Children's impact on the mental health of their older mothers and fathers: findings from the *Survey of Health, Ageing and Retirement in Europe*

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Abstract The relation between social support and mental health has been thoroughly researched and structural characteristics of the social network have been widely recognised as being an important component of social support. The aim of this paper is to clarify the association between children and depressive mood states of their older parents. Based on international comparative data from the *Survey of Health, Ageing and Retirement in Europe* we analysed how the number of children, their proximity and the frequency of contact between older parents and their children are associated with the mental health of older people, using the EURO-D index. Our results indicate a positive association of children and depressive mood since childless men and women report more depressive symptoms. Moreover, few contacts with children were associated with an increased number of depressive symptoms. The family status was related to mental health as well: older men and women living with a spouse or partner had the lowest levels of depression. Interestingly, the presence of a spouse or partner was more relevant for the mental health of older people than the presence of, or contact with, their children.

Keywords Mental health · Older mothers and fathers · Children · SHARE · EURO-D

Introduction

The association between social support and mental health is well established in the literature (e.g., Antonucci and Jackson 1987, Julian et al. 1992; Dalgard et al. 1995; McCabe et al. 1996; Lehtinen et al. 2005, Multran et al. 1995). Less is known about specific dimensions of social support and social networks (Oxman et al. 1992). The purpose of this study was to examine association between children-related characteristics of social networks and depressive mood in older persons.

Based on the international comparative data of the *Survey of Health, Ageing and Retirement in Europe* (SHARE) we analysed symptoms of depression among older adults in Europe with a special focus on the relationship with their children. In particular, we were interested in how the number of children, their proximity and the frequency of contact with them affected the mental health of older people. In view of the decreasing fertility rates in Europe, this determinant of mental health is of special importance. A positive relation between the contact with one's children and mental health could imply a higher prevalence of depression among older adults as the number of children decreases.

Determinants of mental health

Children and mental health

Why should parenthood have effects on mental health? The underlying mechanisms are complex, but two main pathways can be identified. These are social effects as well as selection effects related to parenthood. First, giving care to dependent children and later receiving care from adult

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children may have a positive effect on a parent's mental health. Second, selection theory suggests that people with good mental health and favourable socioeconomic characteristics are more like to marry and having children.

The second explanation of how children may affect their parents' mental health is through selection. The idea is that there is selection into parenthood in terms of socio-economic resources, physical health, values and life-style preferences. Individuals with poor mental health (e.g., emotionally unstable persons) may for example involuntarily remain childless, or they may voluntarily choose childlessness or at least a low number of children. These individuals have also lower chances of getting married, staying married or remarrying.

The first explanation suggests a social effect of children and significant others, that is, children, spouses and close friends may be a source of emotional and physical support, provide a sense of meaning and order to life, and even be a source of self-esteem and prestige. In an investigation of depression in adults over the age of 50, Dean et al. (1990) found that expressive support from one's spouse and friends reduced depression. Penninx et al. (1998) provided evidence for a favourable effect of social support on depressive symptoms in the sense that having a partner and having many close relationships was associated with fewer depressive symptoms. In particular, spouses were found to be most important for psychological well-being (Dean et al. 1990). Nonreciprocal exchange—in terms of effort spent and rewards received—in marital and parental roles is associated with an elevated probability of experiencing depressive symptoms (Knesebeck and Siegrist 2003). Within the framework of intergenerational transfers, further research focuses on the impact of grandchildren and grandparental care on the grandparents' physical and mental health (e.g., Hughes et al. 2007). Other areas of research related to social support refer to recovery from illness and depression and the buffering model of social support (e.g., Multran et al. 1995; Krause 1987; Oxman and Hull 1997, 2001) and to the potential role of social support as a moderator in the depression-functional disability association (Travis et al. 2004). In a broader sense of health, Krause (2007) assessed the association of social support with meaning in life suggesting that greater anticipated support is associated with a deeper sense of meaning in life.

Lehtinen et al. (2005) analysed positive mental health (i.e., well-being) in 11 EU countries or regions based on Eurobarometer data, and found poorer mental health among groups with weak social support. For measuring social support, they used the three-item Oslo social support scale based on three questions that ask for (1) the reported number of close friends, (2) perceived concern and (3) practical help from others if needed. Hence, in the Eurobarometer 2002, the focus was rather on potential than on

actual support. Lehtinen et al. (2005) analysed support by others and did not distinguish between partners, children, relatives, friends or neighbours.

In a survey in Oslo, Dalgard et al. (1995) found that social support protects people against the development of mental disorder when they are exposed to stressors such as negative life events. This so-called buffering effect is especially strong in case of depression. According to McCabe et al. (1996), people who reported they had no close friend or relative with whom they could talk about personal or emotional problems also reported significantly poorer mental health. Julian et al. (1992) analysed the psychological well-being of professional men at midlife. Despite the small sample size (only 75 men) and the younger age group, the study is interesting because it reveals that men's well-being at midlife is influenced by the closeness to their child(ren), perceived closeness to their wife and the number of close friends.

Zunzunegui et al. (2001) assessed the link between emotional and instrumental support provided by children and living arrangements with the physical and mental health of older people in Spain and found that depressive symptoms were associated with low emotional support.

Additionally, intensive research on social support and psychological well-being conducted in China should be mentioned. These studies generally found a beneficial impact of social support from relatives on older people's psychological well-being and findings indicate that especially support from relatives has an important impact (Chen and Silverstein 2000; Krause and Liang 1993). Silverstein et al. (2006) investigated how multigenerational living arrangements and intergenerational transfers of financial, instrumental and emotional support influenced psychological well-being of older parents living in rural areas in China. Stronger emotional cohesion with children turned out to improve well-being as the strength of emotional ties to the child with whom the parent was closest was inversely related to depression.

As suggested by, e.g., House et al. (1988), Oxman and Berkman (1990), Multran et al. (1995) and Oxman and Hull (1997) the major components of social support are (1) network of support, (2) the type and amount of support, and (3) quality and adequacy of support. Proximity, frequency of contact and the type of relationship are structural characteristics referring to the social network (Oxman and Hull 1997). Accordingly, the current study covers different aspects of the network of support, namely the number of children, their place of residence and the frequency of contact with children. The presence of a spouse is a further and important dimension of social network. The contact with children might be of a different quality as compared to that with friends or neighbours. Studies on network structure focusing on who is providing support revealed stronger

effects for help provided by relatives and spouses as compared to friends (Dean et al. 1990; Primomo et al. 1990). Dean et al. (1990) examined differences in the effects of functional expressive support by source on depressive symptoms and found that spouse, friends, and adult children were found to rank in descending order of importance. The examination of frequency of interaction with network members is often applied as a measure of social support (House and Kahn 1985) and we assumed that older people who have frequent contact with their children were also emotionally supported by their offspring and got help and encouragement when they were physically and/or mentally ill.

