.7), and social participation (OR = 0.6, 95% CI = 0.4, 0.8) showed that the more disabled, the less optimistic people were.

Table 3
Associations Between Optimism–Pessimism and a Range of Health and Disability Variables

	In Uncertain Times I Always Expect the Best		Things Never Work Out the Way I Want Them To	
	Strongly Agree / Agree *n* (%)	Adjusted OR, 95% CI	*Strongly Disagree / Disagree* *n* (%)	Adjusted OR, 95% CI
Age/gender				
65–69	166 (49)	1	213 (63)	1
70–79	218 (45)	0.8 (0.6, 1.1)	246 (50)	0.6 (0.5, 0.8)*
80+	102 (62)	1.7 (1.2, 2.5)*	78 (46)	0.5 (0.4, 0.8)*
Women	237 (50)	1.0 (0.7, 1.2)	256 (53)	1.0 (0.8, 1.4)
Men	249 (49)		281 (54)	
Health problems				
No	117 (51)	1	232 (43)	1
1	144 (48)	0.8 (0.5, 1.4)	114 (56)	1.1 (0.7, 1.7)
2–3	182 (50)	0.7 (0.4, 1.1)	249 (56)	1.1 (0.7, 1.6)
4–5	33 (45)	0.7 (0.4, 1.2)	93 (52)	1.0 (0.6, 1.6)
6+	10 (63)	0.4 (0.2, 0.8)*	11 (23)	0.3 (0.1, 0.6)*
Long-standing illness				
Yes	298 (49)	0.9 (0.7, 1.2)	303 (49)	0.6 (0.4, 0.8)*
No	188 (50)		232 (61)	
Limited self-care				
Yes	72 (46)	0.9 (0.6, 1.4)	56 (35)	0.5 (0.3, 0.7)*
No	225 (50)		247 (54)	
Limited social participation				
Yes	121 (47)	0.9 (0.6, 1.3)	106 (41)	0.6 (0.4, 0.8)*
No	176 (50)		197 (56)	
Difficulties in activities of daily living				
Yes	330 (50)	1.0 (0.7, 1.3)	338 (51)	0.8 (0.6, 1.0)
No	150 (48)		190 (60)	

Note: Odds ratio (OR) adjusted for age group and gender. CI = confidence interval.
*$p < .05$.

Quality of Life

Although most old people considered their quality of life to be good (Table 4), there was a decrease from 86% in the 65–69 group to 74% in the 80+ group, showing a negative association between age and quality of life (OR = 0.5, 95% CI = 0.3, 0.8). The number of health problems was negatively

associated with reported good quality of life, showing a graded response: Compared with those reporting no health problems, people with four to five health problems and six or more problems were less likely to report good quality of life (OR = 0.4, 95% CI = 0.2, 0.8; OR = .20, 95% CI = .08, .50, respectively). Quality of life was negatively associated with having long-standing illness (OR = 0.5, 95% CI = 0.4, 0.8), limitations in self-care (OR = 0.4, 95% CI = 0.3, 0.6), limitations in social participation (OR = 0.4, 95% CI = 0.2, 0.6), and difficulties in activities of daily living (OR = 0.4, 95% CI = 0.2, 0.6).

People reporting that they had done all or almost all of the things that they wanted in life was more frequent in the group 80+ years than in the group 65–69 years old (OR = 1.5, 95% CI = 1.0, 2.2); limitations in social participation were negatively associated with having done things wanted in life (OR = 0.7, 95% CI = 0.5, 1.0).

The item asking people to express how well off they consider themselves now as compared with their forties showed that 59% of people aged 80+ years tended to report being better off than before. Having limitations in self-care was negatively associated with a favorable comparison with others (OR = 0.6, 95% CI = 0.4, 1.0). When people compared themselves with others, 49% of people aged 80+ years said that they were better off than their peers were (OR = 1.6, 95% CI = 1.1, 2.4). In terms of how well off people considered themselves to be compared with what they had expected to be at their current ages, among the oldest group, 46% said that they were better off than what they had expected. Limitations in self-care were negatively associated with a favorable comparison between the present and expectations (OR = 0.6, 95% CI = 0.4, 0.9).

