Andreas Motel-Klingebiel
Hans-Joachim von Kondratowitz · Clemens Tesch-Römer

Social inequality in the later life: cross-national comparison of quality of life

Published online: 6 November 2004
© Springer-Verlag 2004

Abstract This paper analyses quality of life and inequality in old age in an international comparative and a life course perspective. Quality of life is seen as an outcome of unequal chances in life. We distinguish between overall and domain specific expressions of quality of life which allows us to analyse the determinants of overall quality of life and their development over the life course. The data presented come from the research project “OASIS - Old Age and Autonomy: The Role of Service Systems and Intergenerational Family Solidarity”. This data set is based on an age stratified random sample of the urban population (25–102 years) in Norway, England, Germany, Spain, and Israel ($n=6,106$). With advancing age, there are decreasing mean levels and increasing variation of quality of life. With age, the impact of physical health on overall quality of life increases, while the predictive power of other domains decreases. The results support the hypothesis of differentiation as well as the age-dependency hypothesis. For both these both aspects, international comparisons show similar results in different societies. These uniform age tendencies in modern European societies point to a limited importance of societal embeddedness and support the interpretation of age group differences as being life course effects.

Keywords Adult life course · Ageing · Quality of life · Social inequality · Subjective well-being

Introduction

European societies currently have to cope with rapid population ageing. While this increasingly global phe-

nomenon is presenting a challenge to societies, the demographic developments are intertwined with the combined tendencies of globalisation, European integration, new needs for occupational flexibility, migration and regional mobility. These transformations may serve as a backdrop for the promotion of research on ageing and living conditions in old age as well as developments and markers of diversity and inequality between age groups and within cohorts. The analysis of quality of life plays an essential role in this context, as the concept refers to objective and subjective dimensions of life situations. Quality of life can be defined as an outcome of continuous and complex multi-level processes of advantages and difficulties that occur in different but interrelated life domains. The results presented here proceed from the basic assumption that the analyses of quality of life and of social inequality need to be linked in a developmental and comparative perspective. The present paper will discuss the distribution of overall quality of life and its association with different life domains across the adult life span and will relate it to the analysis of social inequality. Comparisons between countries are performed to ascertain whether these associations are uniform or specific across societies and consequently to test the importance of cultural embeddedness.

Quality of life as an outcome of life chances

In order to discuss the link between age and inequality empirically it is useful to define a sphere which is essential for social inequality. Quality of life is as a useful category in this perspective since subjective well-being can be regarded as a significant outcome of unequally distributed living conditions and opportunities for persons at different stages of their life course and born at different historical times or in different cultural and social environments. Social and behavioural research on ageing uses the concepts of “quality of life” and “subjective well-being” (quite often

A. Motel-Klingebiel (✉) · H.-J. von Kondratowitz
C. Tesch-Römer
German Centre for Gerontology,
Manfred-von-Richthofen-Strasse 2, 12101 Berlin, Germany
E-mail: motel@dza.de
Tel.: +49-30-26074077
Fax: +49-30-7854350

interchangeably) to refer to the subjective dimension of a good life as distinguished from a person's objective living conditions or available resources (Allardt 1975; Bulmahn 2002; Smith et al. 1996, 1999). Subjective quality of life can be considered as a reaction to experiences or living conditions which a person confronts over his or her life course (Diener 2000; Diener and Suh 1998; Diener et al. 1999; Fahey and Smyth 2004; Filipp 2002; Noll and Schöb 2002), and it has been shown empirically that global satisfaction refers holistically to the entirety of one's own life situation, while specific evaluations refer to various life domains (Campbell et al. 1976; Okun 2001). The distribution of quality of life may reflect the basic patterns of social inequality and is structurally independent of possible shifts in the relevance of objective indicators.

Social inequality over the adult life course

Social inequality is defined as given if access to available and desirable social assets and/or social positions is constrained—with consequently limited and/or favoured opportunities for individuals, groups or societies (see Kreckel 1992). Such a definition goes beyond pure variability and includes normative aspects (e.g. positive or negative evaluations of differences and an agreement on a classification system) and is directly connected to classical theoretical concepts of social inequity (Atkinson 1983; Bolte et al. 1975; Sen 1973). As noted above, quality of life can be seen as a core outcome of access and restrictions. As these may vary over the individual life course with its various institutionalised stages (Kohli 1985), this definition is sufficiently sensitive to analyse the interaction between age and unequal distribution of assets and resources.

In social gerontology two types of hypotheses are discussed regarding the relationship between social inequality and the life course. The first type is related to the question of distribution and includes the mutually exclusive hypotheses of continuity, homogenisation, and differentiation. The continuity hypothesis states that inequality does not change over the later life course. From a gerontological point of view it should be noted that the hypothesis of continuity consistently disregards the inequality relevance of the age structure in society and the difference between stages of the adult life course. A purely employment-oriented definition of social inequality, as still found in contemporary research, does not aspire to include old age in inequality analyses at all (Kohli 1990). This may be problematic since individual dynamics of inequality positions over the later life course are well documented (e.g. for income dynamics in old age see Wagner and Motel 1998).