Moreover, given the traditional gender differentials in responsibility for children, we expect the protective role of children to be stronger for mothers than for fathers. The role of adult daughters as caregivers has received widespread attention (see Walker et al. 1995, for a review). One might assume that the mental health of parents with adult daughters living nearby is better than those of parents whose adult daughters live far away, or of parents who have only adult sons living at any distance from their parents' home. The level of social support is probably a function of the number of children although it does not necessarily increase monotonically by parity.

Other determinants of mental health

Regardless of a person's nationality, his/her mental condition is determined by multiple factors, including biological (e.g., genetics, sex), individual (e.g., personal experiences), familial and social (e.g., social support), economic and environmental (e.g., social status and living arrangements) conditions (Lahtinen et al. 1999). The major mental health variables are gender, age, marital status, economic situation and employment, physical health, domestic circumstances and immigration status.

In general, poorer mental health is typically found among women (Lehtinen et al. 2005; Carta et al. 2005; Prince et al. 1999b; Alonso et al. 2004). Copeland et al. (1999b) assessed the prevalence of depression among individuals aged 65+ in nine European centres and found that also in this respect women outnumber men in the group of older people. Their meta-analysis shows an overall prevalence of diagnostic depression of 12.3% (14.1% for women, and 8.6% for men). The effect of gender is explained "in terms of methodology (women being more apt to report symptoms), psychopathology (women being more vulnerable and more exposed to aetiological factors) and socialisation (women's conflicting and unrewarding roles in society)" (Weissmann and Klerman 1977; cited by Beekman et al. 1999, p 309).

Results regarding the age effect vary. Analyses of depression in late life (i.e., of individuals aged 65 and over) reveal a modest effect of age (Prince et al. 1999b) or find no overall tendency of depression rising with age, except among the oldest old (Copeland et al. 1999a). Marital status is an important determinant of mental health. Being in a confiding relationship seems to have a protective effect, as widowed and divorced persons have poorer mental health (Lehtinen et al. 2003; Carta et al. 2005), and mental disorders are more common among persons never married as well as among persons previously married and now single (Alonso et al. 2004). Mental disorders and socio-economic disadvantages are closely interrelated, relatively high frequencies of mental disorders are found in connection with poor education, material disadvantage, low family income, unemployment and being a pensioner (Beekman et al. 1999; Alonso et al. 2004; Fryers et al. 2005; Lehtinen et al. 2005; Carta et al. 2005; Kessler et al. 1994). Depression is not an isolated illness but also occurs along with other health problems, in particular with physical illness (Copeland et al. 1999b). Poor physical health is an important risk factor for depression in later life (Lenze et al. 2001; Braam et al. 2005).

International comparisons reveal striking differences in depressive symptoms between countries. Copeland et al. (1999b) identified London, Berlin and Verona as high scorers, and Iceland, Liverpool, Zaragoza, Dublin and Amsterdam as low scorers. Analyses based on Eurobarometer data showed the lowest scores for mental health problems in Finland,¹ Sweden and The Netherlands. The highest scores, along with remarkable gender differences in terms of higher female to male ratios, were found in Great Britain, Italy and Portugal. Rather high rates were also observed in France and Greece, while Spain, Germany, Belgium, Denmark, Austria, Luxembourg and Ireland were in the middle range [European Opinion Research Group (EORG) 2003].

Data and method

SHARE aims at understanding the process of individual ageing in Europe and includes detailed cross-national information, among other things on health, well-being, economic circumstances and social networks for the

¹ Interestingly, the low scores for mental health problems in Finland stand in contrast with the fact that Finland has one of the highest suicide rates indicating that in this country, self-reports stand in contrast to behaviour, but might also be a problem with the assessment of "mental health".

following 11 continental European countries:² Austria, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Sweden, Switzerland and Spain. Data were collected between 2004 and 2005.

SHARE covers the non-institutionalised population aged 50 and older.³ Since spouses of persons aged 50 and more were also interviewed, some persons were younger than 50. “Release 2” comprised data on 31,115 individuals in 21,176 households, the weighted average response rate was 61.6% (Börsch-Supan and Jürges 2005⁴). SHARE was designed as a longitudinal survey, the data for the second wave were collected in spring 2007. Three new countries, namely the Czech Republic, Poland and Ireland also participated in this wave.

SHARE enables us to compare the mental health status in a variety of countries and to analyse the determinants of mental health in a very broad context. In contrast to other international comparative studies, SHARE includes representative samples of the total population.

Instruments

Outcome variable is depressive mood measured by the number of depressive symptoms. In our study, mental health was measured by the EURO-D scale. It was developed in a collaborative effort involving 11 European countries in order to compare symptoms of depression in 14 European centres (two centres each in Germany, Great Britain and The Netherlands). Five depression measures⁵

were harmonised into a 12-item scale (Prince et al. 1999a). The reliability of EURO-D was reported to be good. With regard to validity, the scale was shown to correlate well with other well-known health measures (Prince et al. 1999a). The EURO-D is an internally consistent scale, captures the essence of its parent instruments, has been validated in a cross-European study of depression prevalence,⁶ and permits valid comparisons of risk factor associations between countries (Prince et al. 1999a). The EURO-D scale comprises the following 12 items: depression, pessimism, suicidality (wishing death), guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment, tearfulness.⁷ The detailed questions are listed in “Appendix”. The EURO-D is a continuous measure of depressive symptoms; its score ranges from 0 to 12, with higher scores indicating higher levels of depression. Dewey and Prince (2005) suggest to set the threshold at score 3 and to define clinically significant depression as a EURO-D score higher than 3. The current analysis concentrated on the continuous variable EURO-D instead of the dichotomous one, as it allows a more precise analysis, which, moreover, is not dependent on a threshold. In the current sample, EURO-D was internally consistent for all countries, with Cronbach alpha being 0.72 for the pooled sample, ranging from 0.62 (in Switzerland) to 0.78 (in Spain).

Sample

The focus of the present study was on the association of mental health of older persons and structural dimensions of social support from their children. Since the interrelation between employment, type and burden of work on the one

² Moreover, data were collected in Israel in 2005/06. However, they were not included in the current analysis due to missing individual weights.

³ Collecting SHARE data was primarily funded by the European Commission within the 5th Framework Programme (project QLK6-CT-2001-00360 in the thematic programme area *Quality of Life*). Additional funding came from the US National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, Y1-AG-4553-01 and OGHA 04-064). Data collection in Austria (through the Austrian Science Foundation, FWF, grant number P-15422), Belgium (through the Belgian Science Policy Office) and Switzerland (through BBW/OFES/UFES) was nationally funded. The SHARE data collection in Israel was funded by the US National Institute on Aging (R21 AG025169), by the German-Israeli Foundation for Scientific Research and Development (G.I.F.), and by the National Insurance Institute of Israel. Further support by the European Commission provided within the 6th Framework Programme (projects SHARE-I3, RII-CT-2006-062193, and COMPARE, 028857) is gratefully acknowledged. The SHARE dataset is presented in detail in Börsch-Supan et al. (2005a) and Börsch-Supan and Jürges (2005).