Discussion

With the older people, we found expected negative trends in health status, self-care, activities of daily living, and social participation. With increasing age, we observed a decrease in optimism and self-reported quality of life. Kunzmann, Little, and Smith (2000) demonstrated that health status, rather than age, influences well-being. In general, number of health problems and having long-standing illness were both negatively associated with high self-perceived health and good quality of life, showing lower self-perceived health and lower quality of life with increasing levels of illness (i.e., four to five or six or more health problems). Disability (i.e., limitations in self-care, limitations in social participation, and difficulties in activities of daily living)

Table 4
Associations Between Quality of Life and a Range of Self-Reported Health and Disability Variables

	Quality of Life as a Whole		Done Things Wanted in Life		Well Off Compared to Forties		Well Off Compared to Others		Well Off Compared to Expected	
	Good[a] *n* (%)	Adjusted OR, 95% CI	All/Most *n* (%)	Adjusted OR, 95% CI	Better[b] *n* (%)	Adjusted OR, 95% CI	Better[b] *n* (%)	Adjusted OR, 95% CI	More *n* (%)	Adjusted OR, 95% CI
Age/gender										
65–69	291 (86)	1	154 (50)	1	173 (51)	1	124 (37)	1	137 (41)	1
70–79	404 (82)	0.8 (0.5, 1.1)	264 (53)	1.1 (0.9, 1.5)	257 (52)	1.1 (0.8, 1.4)	206 (43)	1.3 (1.0, 1.7)	199 (41)	1.0 (0.8, 1.4)
80+	124 (74)	0.5 (0.3, 0.8)*	119 (62)	1.5 (1.0, 2.2)*	98 (59)	1.4 (0.9, 2.0)	78 (49)	1.6 (1.1, 2.4)*	74 (46)	1.2 (0.8, 1.8)
Women	395 (82)	1.0 (0.7, 1.4)	260 (54)		256 (53)	1.0 (0.8, 1.3)	188 (41)		193 (41)	1.1 (0.8, 1.4)
Men	424 (82)		275 (53)	1.0 (0.8, 1.2)	273 (53)		220 (44)	1.1 (0.9, 1.5)	217 (43)	
Health problems										
No	205 (88)	1	128 (55)	1	127 (55)	1	94 (42)	1	106 (47)	1
1	263 (87)	0.9 (0.4, 1.8)	167 (55)	0.9 (0.6, 1.4)	163 (540)	1.3 (0.8, 2)	132 (44)	1.4 (0.8, 2.2)	123 (41)	1 (0.7, 1.7)
2–3	291 (79)	0.7 (0.4, 1.4)	189 (51)	0.8 (0.6, 1.3)	194 (53)	1 (0.7, 1.5)	150 (43)	1.1 (0.7, 1.6)	148 (41)	0.9 (0.6, 1.3)
4–5	51 (66)	0.4 (0.2, 0.8)*	43 (56)	0.7 (0.4, 1.1)	38 (500)	0.8 (0.5, 1.3)	25 (33)	1 (0.6, 1.6)	27 (36)	0.7 (0.4, 1.1)
6+	9 (56)	0.2 (0.08,0.5)*	8 (50)	0.7 (0.4, 1.5)	6 (38)	0.7 (0.3, 1.3)	7 (47)	0.9 (0.4, 1.7)	7 (41)	0.9 (0.4, 1.7)
Long-standing illness		0.5 (0.4, 0.8)*		0.8 (0.7, 1.1)		0.8 (0.6, 1.1)		1.0 (0.7, 1.2)		0.8 (0.6, 1.1)
Yes	485 (79%)		320 (52%)		313 (51%)		249 (42%)		243 (40%)	
No	333 (87%)		213 (56%)		214 (56%)		158 (43%)		166 (45%)	
Limited self care		0.4 (0.3, 0.6)*		1.5 (1.0, 2.2)		0.6 (0.4, 1.0)*		0.9 (0.6, 1.3)		0.6 (0.4, 0.9)*
Yes	96 (60)		91 (57)		69 (43)		59 (39)		50 (33)	
No	389 (85)		230 (50)		243 (53)		189 (43)		193 (43)	

Limited social participation		0.4 (0.3, 0.6)*		0.7 (0.5, 1.0)*		0.9 (0.6, 1.3)		0.9 (0.6, 1.3)		1.1 (0.7, 1.5)
Yes	172 (55)		130 (50)		124 (47)		101 (40)		100 (39)	
No	312 (88)		191 (54)		189 (53)		148 (43)		143 (41)	
Difficulties in activities of daily living		0.4 (0.2, 0.6)*		08 (0.6, 1.1)		0.8 (0.6, 1.0)		0.8 (0.6, 1.0)		0.8 (0.6, 1.0)
Yes	518 (78)		352 (53)		347 (52)		264 (41)		263 (40)	
No	288 (91)		176 (56)		175 (55)		138 (45)		142 (46)	

Note: Odds ratio (OR) adjusted for age groups and gender. CI = confidence interval.
a. *Good* combined the answers *So good it could not be better + very good + good*.
b. *Better* combined the answers *I am a little better off + I am a lot better off*.
*$p < .05$.

showed a similar pattern of negative association with self-perception of health and quality of life. Illness and disability proved to be associated with psychological distress in old age (Paúl, Ayes, & Ebrahim, 2006).