Beyond plain continuity one can, secondly, formulate a homogenisation or de-structurisation hypothesis. This hypothesis refers, on the one hand, to the standardisation of social positions which may occur in later life because of the increasing relevance of welfare state

institutions which relatively favour those in lower positions. These regulations offer social protection against the hazards of life and may to a certain degree level the inequalities of working life. On the other hand, it is argued that health problems and limitations in mobility may level differences during the late life course (Dowd and Bengtson 1978). These processes are considered to overlay initial social belonging and social differentiation.

Thirdly, one can assume a cumulation of diversity and therefore a reinforcement of social inequality. This differentiation hypothesis, also termed the cumulative advantage/disadvantage hypothesis, states that inequalities intensify in later life as a cumulation of earlier advantages and deprivation (Bengtson et al. 1976; Crystal 1996; Dannefer 2003; Tews 1993). Former material and social conditions determine or at least influence the process of ageing, and increases or decreases in resources over the adult life course are correlated to the baseline inequality. In addition to this, welfare state regulations do not only secure living conditions against deterioration in old age but also can often prevent an active improvement in material conditions during later life, and as a result stabilise basic inequality structures. Although this applies mainly to the income situation of the elderly as a basic condition in modern society, it could also be relevant for other life domains, such as health and social participation.

Another type of hypothesis relates to predictors of inequality positions rather than to distributive aspects. The age-dependency hypothesis of social inequality in later life argues, for example, that vertical intra-cohort distinctions, such as differences between social strata or socio-economic levels (measured by occupational positions, level of education, income and/or assets), are replaced during ageing by age-specific differentiations, which then primarily determine the social position of individuals (Mayer and Wagner 1993). These differentiations may be health-related or be caused by social attribution or welfare state regulations (Mayer and Müller 1989; Mayer and Wagner 1996). This hypothesis has two implications. On the one hand, there should be changes in determinants of outcomes related to social inequality over the life course. On the other hand, if inequality structures are indeed age-dependent, this should be a universal trend across different cultures and countries.

Methods and materials

Comparative analysis

The analysis of cross-sectional data offers only partial insights into developmental or life course patterns. Age group differences could stem simply from generational differences in the evaluation of objective conditions. If plausible, such generational differences must have their source in the variation of societal or cultural embeddedness of cohorts. Hence the analysis focuses on the

relevance of embeddedness in different societal and cultural settings by examining quality of life cross-culturally. While cross-cultural comparisons are driven mainly by the search for generalities and distinctiveness as a result of similar structural requirements or different societal environments (Daatland and Motel-Klingebiel 2004), the present study explored possible similarities (differences) that can be interpreted as an indication of similar (different) structural patterns of ageing. Age patterns of quality of life were analysed in Norway, England, Germany, Spain, and Israel. Living situations and their evaluation are embedded in the context of these societies, which differ on a variety of dimensions, for example, historical developments, welfare regimes, family cultures, normative beliefs, and the generational and social structure (see von Kondratowitz 2003). These can be described by macro-sociological indicators which allow us to ascertain divergent perspectives in tracing similarities and differences.

All of these five countries are modern welfare states, which entails a high degree of legal and administrative regulation and the development of provision structures for the well-being of their citizens. Comparative welfare state research has demonstrated, however, that the similarity due to the existence of welfare states requires considerable differentiation in the case of each country (Esping-Andersen 1990, 1999). While Norway represents the Scandinavian welfare regime and England the market-liberal model, both Germany and Spain belong to the conservative group of welfare states (with Spain also being described as an example for 'southern model'; see Ferrara 1996) whereas Israel as a mixed model cannot be attributed to any of the regimes alone. The societies also vary as to structural indicators such as fertility measures, age- and household-structures, labour force participation of older persons and legal obligations for families to support their members or to bear the costs for such support (see Table 1). In short, although frequent association of indicators can be found between Norway, England and to a certain extent Israel on the one hand, and Germany and Spain on the other, there is no justification for generalising

this. Despite some structural similarities developmental patterns on the macro-sociological level are characterised by more differentiation between the countries than homogenisation. The lack of difference between the societies analysed would indicate limited impact of embeddedness. Limited cross-country differences would therefore put into question the argument that age group difference must be interpreted as divergence between cohorts as societal generations (Mannheim 1964) in the analysis of cross-sectional data and would support the idea of more or less common patterns of the adult life course in modern societies.

Research questions

The following two sets of research questions guided this study: (a) How do levels and diversity of quality of life differ between age groups? Do we find continuity in distribution or are there increased or decreased levels or variations in indicators of quality of life with advancing age? (b) Is the impact of life domains on overall quality of life similar in all age groups, or do patterns differ at the various stages of the adult life course? Of course when looking at individuals in different age groups the differences between them may be due either to life course positions or to cohort differences. These questions are posed in a comparative perspective. Depending on the relevance of cultural embeddedness we find similar or divergent age patterns in different societies and cultures.