⁴ See also <http://www.share-project.org/index.php?page=Sample&menu=2&sub=>.

⁵ Geriatric Mental State-AGECAT (GMS-AGECAT), SHORT-CARE, Centre for Epidemiological Studies Depression scale (CES-D), Zung Self-Rating Depression Scale (ZSDS), Comprehensive Psychopathological Rating Scale (CPRS).

⁶ For reliability purposes, internal consistency was assessed by calculating the inter-item correlations, the item-total correlations and the standardised alpha values. “In each centre, the EURO-D seemed to be adequately internally consistent, although the inter-item and item-total correlations and the standardised alpha value were higher for the CES-D EURO-D than for the GMS EURO-D” (Prince et al. 1999a, p 333). The criterion validity of the EURO-D scales was assessed by comparing the EURO-D scale with the CES-D, CIDI, GMS-AGECAT or CES-D scales. “Agreement with continuous measures was assessed by Spearman non-parametric correlations, and for dichotomous measures by the area under the receiver operating characteristic curve” (Prince et al. 1999a, p. 332).

⁷ The symptoms of depression included in our analyses were chosen by an international consortium including physicians. Admitting to feeling sad and depressed, having problems with sleeping, tearfulness and the wish to be dead are clearly signs of depression and having several of these symptoms is obviously a sign of poor mental health. On its homepage, the National Institute of Mental Health lists ten symptoms, all of which are included in our analysis. It recommends that “[i]f five or more of these symptoms are present every day for at least two weeks and interfere with routine daily activities such as work, self-care, and childcare or social life, seek an evaluation for depression” (see <http://www.nimh.nih.gov/publicat/depcancer.cfm>).

hand and mental health on the other is considerably complex (Hamilton et al. 1997), the relation between employment and mental health among older persons cannot be investigated with the current cross-sectional data and would be more appropriate for longitudinal data. We therefore concentrated on persons aged 60+ who are out of the labour force. When excluding all persons employed or unemployed, the sample comprised 15,469 persons (8,622 women and 6,847 men).

Data-analytic design

In order to investigate the effect of children, our models focused on their number, their place of residence and the parents' contact with them. If a person had several children we included the distance to the child living closest, as well as the most frequent contact with a child. In SHARE, accurate information on a child (marital status, partner, transition to adulthood, employment status, education, frequency of contact) is available for up to four children. If a respondent had more than four children, the data on the children of higher order were limited to basic facts (natural child, gender, year of birth, place of residence).

We conducted multivariate linear regression models using the EURO-D scale as dependent variable to estimate the children's impact on their older parents' mental health. In addition to children, our analysis included socio-economic variables that were found to have an effect on mental health: age, sex, family status (living together with a spouse or a partner, never married and living single, divorced and living single, widowed and living single), highest educational level (primary school: ISCED 0–1, lower secondary: ISCED 2, higher secondary: ISCED 3–4, and tertiary education: ISCED 5–6) and limitations in activities of daily living (ADL, no limitations vs. one or more limitations). Regressions were performed separately for men and women to take into account different gender-specific effects of explanatory and control variables.

Findings

Descriptive findings

First, descriptive results indicate a mean EURO-D scale of 3.3 among women, and 2.2 among men. Figures 1a, b show the distribution of depressive symptoms across the 11 countries participating in the first wave of SHARE. The highest levels of depressive symptoms were recorded in Spain, Italy and France (with exceptionally high levels among Spanish women), the lowest levels were found among Danish women and Austrian men.

Fig. 1 a Distribution of number of depressive symptoms among women. Source SHARE, women aged 60 and older who are not in the labour force, weighted sample. Note sorted in ascending order according to the percentages of “not depressed”, i.e., EURO-D 0 to 3. b Distribution of number of depressive symptoms among men. Source SHARE Release 2.0.1, men aged 60 and older who are not in the labour force, weighted sample. Note sorted in ascending order according to the percentages of “not depressed”, i.e., EURO-D 0–3

Tables 1 and 2 show the characteristics of the study sample. The mean age was 71.2 years for men and 72.6 years for women, most respondents were between ages 60 and 69, and there were more women than men (56%). The sample adequately reflects the living conditions of older people, with a high proportion of widowed women, which is typically found in all sample countries. As expected, in our sample of older persons men were generally better educated than women.⁸ Regarding physical health, women more often reported one or more limitations in activities of daily living than men did (18 vs. 14%).

In our data, 14% of both men and women were childless, most of them had two children. Childlessness was lowest in Denmark and Greece, and more people in Spain and in the Netherlands reported that they had four and more children. Local proximity to the children varied strongly across the 11 SHARE countries: whereas in the Nordic countries only

⁸ The Austrian data showed differences in the distribution of educational level. Compared to the microcensus 2003, groups with higher education were overrepresented in the Austrian SHARE data. This phenomenon is frequently observed in surveys and might also hold true for other countries.

Table 1 Distribution of variables (percentages) for women

	AT	DE	SE	NL	ES	IT	FR	DK	GR	CH	BE	ALL
Number of children												
Childless	17	15	12	13	14	16	13	11	11	13	12	14
One child	26	26	19	10	16	19	22	14	17	23	21	21
Two children	33	31	36	31	29	31	28	36	46	30	29	31
Three children	14	17	20	22	20	19	20	21	17	19	20	19
Four and more children	11	12	12	23	22	14	17	17	8	15	18	15
Location of child living closest												
Childless	17	15	12	13	14	16	13	11	11	13	12	14
In same house(hold)	26	25	2	6	37	44	13	4	38	19	12	27
Less than 1 km away	15	14	17	21	25	14	15	19	19	15	24	17
Between 1 and 25 km away	30	32	44	48	17	19	37	47	22	35	43	29
Between 25 and 100 km away	7	7	13	8	2	4	10	13	3	10	6	7
More than 100 km away	5	8	12	3	5	3	12	6	7	8	2	7
Contact with child(ren)												
Childless	17	15	12	13	14	16	13	11	11	13	12	14
Child(ren) in house(hold)	26	25	2	6	37	44	13	4	38	19	12	27
Daily contact	19	18	30	28	30	27	25	27	31	17	31	24
Several times a week or weekly	31	35	51	48	17	12	41	52	18	42	39	30
Less than weekly	7	7	5	4	3	2	8	6	2	9	5	5
Family status												
Living with spouse or partner	37	47	43	47	45	44	48	47	42	51	54	46
Never married, no partner	9	6	6	6	7	9	5	4	4	5	3	7
Divorced, no partner	9	7	12	9	2	3	7	12	4	7	6	6
Widowed, no partner	45	41	39	38	47	44	40	37	49	36	36	42
Mean age (in years)	71.9	72.1	75.0	72.3	73.6	72.0	73.4	72.8	71.5	73.0	72.6	72.6
Highest educational attainment												
Primary school	0	2	55	30	83	75	64	0	78	32	41	46
Lower secondary	48	37	14	45	11	10	9	45	8	37	24	22
Higher secondary or tertiary	52	61	31	25	5	14	26	55	14	31	35	32
ADL limitations												
No limitations	86	83	81	85	79	81	82	85	84	88	78	82
One and more limitations	14	17	19	15	21	19	18	15	16	12	22	18
Mean EURO-D	2.5	2.8	2.6	2.6	4.5	3.7	3.5	2.0	3.0	2.3	2.9	3.3
<i>N</i> (unweighted)	725	932	796	781	856	866	953	477	830	262	1,144	8,622

Source: SHARE Release 2.0.1, women aged 60 and older who are not in the labour force, weighted sample

a minority of older people were parents living together in the same house(hold) with a child, this living situation was much more common in the southern countries. If we disregard childless people, older adults in Europe generally had frequent contact with their children. About one out of four lived together with a child in the same home or household, another 25% had daily contact with at least one of their children. Three out of ten had contact with their child(ren) several times a week or weekly. Just a small group had only little contact with their child(ren), i.e., less than once a week.