At first glance, the rather high levels of optimism and quality of life reported by older people, despite higher levels of disability and illness, seem to confirm the existence of the disability paradox, that is, high disability and high optimism and self-perception of quality of life. However, upon examination of these associations within broad age groups, we found that among the oldest age group, those in better health were more optimistic, contra the disability paradox. More health problems and more limitation of activity meant lower self-perception of health and quality of life and less optimism. Associations of health status with quality of life are complex because quality of life is a broad concept, including not only health but also many other individual, social, and environmental factors (Koch, 2000). Our data suggest that people base their self-assessment of health on their actual health status (as reflected by number of health problems) and that when health decreases beyond a certain level, they tend to start reporting adverse self-rated health and well-being.

The dual model of coping proposed by Brandtstadter (1989) may help to explain the positive self-perception of health and quality of life. He suggested that older people's adjustment to losses involves assimilative and accommodative coping. Assimilative coping attempts to avoid or diminish actual or anticipated losses by compensatory activities. Individuals try to transform any negatively evaluated situation into one that conforms to their goals. Through this, the discrepancy between actual and desired states is reduced. In accommodative coping, goals and standards are lowered to meet constraints, and there is a reduction of personal performance standards and aspirations. Compensatory efforts have been found to increase up to the age of 70 years, but above that age, a decrease in compensatory efforts has been observed. This switch of effort may be explained by a decrease in the availability and efficiency of the individual's resources, which formerly allowed for successful compensation but now with limited reserves it proves necessary for people to adapt to their actual levels of performance (Rothermund & Brandtstadter, 2003). We noticed that limitations in activity owing to disease and not the presence of disease itself reduced the likelihood of optimism. Dual-process coping may provide an alternative explanation for why many older people with activity limitations do not use terms such as *disability* to describe their status (Gooberman-Hill, Ayis, & Ebrahim, 2003).

Wrosch and Heckhausen (2002) showed that as the opportunities to alter regrettable behavior decline with age, perceived external control can be

beneficial for older adults and can have a self-protective function by deactivating feelings of regret. In our study, that more than half of all respondents reported that they had accomplished all or most of the things in life appears to illustrate this mechanism. Furthermore, given that the percentage of people expecting to live to 100 years was greatest among the group aged 80 and older, it is possible that positive emotions and optimism for the future are important mechanisms in understanding differential survival prospects that have been observed in relation to positive perceptions in old age (Levy, Slade, Kunkel, & Kasl, 2002; Taylor, Kemeny, Reed, Bower, & Grunewald, 2000).

The cross-sectional nature of this data makes it difficult to define the direction of some of the associations observed. Psychosocial variables seem to be an outcome of good health rather than a cause, because the old persons who are more positive are those who have experienced less illness. We cannot exclude the hypothesis that people survived longer because they have a more positive attitude toward life; it is quite possible that those in their 80s represent a survivor group among whom all those with pessimistic outlooks have already died (e.g., Larsen, Hemenover, Norris, & Cacioppo, 2003; Ostir, Ottenbaker, & Markides, 2004; Salovey, Rothman, Detweiler, & Steward, 2000; Taylor et al., 2000). Our results appear to show stability or even an increase of positive psychosocial aspects during old age, but it seems that health condition remains one major factor influencing quality of life during the aging process. Findings reported by Bowling (1995; Bowling et al., 2003) on what enhances quality of life among old people show that despite the value that people place on good social relationships, poor health lowers quality of life.

In summary, quality of life and psychological variables show a positive progression with age. We hypothesized that this tendency corresponds to a specific coping mechanism that fosters adaptation to health-related losses during old age, insofar as these losses remain in an acceptable and/or expected level.

Current challenges of the oldest old people include the need for interventions to improve the morale of older people, to reinforce their control over their lives, and to foster social networks and participation. People with age-related losses may benefit from changes in lifestyle as well as from interventions to create safer, better environments; prevent increasing disability rates; and extend autonomy and well-being. If the dual-process coping strategy supported by our findings is generally applicable, it would suggest that a dual approach to healthy living and rehabilitation in older age is needed, targeting the need to compensate for age-related losses for some and adaptation strategies for those on the boundaries of thresholds for maintaining their independence.

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