Database

The analyses are based on data collected by the research project Old Age and Autonomy: the Role of Service Systems and Intergenerational Family Solidarity (OA-SIS), which was conducted on adult urban populations by five institutions: the Norwegian Social Research, Keele University (United Kingdom), German Centre for Gerontology, University of the Basque Country (Spain),

Table 1 Macro-sociological indicators for comparisons

Welfare regime type (Esping-Andersen 1990, 1999)	Norway Social-democratic northern European	UK Market liberal	Germany Conservative corporatist	Spain Mediterranean	Israel Mixed
Fertility rate (2002)	1.7	1.6	1.3	1.1	2.7
Proportion aged over 80 years (2000)	4.5	4.1	3.6	3.8	2.1
Ratio of those aged 50–64 to 80+ (parent support ratio, 2000)	26.2	23.8	19.1	23.4	17.9
Proportion of labour force participation at age 60–64 (2000): men/women	59.4/45.3	53.1/21.0	29.9/9.0	42.0/14.5	60.9/22.1
Proportion of single households (2001)	38	12	15	4	17
Presence of social services (2003)	High	Medium	Medium	Low	High
Legal obligation for families to support their aged members (2003)	No	No	Yes (but LTCI)	Yes (but first debates about possible LTC measures)	Yes (but LTCI)

and University of Haifa (Israel), where the project was coordinated. The project was funded principally by the Fifth Framework Programme of the European Commission (contract N QLK6-CT-1999-02182; see Lowenstein and Ogg 2003; Phillips and Ray 2003; Tesch-Römer et al. 2000). The research was carried out between 2000 and 2003 and the survey data collection phase in 2000 and 2001. Project data were from two sources: the OASIS survey sample and a qualitative OASIS sample. Only the survey data are used here. (For information on the qualitative data which are not used here see Phillips and Ray (2003). The OASIS survey sample included 6,106 persons disproportionately stratified by age group and country. There was no stratification by gender, and therefore the sex distribution should reflect that of the target populations. About 1,200 persons living in private households were interviewed in each country (in the United Kingdom representative only for the English part); two-thirds of subjects were aged 25–74 years and one-third 75 or older. Although participation rates may be characteristically low in urban areas, the sample is representative of the target population, with no survey-specific selectivity problems (for a more detailed analysis of response patterns see Motel-Klingebiel and Gilberg 2002; Motel-Klingebiel et al. 2003).

Instruments

Analyses focus on subjective representations as assessed by the instrument WHOQOL (see WHOQOL Group 1994); the short format of WHOQOL-Bref was used in the OASIS study (see Tesch-Römer et al. 2000). Quality of life is seen here as the individual's interpretation of the current living situation under the condition of his or her respective culture, norms, and values compared with their goals, expectations, standards and interests. The WHOQOL-Bref instrument concentrates on four major life domains covering the respondents' entire living situation. Domain scores are computed as individual means in the areas 'physical health', 'psychological health', 'social relationships' and 'environment' (Table 2) which are highly correlated with the complete WHOQOL measures (World Health Organisation 1996; WHOQOL Group 1998a). While domain 3 includes only three indicators, it offers limited explanatory power, and it may be questioned whether the items are sufficient to cover the domain. The small number of items also leads to limited reliability (Table 2). However, the somewhat weak domain 3 is included here as suggested by the WHO. Domain 4 is very heterogeneous, but reliability seems to be sufficiently high (Table 2). Overall psychometric properties of the instrument are comprehensively discussed by the WHOQOL Group (1998b). (On the formulation of WHOQOL-100 and WHOQOL-Bref, its psychometric properties, its construction in different languages, and studies conducted on specific populations see World Health Organization (1999).

Table 2 Quality of life: the WHOQOL-Bref instrument (*ranges* minimum and maximum values for all five countries)

Items	Reliability (Cronbach's α)
Domain 1: physical health	0.87 (0.84–0.90)
Activities of daily living	
Energy and fatigue	
Dependence on medicinal substances and medical aids	
Mobility	
Pain and discomfort	
Sleep and rest	
Work capacity	
Domain 2: psychological health	0.80 (0.75–0.83)
Bodily image and appearance	
Negative feelings	
Positive feelings	
Self-esteem	
Spirituality, religion, and personal beliefs	
Thinking, learning, memory, and concentration	
Domain 3: social relationships	0.65 (0.54–0.72)
Personal relationships	
Sexual activity	
Social support	
Domain 4: environment and living conditions	0.77 (0.72–0.78)
Financial resources	
Freedom, physical safety, and security	
Health and social care (accessibility, quality)	
Home environment	
Transport	
Participation in and opportunities for recreation and leisure activities	
Physical environment (pollution, noise, traffic, climate)	
Opportunities for acquiring new information and skills	
Overall measures: single indicators	–
Overall quality of life	
Overall life satisfaction	

In addition, there are single items on overall quality of life and overall life satisfaction measured on a five-point Likert scale, used as a semantic differential. The analyses presented used only the item on overall quality of life. After a general introduction which includes the request, 'We ask that you think about your life in the last 2 weeks' the wording of the question was: 'How would you rate your quality of life?' The entire instrument is designed and systematically tested to be employed in international comparative research settings. The present analysis uses the hierarchical structure of the WHOQOL-Bref instrument and combines measurement on the overall and domain levels to investigate the relationship between the two, which is assumed to be age related.

Results

The empirical analyses regarding quality of life according to age and the importance of the different life domains for overall quality of life in five countries were guided by the two sets of research questions presented above.