Considering parents only, we observed a high degree of local proximity. With the exception of Swedish mothers and

fathers and Danish fathers, at least three out of four had a child who lived no more than 25 km away. Moreover, one in three was sharing a home or the household with a child, 28% had daily contact with their child(ren), one-third had frequent contact with their child(ren) and saw or heard them several times a week or weekly, whereas only 7% of all fathers and 6% of all mothers had only little contact with their child(ren) and saw or heard them less than once a week. Proximity to and contact of older people with their children varied across Europe: In Italy, Spain and Greece, elders frequently lived with their children (mothers: 43–52%, fathers: 43–48%), which was very rare in Sweden, Denmark and the Netherlands (mothers: 3–7%, fathers: 3–9%)

Table 2 Distribution of variables (percentages) for men

	AT	DE	SE	NL	ES	IT	FR	DK	GR	CH	BE	AT
Number of children												
Childless	14	16	10	8	13	16	14	9	9	12	11	14
One child	22	22	13	13	13	18	19	11	16	19	21	18
Two children	36	35	38	40	28	35	29	41	51	33	32	34
Three children	17	17	21	21	22	18	19	22	17	22	19	19
Four and more children	11	10	18	18	24	14	20	17	6	15	17	15
Location of child living closest												
Childless	14	16	10	8	13	16	14	9	9	12	11	14
In same house(hold)	24	20	3	8	38	41	13	5	42	14	13	25
Less than 1 km away	13	13	16	25	24	15	13	15	18	10	21	16
Between 1 and 25 km away	32	32	47	47	19	22	35	45	20	46	45	30
Between 25 and 100 km away	9	9	14	8	2	3	12	17	3	11	7	7
More than 100 km away	8	9	11	4	5	3	14	8	7	7	3	8
Contact with child(ren)												
Childless	14	16	10	8	13	16	14	9	9	12	11	14
Child(ren) in house(hold)	24	20	3	8	37	41	13	5	42	14	13	25
Daily contact	17	17	28	29	30	27	23	23	31	11	29	24
Several times a week or weekly	34	39	53	49	16	13	42	54	16	47	40	31
Less than weekly	11	8	7	6	4	3	9	8	1	16	6	6
Family status												
Living with spouse or partner	77	78	70	77	76	76	80	71	82	79	82	77
Never married, no partner	5	8	6	3	8	9	5	4	2	5	3	7
Divorced, no partner	6	4	10	5	2	2	6	10	4	5	4	4
Widowed, no partner	12	11	15	14	14	13	9	14	13	12	11	12
Mean age (in years)	70.1	70.3	73.3	70.7	72.4	70.9	71.7	71.6	71.5	72.2	71.1	71.2
Highest educational attainment												
Primary school	0	0	53	22	75	62	54	0	59	23	32	39
Lower secondary	22	9	13	36	13	20	6	21	9	26	21	14
Higher secondary or tertiary	78	91	34	42	12	18	41	79	31	51	46	47
ADL limitations												
No limitations	90	87	87	92	87	86	82	85	90	92	88	86
One and more limitations	10	13	13	8	13	14	18	15	10	8	12	14
Mean EURO-D	1.6	1.8	1.8	1.9	2.6	2.6	2.3	1.6	1.8	1.5	1.9	2.2
N (unweighted)	495	773	746	698	610	680	712	360	613	214	946	6,847

Source: SHARE Release 2.0.1, men aged 60 and older who are not in the labour force, weighted sample

(see also Hank 2007). Nevertheless, variation in the contact was less pronounced. In all countries, older parents had frequent contact with their children: The proportion of those having at least one weekly contact with their child(ren) was 93% among fathers and 94% among mothers, being lowest for Swiss fathers (82%) and highest for Italian and Greek parents (97–99%) (results not shown in the tables).

Multivariate results

Multivariate linear regression models were estimated separately for men and women (Table 3), the explanatory

variable being the number of children (models 1 and 4), local proximity to the closest child (models 2 and 5) and most frequent contact with a child (models 3 and 6).

The number of children is not relevant for the mental health of older women (though it was slightly better for women with two children) but does have a significant influence on the mental health of men. Older men with up to three children had significantly fewer depressive symptoms than childless men and fathers of four or more children (models 1 and 4). The result that childlessness has an impact on men's mental health but not on that of women might indicate that childless older men are a much more special group as compared to childless older women. The

Table 3 Estimated coefficients from regressions for mental health among older men and women

	Women			Men		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Country						
AT	−0.27**	−0.28***	−0.28***	−0.22**	−0.23**	−0.23**
DE	−0.06	−0.07	−0.06	−0.13+	−0.13+	−0.13+
SE	−0.29***	−0.28***	−0.27***	−0.18*	−0.16*	−0.16*
NL	−0.32***	−0.31***	−0.31***	−0.09	−0.09	−0.07
ES	1.15***	1.16***	1.14***	0.47***	0.48***	0.48***
IT	0.59***	0.58***	0.57***	0.50***	0.49***	0.48***
FR	0.39***	0.39***	0.40***	0.42***	0.44***	0.43***
DK	−0.70***	−0.69***	−0.68***	−0.33***	−0.32***	−0.31**
GR	0.08	0.06	0.05	−0.05	−0.08	−0.08
CH	−0.51***	−0.51***	−0.51***	−0.33**	−0.32**	−0.33**
BE	−0.06	−0.05	−0.05	−0.06	−0.07	−0.05
Number of children						
Childless ^a	0			0		
One child	0.02			−0.19+		
Two children	−0.08			−0.24*		
Three children	0.01			−0.19+		
Four and more children	0.04			−0.03		
Location of child living closest						
Childless		0.02			0.18+	
In same house(hold)		0.04			0.02	
Less than 1 km away		−0.06			0.04	
Between 1 and 25 km away ^a		0			0	
Between 25 and 100 km away		0.01			−0.01	
More than 100 km away		0.02			−0.14	
Contact with child(ren)						
Childless			0.08			0.24*
Child(ren) in house(hold)			0.11			0.07
Daily contact			0.08			0.07
Several times a week or weekly ^a			0			0
Less than weekly			0.21+			0.24*
Family status						
Living with spouse or partner ^a	0	0	0	0	0	0
Never married. no partner	0.29*	0.29*	0.29*	−0.04	−0.04	−0.05
Divorced, no partner	0.64***	0.64***	0.64***	0.24+	0.26*	0.20+
Widowed, no partner	0.37***	0.37***	0.37***	0.55***	0.55***	0.53***
Age effect						
Age	−0.01	0.01	0.00	0.01	0.01	0.02
Age × age/100	0.01	0.00	0.01	0.00	0.00	0.00
Highest educational attainment						
Primary school	0.49***	0.49***	0.49***	0.23***	0.23***	0.24***
Lower secondary	0.27***	0.27***	0.27***	−0.01	−0.02	−0.01
Higher secondary or tertiary ^a	0	0	0	0	0	0
ADL limitations						
No limitations ^a						
One and more limitations	1.79***	1.79***	1.79***	1.78***	1.79***	1.79***
Constant	1.99	1.55	1.61	0.64	0.37	0.20