Variations in quality of life by age and in age groups

First, the distribution of overall quality of life according to age group is analysed. The information from all the countries is condensed for the computations presented graphically in Figs. 1 and 2 to provide overall trends in a straightforward visual illustration. As seen here, there is a clear effect of age groups on overall quality of life. While nearly 25% of the youngest subjects rate their current quality of life as 'very good' and approx. 80% at least as 'good' (on a five-point scale from 'very good' to 'very poor') these proportions are much lower in older age groups. Among those of aged 85 years or older approx. 10% rate their overall quality of life as 'very good' and fewer than 60% at least as 'good'. Although this is still impressively high compared to widespread common beliefs about the living situation of older persons, these values are nevertheless substantially lower than in younger age groups (Fig. 1). The correlation of overall quality of life and age is $r_{QOL\_25+} = -0.20$ ($P < 0.001$).

This finding contradicts those from some other studies reporting smaller differences in subjective measures such as life satisfaction by age. The explanation for this discrepancy may be twofold. Firstly, based on OASIS data

Fig. 1 Overall quality of life and age (all countries). Source: OASIS 2000 ($n = 6,035$)

Fig. 2 Means and variances of domain specific and overall quality of life (all countries). Source: OASIS 2000 ($n = 5,803-6,035$)

for overall life satisfaction in all five countries the correlation by age is indeed smaller ($r_{LS\_25+} = -0.15$, $P < 0.001$). Secondly, correlations reported above derive from a sample that covers the adult life span. Analyses focusing on later stages only (e.g. those aged 60 or even 80 years and older) may confirm smaller age differences in overall quality of life in old age ($r_{QOL\_60+} = -0.11$, $P < 0.001$; $r_{QOL\_70+} = -0.09$, $P < 0.001$; $r_{QOL\_80+} = -0.01$, n.s.; $r_{LS\_60+} = -0.10$, $P < 0.001$; $r_{LS\_70+} = -0.07$, $P < 0.001$; $r_{LS\_80+} = -0.04$, n.s.).

An analogous decrease by age group is seen for all quality of life domains when age-specific means of domain scores are compared (Fig. 2). Here decreases according to age groups can be identified for the overall measure presented in Fig. 1 and for most of the domain-specific markers. Domain 4 (environment) is an exceptional case, decreasing only slightly among those aged 75 years or older. This effect is plausible when one considers the items included in this scale (Table 2).

This global picture that combines country-specific information from Norway, England, Germany, Spain and Israel can be confirmed when analysing the subjects separately in each country. Similar patterns in each of the societies are seen. However, comparison of overall and domain-specific quality of life reveals a difference between societies regarding evaluations: in Germany and to a lesser extent in Israel the overall measure yields lower values than the domain scores while the opposite is true in the other countries.

Since inequality may exist not only as mean differences between certain age groups but also within groups of people at different or similar stages of the life course, one must look at the variation and its development according to age. An increase is seen with respect to the variation in quality of life in the general population (Fig. 2) which is mainly the case for the overall measure and the health indicators. There is also a moderate increase in the variance according to age in domain 4 (environment) while there is a slight decrease in the variance for domain 3 (social relationships; all the age differences are highly significant, $P < 0.01$). Again, this picture is basically confirmed for each society when analysed separately (Tables 3, 4). With respect to the overall measure as well as for the domains 1 and 2 (physical and psychological health) there is an overall

Table 3 Means of domain-specific and overall quality of life by country (source: OASIS 2000, $n = 5,803-6,035$)

	Norway	England	Germany	Spain	Israel
Overall quality of life					
25-49	4.15	3.96	3.98	3.84	3.95
50-74	4.12	3.91	3.78	3.57	3.86
75+	3.90	3.72	3.45	3.44	3.58
$t_{25-49,75+}$	4.62**	3.50**	10.96**	8.42**	6.54**
Domain 1: physical health					
25-49	4.18	4.04	4.40	4.30	4.07
50-74	3.94	3.65	4.08	3.69	3.76
75+	3.53	3.26	3.55	3.17	3.13
$t_{25-49,75+}$	13.16**	12.38**	19.86**	24.66**	19.38**
Domain 2: psychological health					
25-49	3.94	3.79	4.14	3.77	3.83
50-74	3.91	3.78	4.04	3.45	3.65
75+	3.70	3.60	3.82	3.21	3.34
$t_{25-49,75+}$	6.36**	3.68**	7.84**	13.48**	11.62**
Domain 3: social relationships					
25-49	3.99	4.01	3.99	4.12	3.88
50-74	3.89	3.89	3.74	3.82	3.66
75+	3.68	3.74	3.48	3.62	3.41
$t_{25-49,75+}$	8.16**	5.55**	13.06**	12.24**	8.22**
Domain 4: environment					
25-49	3.90	3.57	3.94	3.61	3.64
50-74	4.01	3.67	3.95	3.41	3.62
75+	3.83	3.55	3.86	3.26	3.45
$t_{25-49,75+}$	1.97*	0.32	2.29*	9.89**	5.12**

* $P < 0.05$, ** $P < 0.01$ **Table 4** Variance of domain-specific and overall quality of life by country (source: OASIS 2000, $n = 5,803-6,035$)