Table 3 continued

	Women			Men		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
R^2	0.16	0.16	0.16	0.14	0.14	0.14
N	8,393	8,380	8,393	6,698	6,682	6,698

For the country effects, the coefficients show the deviation from the grand mean. Source: SHARE Release 2.0.1, respondents aged 60 and older who are not in the labour force

^a Reference category

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

local proximity of children turned out to have no explanatory power for the mental health of their parents (models 2 and 5).

We detected a protective effect of the contact with children, since fathers and mothers who saw or talked to their child(ren) less often than once a week had significantly higher levels of depression. Older fathers and mothers who lived with their children or who had daily contact with them turned out to have slightly more depressive symptoms compared to those with regular contact (several times a week or weekly). This result might reflect the causal relationship between parents' mental and/or physical health and co-residence with a child. Many older parents might live with their child(ren) because of physical and/or mental health problems. Moreover, daily contact between older parents and their children might also be an indicator for poor physical and/or mental health of the elders. Unfortunately, the direction of causality cannot be disentangled with the current data.

As one may wonder about the relative impact of the 12 items contributing to the EURO-D scale, we excluded single items from the EURO-D scale. In one model, we left out the question on depression from our analysis as one might argue that a direct question about depression might lead to underreporting. In another model, we left out the item on interest, as the loss of interest is not necessarily an indicator for depression, especially at older ages. Following the idea of Copeland et al. (1999a) we left out the somatic symptoms when calculating the level of depression in the third model. The analysis clearly shows that our results are stable and do not depend on the 12 contributing items (tables not shown here).

To determine whether the correlation between contact with children and socio-demographic characteristics and mental health differs across European countries, models were run separately for each country. Little contact with children seems to affect the mental health of older mothers in different ways. Whereas older mothers in Sweden and Denmark reported rather few depressive symptoms, those in Austria, Germany, The Netherlands, France, Greece, Switzerland and Belgium had more depressive symptoms.

Having little contact with children was very rare in Italy and Spain (2–3%) and the corresponding coefficients indicated only slightly higher levels of depression.

Moreover, we detected substantial differences in the link between divorce and depression of older women. On the one hand, being divorced seemed to be very harmful for the mental health of older women in more traditional countries such as Spain, Italy and Greece, but also in The Netherlands. On the other hand, divorced older women (with no new partner) in France and Germany were not significantly more depressed than those who had a partner. Finally, our study revealed differences regarding the correlation between mental health and education. Once more, Spain stood out as low-educated women reported more severe depressive symptoms, while education did not have an impact on the mental health of older women in Sweden. In Belgium, the effect of education was comparably low (Table 4).

We briefly compared the country-specific results for men: the association between children on the mental health of older men was strongest in The Netherlands, Spain, Greece and Switzerland, where childless men as well as fathers with few contacts to their children suffered (significantly) more from depressive symptoms. In all 11 European countries, widowed men were more depressed than divorced men, with widowhood being more harmful in Germany, the Netherlands, Italy, Belgium and Switzerland. Finally, in Sweden educational differences had no effect on men's depression (Table 5).

Discussion

The current paper focuses on children's impact on the mental health of older adults and finds indicators for a beneficial impact of children. To begin with, childless men had somewhat higher levels of depression, while for women the number of children appears to have no implications on depression. These results only partly correspond to findings for China where older persons with fewer children tended to have more depressive symptoms

Table 4 Results of logit models for mental health among older women and contact with child(ren), country-specific models

	ALL	AT	DE	SE	NL	ES	IT	FR	DK	GR	CH	BE
Contact with child(ren)												
Childless	0.08	0.35	0.31	0.11	-0.22	0.31	-0.12	-0.10	0.26	0.26	-0.32	0.10
Child(ren) in house(hold)	0.11	-0.05	0.08	0.17	0.27	0.13	0.04	-0.28	-0.03	0.55*	0.11	0.02
Daily contact	0.08	-0.15	0.25	0.34*	-0.04	-0.10	0.20	-0.02	0.16	0.54*	-0.48	-0.04
Several times a week or weekly ^a	0	0	0	0	0	0	0	0	0	0	0	0
Less than weekly	0.21+	0.50	0.35	-0.58	0.60	0.05	0.08	0.35	-0.44	0.27	0.13	0.33
Family status												
Living with spouse or partner ^a	0	0	0	0	0	0	0	0	0	0	0	0
Never married, no partner	0.29*	0.19	0.67+	0.72+	1.12*	-0.48	0.36	-0.10	-0.46	0.90+	1.09+	-0.00
Divorced, no partner	0.64***	0.78**	0.12	0.44+	1.41***	2.54**	1.14	-0.13	0.60*	0.83+	0.59	0.68*
Widowed, no partner	0.37***	0.53**	0.54**	0.16	0.56**	0.53*	0.01	0.31+	0.14	0.42*	0.45+	0.43**
Age effect												
Age	0.00	0.27+	-0.17	-0.20	-0.04	0.35+	-0.05	-0.27+	-0.19	0.24	0.15	-0.23
Age × age/100	0.01	-0.18	0.13	0.14	0.03	-0.22+	0.05	0.17+	0.13	-0.14	-0.10	0.16
Highest educational attainment												
Primary school	0.49***	-0.11	1.09*	-0.05	0.64**	1.66***	0.57*	0.34+		0.65**	0.44	0.25
Lower secondary	0.27***	0.42*	0.75***	-0.09	0.22	1.14*	0.10	0.22	0.42*	0.05	0.17	0.05
Higher secondary or tertiary ^a	0	0	0	0	0	0	0	0	0	0	0	0
ADL limitations												
No limitations ^a	0	0	0	0	0	0	0	0	0	0	0	0
One and more limitations	1.79***	2.56***	1.59***	1.61***	1.36***	2.11***	2.35***	1.74***	1.26***	1.71***	1.22***	1.47***
Constant	1.61	-8.28	7.34	9.35+	3.11	-11.97+	3.70	13.36*	8.42	-8.27	-3.81	10.65*
R ²	0.16	0.18	0.15	0.10	0.11	0.17	0.15	0.09	0.10	0.12	0.10	0.10
N	8,393	718	905	772	758	825	858	911	473	783	258	1132

The model for "ALL" countries also includes country dummies (compare Table 2, Model 3). Source: SHARE Release 2.0.1, women aged 60 and older who are not in the labour force

^a Reference category

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5 Results of logit models for mental health among older men and contact with child(ren), country-specific models

	ALL	AT	DE	SE	NL	ES	IT	FR	DK	GR	CH	BE
Contact with child(ren)												
Childless	0.24*	0.29	0.15	-0.29	1.05**	0.59	-0.03	-0.05	0.37	0.75*	0.66	0.03
Child(ren) in house(hold)	0.07	0.03	0.24	0.38	0.01	0.10	0.06	0.16	0.72	0.11	-0.13	0.18
Daily contact	0.07	-0.12	0.14	0.01	-0.04	0.05	0.44	-0.14	0.32	0.00	0.23	0.09
Several times a week or weekly ^a												
Less than weekly	0.24*	0.33	-0.32	0.22	0.58+	0.69	-0.08	0.17	0.88*	1.54	0.52	0.25
Family status												
Living with spouse or partner ^a	0	0	0	0	0	0	0	0	0	0	0	0
Never married, no partner	-0.05	-1.10**	-0.04	0.27	-0.83	-0.41	0.84+	0.25	0.22	-0.07	-0.20	0.11
Divorced, no partner	0.20+	0.25	0.69	-0.40	0.56	-0.40	0.08	-0.01	0.09	0.50	0.95+	0.26
Widowed, no partner	0.53***	0.47+	0.94***	0.18	0.91***	0.14	1.16**	0.15	0.27	0.47+	0.64	0.68***
Age effect												
Age	0.02	-0.09	-0.11	-0.01	0.24	-0.15	-0.21	0.21	-0.05	0.19	-0.05	-0.00
Age × age/100	0.00	0.09	0.09	0.02	-0.18	0.13	0.17	-0.14	0.04	-0.10	0.03	0.01
Highest educational attainment												
Primary school	0.24***		0.92	0.01	0.57**	0.46	0.53*	-0.03		0.25	0.62*	0.19
Lower secondary	-0.01	-0.15	-0.02	0.03	0.12	0.10	0.21	-0.65+	-0.29	-0.02	0.46	0.18
Higher secondary or tertiary ^a	0	0	0	0	0	0	0	0	0	0	0	0
ADL limitations												
No limitations ^a	0	0	0	0	0	0	0	0	0	0	0	0
One and more limitations	1.79***	2.49***	1.73***	2.12***	1.46***	2.44***	2.14***	1.80***	1.41***	1.19***	1.53**	1.25***
Constant	0.20	3.11	4.83	1.18	-6.91	5.78	8.23	-5.49	2.72	-7.32	3.31	0.88
R ²	0.14	0.21	0.12	0.14	0.10	0.17	0.18	0.10	0.12	0.11	0.13	0.09
N	6,698	488	761	729	689	596	676	680	353	582	210	934

The model for “ALL” countries also includes country dummies (compare Table 2, Model 6). Source: SHARE Release 2.0.1, men aged 60 and older who are not in the labour force

^a Reference category

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(Silverstein et al. 2006). Presumably, these conflicting results might be explained by the more traditional society in rural China as compared to Europe.

Furthermore, the results suggest that fewer contacts with children were associated with more depressive symptoms among older parents supporting Oxman et al. (1992) who identified the number of children making weekly visits as being significant for depression among older parents. One might argue that the frequency of contact does not reflect quality and adequacy of the relationship with and the social support by one's adult children, the first being a crucial dimension of social support (Oxman et al. 1992; Umberson 1992). Older people might have frequent contact with their children either because their children visit or call them regularly or because the parents call and visit their children. Moreover, the reason for seeing and hearing each other does not have to be joyful, it might also be a conflict or a dispute. SHARE does not include any information on the quality of the contact with children, though we argue that a high frequency is a sign of integration into the family, whereas very little contact with one's children would normally be interpreted as a sign of disinterest and lack of concern for one's old parents part. In view of the decreasing fertility in Western societies, we expect mental health to deteriorate.

The outcomes of the control variables are in line with previous research. Moreover, they reveal remarkable gender-specific differences. Limitations with activities of daily living are the main determinants of mental health—for both men and women. Nevertheless, the interrelation between physical and mental health is difficult to disentangle and might be reciprocal. Education and family status are strongly associated with depressive mood: the number of depressive symptoms risk decreased with improving education, thus confirming the expected correlation. In addition, our gender-specific analysis showed that the correlation between low education (primary only) and poor mental health is more pronounced among women than among men. Regarding family status, older people who lived with a spouse or a partner had the lowest levels of depression. Divorced and widowed older adults not living together with a (new) partner had higher levels of depressive symptoms. The same held true for never married women who had no partner with whom they shared the household. However, never married men living without a partner reported no elevated levels of depressive symptoms. Although divorce and widowhood are associated with higher levels of depressive symptoms, the strength of the correlation is different among men compared to women. For men, widowerhood has a stronger negative effect on mental health as compared to divorce, whereas for women it is the other way round: divorced women more often have depressive symptoms than widowed women.

Finally, in the multivariate analysis, age turned out to have no explanatory power for the mental health of older people.

Another interesting result is the fact that the presence of a spouse or partner is much more associated with depressive mood of older people than the presence of or contact with one's children. These findings are in line with US studies in the early 1990s where “spouse, friends, and adult children were found to rank in descending order of importance” (Dean et al. 1990).

In a study on the importance of social support and depression to recovery from illness, Multran et al. (1995) distinguished three different kinds of social support effects, namely quantity of support, source of support and subjective assessment of support. On the one hand, they suspect the quantity of support to be least likely to influence recovery. On the other, the source of support may be a considerable factor and they suppose being able to share a confidence with a spouse is more likely to influence patients' well-being than their ties to children, siblings, other relatives, or friends. Accordingly, the number of children might be interpreted as indicators for quantity of support. In this sense, the presented findings support the assumption of Multran et al. (1995). What is more, the present study also confirms their weighting with regard to the source of support. However, we were unable to analyse the quality of the contact with children or support or expressive support like showing love, esteem and concern for the parents (e.g., Dean et al. 1990).

Nevertheless it has to be underlined that social networks, and especially close, confiding relationships, can be both protective and risk factors (Oxman et al. 1992). The death of a close person, e.g., a spouse, child, relative or friend, losing one's partner or one's job can trigger a depression. Tsang et al. (2007), analysing family support and depression in older people in Taiwan, finds that support from sons and daughters-in-law is more important there for older persons' mental health than support from their spouse. Moreover, he concludes that, unlike in Western societies, support from friends is not relevant for depression. In the light of these findings we may conclude that children and partners have different impacts on mental health in Asian and Western cultures.