	Norway	England	Germany	Spain	Israel
Overall quality of life					
25-49	0.54	0.75	0.48	0.46	0.62
50-74	0.53	0.86	0.53	0.44	0.54
75+	0.72	0.95	0.60	0.48	0.71
$F_{25-49,75+}$	1.35**	1.27**	1.24**	1.04	1.15**
Domain 1: physical health					
25-49	0.38	0.61	0.32	0.26	0.35
50-74	0.57	0.87	0.42	0.62	0.51
75+	0.67	0.87	0.53	0.57	0.55
$F_{25-49,75+}$	1.78**	1.42**	1.68**	2.24**	1.54**
Domain 2: psychological health					
25-49	0.25	0.42	0.36	0.35	0.33
50-74	0.25	0.47	0.39	0.31	0.37
75+	0.38	0.50	0.39	0.35	0.41
$F_{25-49,75+}$	1.52**	1.20**	1.08	1.01	1.25**
Domain 3: social relationships					
25-49	0.30	0.51	0.40	0.35	0.58
50-74	0.31	0.39	0.43	0.33	0.58
75+	0.33	0.34	0.31	0.31	0.67
$F_{25-49,75+}$	1.10*	1.53**	1.29**	1.15*	1.16**
Domain 4: environment					
25-49	0.24	0.40	0.29	0.27	0.28
50-74	0.24	0.39	0.28	0.25	0.28
75+	0.29	0.38	0.26	0.24	0.34
$F_{25-49,75+}$	1.20**	1.05	1.10*	1.11*	1.22**

* $P < 0.05$, ** $P < 0.01$

tendency for a substantial increase in variation in each of the countries (with the exception of Spain, with increases for physical health only, and only a slight increase in domain 2 in Germany). Domain 3 (social

relationships) and domain 4 (environment), on the other hand, show an inconsistent picture, with increases in variance in Norway and Israel and decreases in the other countries (exception: no significant change in variance for domain 4 in England). The diversity of health measures and the overall quality of life is highest in older age groups. The variation increases with age. Social relationships and the environment show different effects in the societies analysed.

The relevance of life domains for overall quality of life by age

To analyse the age-specific relevance of each sub-domain for overall social inequality we calculated ordinary least-squares (OLS) regression models of overall quality of life on life domains (Table 5). First, simple models were estimated for three age groups (25-49, 50-74 and 75+ years) and the total population with the four WHOQOL-Bref life domains as predictors of overall quality of life (Table 5, models 1-4). On the one hand, there is a clear increase in the impact of physical health and a decrease for the environment domain. On the other, there is no significant effect on the life domains of psychological health and social relationships.

The final overall model (Table 5, model 6) indicates that the overall impact of three dimensions (domains 1, 2, 4) is similar and quite high, while domain 3 (social relationships) is an exceptional case with a small but still significant direct impact on overall quality of life. The minor exploratory power of domain 3 is reasonable, since this domain is measured by only three items in the WHOQOL-Bref and therefore offers only limited variance. Nevertheless, from a theoretical perspective the analysis does not focus on the strength of single domains but on their development according to age. In this respect the domains behave differently, as documented earlier.

In the next step the OLS-regression models that were estimated for each age group separately and for the total population (Table 5, model 1-4) were extended by chronological age (Table 5, model 5). In the final step on the overall level a full model was estimated including both 'age' and the interactions of age with the respective domains as predictors (Table 5, model 6). This was carried out to analyse the relationships between the domain indicators and chronological age in more detail and to examine whether there is a statistically significant decline or increase in the importance of certain domains. As expected from the graphic analyses presented above, there was a strong and significant positive effect of the interaction between physical health and age as well as a substantial negative effect of the interaction between the environment dimension and age. The effects of the other interactions were negligible and not significant. As domain 4 (environment) is a heterogeneous category including numerous single items, an analysis was performed to determine whether certain sub-dimensions

Table 5 Overall and domain-specific quality of life (OLS regression, all countries). Further analyses confirmed that despite differences in levels of quality of life, the inclusion of gender and country in these analyses does not effect the results (exception: the

β coefficient for domain 3 in model 3 was no longer significant when controlling for country); the coefficients were not included to enhance legibility (source: OASIS 2000)

	Model 1, 25–49	Model 2, 50–74	Model 3, 75+	Model 4, total	Model 5, total	Model 6, total
Main effects						
Domain 1: physical health	0.09**	0.24**	0.33**	0.20**	0.19**	0.20**
Domain 2: psychological health	0.22**	0.26**	0.25**	0.24**	0.24**	0.23**
Domain 3: social relationships	0.10**	0.05*	0.07**	0.08**	0.07**	0.08**
Domain 4: environment	0.26**	0.16**	0.06*	0.20**	0.20**	0.19**
Interaction of age with:						
Physical health	-	-	-	-	-	0.09**
Psychological health	-	-	-	-	-	0.03
Social relationships	-	-	-	-	-	-0.01
Environment	-	-	-	-	-	-0.09**
Age (years)	-	-	-	-	-0.01	-0.01
<i>n</i>	2,194	1,719	1,876	5,789	5,789	5,789
<i>R</i> ²	0.31	0.36	0.38	0.36	0.36	0.37

* $P < 0.05$, ** $P < 0.01$, standardised β coefficients

have a major effect. More exhaustive modelling confirmed that the evaluation of income situation and the interaction of income and age played a major role; the impact of the financial situation was significantly lower in older age groups than in younger ones. Thus, money does indeed ‘buy happiness’ but significantly less at later stages of the life course. The effect for the entire domain (and the interaction with age) remained highly significant even if excluded from this quality of life domain and included separately.