Cultural differences are definitely a main aspect in any international and cross-cultural analysis. Although cross-cultural surveys allow comparative ageing research, problems of comparability of behavioural and psychological phenomena may arise (Tesch-Römer and Kondratowicz 2006). People from different cultural backgrounds might understand and interpret terms and concepts differently, which might cause variation across the participating countries (Bardage et al. 2005; Lehtinen et al. 2005). Therefore, the differences in mental health might be

“mainly due to methodological/cultural biases, but of course they can also indicate true differences between countries” (Lehtinen et al. 2005, p 5). Börsch-Supan et al. (2005) and in more detail Jürges (2007) address the role of reporting styles, their impact on cross-country differences in self-assessed health and comparability of health measures. Using a standardised health index, they find that Scandinavians (Danish and Swedish) have a more positive attitude towards their health and systematically overvalue their health as compared to the SHARE average. Germans, Dutch and Swiss are less positive and tend to undervalue their health, whereas differences between reported and adjusted health levels are unsystematic in Mediterranean countries and in Austria. Our study focused on identifying an objective indicator of mental health. Nevertheless, the question of comparability across countries was also an important issue. In the light of the results for physical health by Jürges (2007) our findings tend to be robust: France, Italy and Spain turned out to be the least healthy countries according to Jürges (2007) and had the highest levels of depression in our analyses. Moreover, respondents in these countries do not systematically undervalue their self-perceived health and we may assume that this holds true not only for self-perceived health but also for questions on mental health. Nevertheless, questions of physical health are socially much more accepted and less tabooed than questions of mental health. What is more, their taboo levels might be different across countries.

The high levels of depression among Spanish and Italian women might reflect the changes in women’s role in society. Spain, as many other countries in the Mediterranean, has undergone a period of economic and social transition (Zunzunegui et al. 1998, Zunzunegui 2001) and the erosion of ideals and traditional gender roles might have affected the mental health of older women who grew up with traditional gender roles. Whereas older women in Spain and Italy reported high levels of depression, their peers in a third Mediterranean country included in SHARE—Greece—had a much better mental health and further analyses are required to explain this phenomenon.

To some extent, the country-specific results reflect the different roles of families in Europe. Nordic countries are characterised by a rather early transition to adulthood. In southern countries, children leave the parental home at a very late age. As mentioned earlier, the majority of older parents there live with a child, which is very rare in Nordic countries. In a study on depression in Spain, Zunzunegui et al. (1998) argue that the effects of social support on depressive symptoms may depend on social values and cultural norms. In Mediterranean countries, older persons’ social networks are “essentially centred around the family”, whereas studies carried out in predominantly

Anglo-Saxon populations found a different hierarchical order for the provision of social support, with “emotional support from friends having a greater effect than that from the family” (ibid, p 202). Although we did not detect any correlation between little contact with one’s children and poor mental health in older parents in Spain and Italy (which might be explained by very small numbers), we found this link in Greece and in central Europe. Moreover, our results might reflect a different hierarchical order of family and friends in the Nordic countries (Sweden and Denmark) where few contacts with children do not negatively influence the mental health of their older parents.

Several limitations have to be mentioned. The current study relates only to the structural dimension of social support. Due to data restrictions, functional aspects of social support like emotional and instrumental dimensions as well as issues like adequacy of support, perceived satisfaction or quality of contact were not covered. Moreover, the longitudinal perspective of SHARE will allow to investigate dynamic aspects and causalities. It has been stressed that with the current data the causal direction between social support and depressive mood can not be assessed but only associations that might indicate possible causalities. Nevertheless, these associations might indicate a potential impact of relationships on well-being (Umberson 1992). Moreover, having parents who suffer from depression may also be a reason for avoiding contact with them.

Studies on frequency of interaction with network members have suggested that friends are distinctly significant from spouses and children. According to one explanation, support provided by friends is given freely rather than from a sense of expectation or obligation (Antonucci and Jackson 1987). Others suggested that support from one’s adult children and relatives may implicate strains and issues of autonomy and dependency (Circirelli 1981). Due to lack of data, we were not able to include other network sources nor the motivation for the frequency of contact with children. Moreover, the question of quality and adequacy of social relationships, which have been reported to be key predictors for mental health (Blazer 1982; Oxman et al. 1992), needs to be addressed in further studies. Finally, it has to be mentioned that data included in SHARE are based on interviews, they are self-reports and include no medical diagnoses by general practitioners or psychiatrists. Moreover, the association has to be assessed critically as parents who are depressive might have a biased view on children.

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Appendix: 12 items contributing to the EURO-D-scale

For further details see SHARE Codebook (Buber 2006).⁹

1. Depression: “In the last month, have you been sad or depressed?” (a) Yes, (b) No
2. Pessimism: “What are your hopes for the future?” (a) Any hopes mentioned, (b) no hopes mentioned
3. Suicidality: “In the last month, have you felt that you would rather be dead?” (a) Any mention of suicidal feelings or wishing to be dead, (b) no such feelings
4. Guilt: “Do you tend to blame yourself or feel guilty about anything?” (a) Obvious excessive guilt or self-blame, (b) no such feelings, (c) mentions guilt or self-blame, but it is unclear if these constitute obvious or excessive guilt or self-blame

“So for what do you blame yourself?” (a) Example(s) given constitute obvious excessive guilt or self-blame, (b) example(s) do not constitute obvious excessive guilt or self-blame, or it remains unclear if these constitute obvious or excessive guilt or self-blame.

5. Sleep: “Have you had trouble sleeping recently?” (a) Trouble with sleep or recent change in pattern, (b) no trouble sleeping
6. Interest: “In the last month, what has been your interest in things?” (a) Less interest than usual mentioned, (b) no mention of loss of interest, (c) non-specific or uncodeable response

“So, do you keep up your interests?” (a) Yes, (b) No

7. Irritability: “Have you been irritable recently?” (a) Yes, (b) No
8. Appetite: “What has your appetite been like?” (a) Diminution in desire for food, (b) no diminution in desire for food, (c) non-specific or uncodeable response

“So, have you been eating more or less than usual?” (a) Less, (b) More, (c) Neither more nor less

9. Fatigue: “In the last month, have you had too little energy to do the things you wanted to do?” (a) Yes, (b) No
10. Concentration:¹⁰ “How is your concentration? For example, can you concentrate on a television programme, film or radio programme?” (a) Difficulty in concentrating on entertainment, (b) no such difficulty mentioned

⁹ For the items “guilt”, “interest” and “appetite”: those who gave a non-specific response or an unclear answer were asked a second question.

¹⁰ Those who replied they found it difficult to concentrate in one of the two questions were coded as having problems with concentration.