The final step in the analyses is to estimate the models separately for each country. Only the final models are presented in Table 6. This distinguishes the OLS regression models of overall quality of life on domain indicators with chronological age, the four life domains and the interaction between life domains and age by society. The results are similar to those for the overall model but in more detail. Patterns in the countries are quite similar, generally indicating a shift from social to health-related life domains. The models for Norway,

England and Germany show very similar effects as the overall model: Relative increases for physical health according to age with relative decreases in the significance of social dimensions. Israel shows a fairly similar pattern as these European societies, but physical health is replaced by psychological health as a distinctive feature of this society. Psychological health clearly assumes the role of physical health in the models for Norway, England and Germany. However, the pattern indicating an increase in the relevance of health can also be found. Spain is an exception as there are no significant interaction effects, although there is a mild increase in the psychological health domain and a slight decline in the effects of relationships according to age.

Discussion

Quality of life can be understood as an outcome of unequally distributed access to available and desirable so-

Table 6 Overall and domain-specific quality of life (OLS regressions by country). Further analyses confirmed that despite occasionally significant differences in levels of quality of life between men and women, the inclusion of gender in these analyses does

not effect the results (exception: the β coefficient for domain 3 in model 3 was no longer significant if controlled for country); the coefficients were not included to enhance legibility (source: OASIS 2000)

	Model 1, Norway	Model 2, England	Model 3, Germany	Model 4, Spain	Model 5, Israel	Model 6, total
Main effect						
Domain 1: physical health	0.25**	0.20**	0.24**	0.22**	0.19**	0.20**
Domain 2: psychological health	0.42**	0.26**	0.30**	0.14**	0.14**	0.23**
Domain 3: social relationships	0.00	0.06*	0.11**	0.07*	0.05	0.08**
Domain 4: environment	0.05	0.20**	0.10**	0.23**	0.34**	0.19**
Interaction of age with:						
Physical health	0.07*	0.14**	0.14**	0.00	0.03	0.09**
Psychological health	-0.02	0.04	0.01	0.05	0.07*	0.03
Social relationships	-0.06*	-0.05	-0.05*	-0.05	0.03	-0.01
Environment	-0.09**	-0.01	-0.05*	-0.01	-0.10**	-0.09**
Age (years)	0.05	0.06	-0.04	0.05	0.03	-0.01
<i>n</i>	1,176	1,171	1,277	1,142	1,023	5,789
<i>R</i> ²	0.36	0.40	0.45	0.27	0.35	0.37

* $P < 0.05$, ** $P < 0.01$, standardised β coefficients

cial assets or positions, with consequently restricted or favoured opportunities. Quality of life is based both on objective resources and conditions and on subjective evaluations. It can be evaluated either on the individual or on the societal level. Based on the subjective aspects on the individual level, quality of life is seen here as a multi-dimensional and multi-level construct that can be measured overall and in four separate life domains according to the instrument WHO quality of life scale WHOQOL-Bref. This instrument was developed for comparative purposes during the 1990s. With respect to social inequality and ageing four different hypotheses were tested: continuity, homogenisation, differentiation and age-dependency of inequality structures. These theoretical concepts guided the empirical analyses of quality of life and social inequality in later life.

The findings show lower levels of quality of life in older age groups in all the five countries. At the same time there is a significantly higher degree of variation in quality of life in the older than in the younger population. Satisfaction with environment and social relationships are an exception here. There are distinct age-specific differences with respect to variation in domains 3 and 4. While Norway and Israel show increases by age group, we find that there are decreases in the three other countries. This may indicate that higher differentiation in upper age groups cannot be assumed as a unique pattern for all the indicators in the comparative perspective, but that there may be societal characteristics that have an impact on age patterns in the social and environmental life domains. The overall tendency of the findings described corresponds with results from the Berlin Ageing Study (Borchelt et al. 1996; Helmchen et al. 1996; Steinhagen-Thiessen and Borchelt 1996) and other studies (Jacobzone et al. 1999; Künemund 2000). Subjective physical health is the most important single domain for overall quality of life in old age. There is a shift of relevance of life domains for the overall quality of life according to the different age groups from the social spheres to the psychological and physical aspects of life. The social world declines in importance in the oldest persons and is replaced by more health-related aspects of life.

These findings display a common characteristic across all the societies analysed. This stability suggests specifically life course and not merely cohort effects. On the one hand, the hypothesis of de-structuring or homogenisation according to age group is not generally supported by the results based on quality of life. On the other hand, the increase in the inequality of the distribution of quality of life indicates that there are significant processes of differentiation and hence supports the differentiation hypothesis. This result is based mainly on health-related aspects while there are ambiguous findings on the social and environmental dimensions as discussed above. The age group differences in the structure of the predictors of overall quality of life—caused by an increase in the relevance of health indicators (mostly physical health) and a decrease in social

indicators (mainly the heterogeneous indicators of environment)—support the hypothesis of an age-dependency of inequality structures. Social aspects lose importance for the perceived quality of life amongst the elderly, while health-related dimensions, especially physical health, are the most relevant factors in later life. This is certainly the most substantial result of the analyses presented here.

Further analyses could provide evidence as to whether certain other factors such as need for care and social class have a confounding effect on these results. However, the results demonstrate that analysis of the development of social inequality is relevant for evidence-based social policy intervention as well as a contribution to age-sensitive research on social inequality as one of the key issues in sociology (e.g. Weber 1976; Mayer and Wagner 1996; O'Rand 1990; Streib 1985).

References

- Allardt E (1975) Dimensions of welfare in a comparative Scandinavian study. Research reports. Research Group for Comparative Sociology, Helsinki
- Atkinson AB (1983) The economics of inequality, 2nd edn. Clarendon, Oxford
- Bengtson VL, Kasschau PL, Ragan PK (1976) The impact of social structure on aging individuals. In: Birren JE, Schaie KW (eds) Handbook of psychology of aging. New York, pp 327–353
- Bolte KM, Kappe D, Neidhardt F (1975) Soziale Ungleichheit. Leske + Budrich, Opladen
- Borchelt M, Gilberg R, Horgas AL, Geiselmann B (1996) Zur Bedeutung von Krankheit und Behinderung im Alter. In: Mayer KU, Baltes PB (eds) Die Berliner Altersstudie. Akademie Verlag, Berlin, pp 449–474
- Bulmahn T (2002) Globalmaße des subjektiven Wohlbefindens. In: Statistisches Bundesamt (ed) Datenreport 2002. Zahlen und Fakten über die Bundesrepublik Deutschland. Bundeszentrale für politische Bildung, Bonn, pp 423–631
- Campbell A, Converse PE, Rodgers WL (1976) The quality of American life: perceptions, evaluations, satisfactions. Russell Sage, New York
- Crystal S (1996) Economic status of the elderly. In: Binstock RH, George LK (eds) Handbook of aging and the social sciences, 4th edn. Academic, San Diego, pp 388–409
- Daatland SO, Motel-Klingebiel A (2004) Separating the local and the general in cross-cultural aging research. In: Wahl H-W, Tesch-Römer C, Hoff A (eds) New dynamics in old age: individual, environmental and societal perspectives. Baywood, Amityville
- Dannefer D (2003) Cumulative advantage/disadvantage and the life course. Cross-fertilizing age and social science theory. *J Gerontol B Psychol Sci Soc Sci* 58:S327–S337
- Diener E (2000) Subjective well-being. *Am Psychol* 55:34–43
- Diener E, Suh EM (1998) Age and subjective well-being: an international analysis. In: Schaie KW, Powell LM (eds) Annual review of gerontology and geriatrics, vol 17. Springer, Berlin Heidelberg New York, pp 304–324
- Diener E, Suh EM, Lucas RE, Smith HL (1999) Subjective well-being: three decades of progress. *Psychol Bull* 125:276–302
- Dowd JJ, Bengtson VL (1978) Aging in minority populations. An examination of the double jeopardy hypothesis. *J Gerontol* 33:427–436
- Esping-Andersen G (1990) The three worlds of welfare capitalism. Princeton University Press, Princeton
- Esping-Andersen G (1999) Social foundations of postindustrial economies. Oxford University Press, Oxford

- Fahey T, Smyth E (2004) Do subjective indicators measure welfare? *Eur Societies* 6:5–27
- Ferrara M (1996) The 'southern model' of welfare in southern Europe. *J Eur Soc Policy* 66:17–37
- Filipp S-H (2002) Gesundheitsbezogene Lebensqualität alter und hochbetagter Frauen und Männer. In: Deutsches Zentrum für Altersfragen (ed) *Expertisen zum vierten Altenbericht der Bundesregierung*, vol 1. Vincentz, Hanover, pp 315–414
- Helmchen H, Baltes MM, Geiselman B, Kanowski S, Linden M, Reischies FM, Wagner M, Wilms HU (1996) Psychische Erkrankung im Alter. In: Mayer KU, Baltes PB (eds) *Die Berliner Altersstudie*. Akademie, Berlin, pp 185–219
- Jacobzone S, Cambois E, Chaplain E, Robine J-M (1999) The health of older persons in OECD countries: is it improving fast enough to compensate for population ageing? Labour market and social policy occasional papers no 37. Organisation for Economic Cooperation and Development, Paris
- Kohli M (1985) Die Institutionalisierung des Lebenslaufs-Historische Befunde und theoretische Argumente. *Kölner Z Soz Sozialpsychol* 37:1–29
- Kohli M (1990) Das Alter als Herausforderung an die Theorie sozialer Ungleichheit. In: Berger PA, Hradil S (eds) *Lebenslagen, Lebensläufe, Lebensstile*. Soziale Welt [Suppl 7]:387–408
- Kondratowitz H-J von (2003) Comparing welfare states. In: Lowenstein A, Ogg J (eds) *OASIS—old age and autonomy: the role of service systems and intergenerational family solidarity*. Final report. Haifa University, Haifa, pp 25–62
- Kreckel R (1992) *Politische Soziologie der sozialen Ungleichheit*. Campus, Frankfurt
- Künemund H (2000) Gesundheit. In: Kohli M, Künemund H (eds) *Die zweite Lebenshälfte-Gesellschaftliche Lage und Partizipation im Spiegel des Alters-Survey*. Leske + Budrich, Opladen, pp 102–123
- Lowenstein A, Ogg J (eds) (2003) *OASIS—old age and autonomy: the role of service systems and intergenerational family solidarity*. Final report. University of Haifa, Haifa, http://www.dza.de/forschung/oasis_report.pdf
- Mannheim K (1964) Das Problem der Generationen. In: Wolff KH (ed) *Wissenssoziologie*. Luchterhand, Berlin, pp 509–565
- Mayer KU, Müller W (1994) Individualisierung und Standardisierung im Strukturwandel der Moderne. *Lebensverläufe im Wohlfahrtsstaat*. In: Beck U, Beck-Gernsheim E (eds) *Risikante Freiheiten*. Suhrkamp, Frankfurt, pp 265–295
- Mayer KU, Wagner M (1993) Socio-economic resources and differential ageing. *Ageing Soc [Suppl]* 13:517–550
- Mayer KU, Wagner M (1996) Lebenslagen und soziale Ungleichheit im hohen Alter. In: Mayer KU, Baltes PB (eds) *Die Berliner Altersstudie*. Akademie Verlag, Berlin, pp 251
- Motel-Klingebiel A, Gilberg R (2002) Zielsetzungen, Perspektiven und Probleme bei Surveybefragungen mit alten Menschen. In: Motel-Klingebiel A, Kelle U (eds) *Perspektiven der empirischen Alter(n)soziologie*. Leske + Budrich, Opladen, pp 133–153
- Motel-Klingebiel A, Tesch-Römer C, von Kondratowitz H-J (2003) The quantitative survey. In: Lowenstein A, Ogg J (eds) *OASIS—old age and autonomy: the role of service systems and intergenerational family solidarity*. Final report. Haifa University, Haifa, pp 63–101
- Noll H-H, Schöb A (2002) Lebensqualität im Alter. In: Deutsches Zentrum für Altersfragen (ed) *Das hohe Alter-Konzepte, Forschungsfelder, Lebensqualität*. Expertisen zum Vierten Altenbericht der Bundesregierung, vol 1. Vincentz, Hanover, pp 229–313
- Okun ML (2001) Subjective well-being. In: Maddox GL (ed) *The encyclopedia of aging*, 3rd edn. Springer, Berlin Heidelberg New York, pp 986–989
- O'Rand AM (1990) Stratification and the life course. In: Binstock RH, George LK (eds) *Handbook of aging and the social sciences*, 3rd edn, vols 2 and 3. Academic, San Diego, pp 130–148
- Phillips J, Ray M (2003) The qualitative phase. In: Lowenstein A, Ogg J (eds) *OASIS—old age and autonomy: the role of service systems and intergenerational family solidarity*. Final report. Haifa University, Haifa, pp 103–126
- Sen A (1973) *On economic inequality*. Oxford University Press, Oxford
- Smith J, Fleeson W, Geiselman B, Settersten RAJ, Kunzmann U (1996) Wohlbefinden im hohen Alter: Vorhersagen aufgrund objektiver Lebensbedingungen und subjektiver Bewertung. In: Mayer KU, Baltes PB (eds) *Die Berliner Altersstudie*. Akademie Verlag, Berlin, pp 497–523
- Smith J, Fleeson W, Geiselman B, Settersten RAJ, Kunzmann U (1999) Sources of well-being in very old age. In: Baltes PB, Mayer KU (eds) *The Berlin aging study: aging from 70 to 100*. Cambridge University Press, Cambridge, pp 450–471
- Steinhagen-Thiessen E, Borchelt M (1996) Morbidität, Medikation und Funktionalität im Alter. In: Mayer KU, Baltes PB (eds) *Die Berliner Altersstudie*. Akademie, Berlin, pp 151–183
- Streib GF (1985) Social stratification and aging. In: Binstock RH, Shanas E (eds) *Handbook of aging and the social sciences*, 2nd edn, vol 3. Van Nostrand Reinhold, New York, pp 339–368
- Tesch-Römer C, von Kondratowitz H-J, Motel-Klingebiel A, Spangler D (2000) *OASIS—old age and autonomy: the role of service systems and intergenerational family solidarity*. Erhebungsdesign und Instrumente des deutschen Survey. Diskussionspapiere no 32. Deutsches Zentrum für Altersfragen, Berlin
- Tews HP (1993) Neue und alte Aspekte des Strukturwandels des Alters. In: Naegle G, Tews HP (eds) *Lebenslagen im Strukturwandel des Alters. Alternde Gesellschaft—Folgen für die Politik*. Westdeutscher Verlag, Opladen, pp 15–42
- Wagner M, Motel A (1998) Income dynamics in old age in Germany. In: Leisering L, Walker R (eds) *The dynamics of modern society. Poverty, policy and welfare*. Policy Press, Bristol, pp 125–142
- Weber M (1976) *Wirtschaft und Gesellschaft-Grundriß der verstehenden Soziologie*, 5th edn. Mohr, Tübingen
- WHOQOL Group (1994) Development of the WHOQOL: rationales and current status. *Int J Ment Health* 23:24–56
- WHOQOL Group (1998a) Development of the World Health Organization WHOQOL-Bref quality of life assessment. *Psychol Med* 28:551–558
- WHOQOL Group (1998b) The World Health Organization quality of life assessment (WHOQOL): development and general psychometric properties. *Soc Sci Med* 46:1569–1585
- World Health Organization (1996) *WHOQOL-Bref-Introduction, administration, scoring and generic version of the assessment*. Field trial version. World Health Organization Programme on Mental Health, Geneva
- World Health Organization (1999) *Annotated bibliography of the WHO quality of life assessment instrument—WHOQOL*. World Health Organization Department on Mental Health, Geneva