“Can you concentrate on something you read?” (a) Difficulty in concentrating on reading, (b) no such difficulty mentioned

11. Enjoyment: “What have you enjoyed doing recently?” (a) Fails to mention any enjoyable activity, (b) mentions any enjoyment from activity
12. Tearfulness: “In the last month, have you cried at all?” (a) Yes, (b) No

References

- Alonso J, Angermeyer MC, Bernet S, Bruffaerts R, Brugha TS, Bryson H, de Girolamo G, de Graaf R, Demyttenaere K, Gasquet I, Haro JM, Katz SJ, Kessler RC, Kovess V, Lépine JP, Ormel J, Polidori G, Russo LJ, Vilat G (2004) Prevalence of mental disorders in Europe: results from the European Study of Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatr Scand* 109(suppl 420):21–27
- Antonucci TC, Jackson JS (1987) Social support, interpersonal efficacy and health. In: Carstensen L, Edelman BA (eds) *Handbook of clinical gerontology*. Pergamon, New York, pp 291–311
- Bardage C, Pluijm SMF, Pedersen NL, Deeg DJH, Jylhä M, Noale M, Blumstein T, Otero A (2005) Self-rated health among older adults: a cross-national comparison. *Eur J Ageing* 2:149–158
- Beekman ATF, Copeland JRM, Prince MJ (1999) Review of community prevalence of depression in later life. *Br J Psychiatry* 174:307–311
- Blazer DG (1982) Social support and mortality in an elderly community population. *Am J Epidemiol* 115:684–694
- Börsch-Supan A, Hank K, Jürges H (2005) A new comprehensive and international view on ageing: introducing the survey of health, ageing and retirement in Europe. *Eur J Ageing* 2(4):245–253
- Börsch-Supan A, Jürges H (eds) (2005) *The survey of health, ageing and retirement in Europe—methodology*. MEA Eigenverlag, Mannheim
- Braam AW, Prince MJ, Beekman ATF, Delespaul P, Dewey ME, Geerlings SW, Kivela SL, Lawlor BA, Magnusson H, Meller I, Pérès K, Reischies FM, Roelands M, Schoevers RA, Saz P, Skoog I, Turrina C, Versporten A, Copeland JRM (2005) Physical health and depressive symptoms in older Europeans. Results from EURODEP. *Br J Psychiatry* 187:35–42
- Buber I (2006) SHARE codebook. Research report 30. Vienna Institute of Demography, Vienna
- Carta MG, Bernal M, Haro MC, Haro-Abad JM (2005) Migration and mental health in Europe (the state of mental health in Europe working group: appendix I). *Clin Pract Epidemiol Ment Health*. Available online at <http://www.cpementalhealth.com/content/1/1/13>. Accessed 23 Oct 2006
- Chen X, Silverstein M (2000) Intergenerational social support and the psychological well-being of older parents in China. *Res Aging* 22:43–65
- Circirelli VG (1981) *Helping elderly parents: the role of adult children*. Auburn House, Boston
- Copeland JRM, Beekman ATF, Dewey ME, Jordan A, Lawlor BA, Linden M, Lobo A, Magnusson H, Mann AH, Fichter M, Prince MJ, Saz P, Turrina C, Wilson KCM (1999a) Cross-cultural comparison of depressive symptoms in Europe does not support stereotypes of ageing. *Br J Psychiatry* 174:322–329
- Copeland JRM, Beekman ATF, Dewey ME, Hooijer C, Jordan A, Lobo BA, Magnusson H, Mann AH, Meller I, Prince MJ, Reischies F, Turrina C, deVries MW, Wilson KCM (1999b) Depression in Europe. Geographical distribution among older people. *Br J Psychiatry* 174:312–321

- Dalgard OS, Bjork S, Tambs K (1995) Social support, negative life events and mental health. *Br J Psychiatry* 166(1):29–34
- Dean A, Kolody B, Wood P (1990) Effects of social support from various sources on depression in elderly persons. *J Health Soc Behav* 31:148–161
- Dewey ME, Prince MJ (2005) Mental health. In: Börsch-Supan A, Jürges H (eds) *Health, ageing and retirement in Europe—first results from the survey of health, ageing and retirement in Europe*. MEA Eigenverlag, Mannheim, pp 108–117
- EORG (European Opinion Research Group) (2003) The mental health status of the European population. European Commission
- Fryers T, Melzer D, Jenkins R, Brugha T (2005) The distribution of the common mental disorders: social inequalities in Europe. *Clin Pract Epidemiol Ment Health*. Available online at <http://www.cpementalhealth.com/content/1/1/14>. Accessed 23 Oct 2006
- Hamilton VH, Merrigan P, Dufresne E (1997) Down and out: estimating the relationship between mental health and unemployment. *Health Econ* 6(4):397–406
- Hank K (2007) Proximity and contacts between older parents and their children: a European comparison. *J Marriage Fam* 69(1): 157–173
- House JS, Kahn RL (1985) Measures and concepts of social support. In: Cohen S, Syme S (eds) *Social support and health*. Academic Press, New York, pp 83–105
- House JS, Umberson D, Landis KR (1988) Structures and processes of social support. *Annu Rev Sociol* 14:293–318
- Hughes ME, Waite LJ, PaPierre TA, Luo Y (2007) All in the family: the impact of caring for grandchildren on grandparents' health. *J Gerontol B Soc Sci* 62B(2):S108–S119
- Jürges H (2007) True health vs. response styles: exploring cross-country differences in self-reported health. *Health Econ* 16(2): 163–178
- Julian T, McKenry PC, McKelvey MW (1992) Components of men's well-being at mid-life. *Issues Ment Health Nurs* 13(4):285–299
- Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Wittchen HU, Kendler KS (1994) Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey. *Arch Gen Psychiatry* 51:8–19
- Knesebeck Ovd, Siegrist J (2003) Reported nonreciprocity of social exchange and depressive symptoms. Extending the model of effort-reward imbalance beyond work. *J Psychosom Res* 55: 209–214
- Krause N (1987) Satisfaction with social support and self-rated health in older adults. *Gerontologist* 27:301–308
- Krause N (2007) Longitudinal study of social support and meaning in life. *Psychol Aging* 22(3):456–469
- Krause N, Liang J (1993) Stress, social support and psychological distress among the Chinese elderly. *J Gerontol* 48(6):P282–P291
- Lahtinen E, Lehtinen V, Riikonen E, Ahonen J (eds) (1999) *Framework for promoting mental health in Europe*. (STAKES) National Research and Development Centre for Welfare and Health, Ministry of Social Affairs and Health, Finland
- Lehtinen V, Michalak E, Wilkinson C, Dowrick C, Ayuso-Mateos JL, Dalgard OS, Casey P, Vazquez-Barquero JL, Wilkinson G (2003) Urban-rural differences in the occurrence of female depressive disorder in Europe—evidence from the ODIN study. *Soc Psychiatry Psychiatr Epidemiol* 38(6):283–289
- Lehtinen V, Sohlman B, Kovess-Masfety V (2005) Level of positive mental health in the European Union: results from the Eurobarometer 2002 Survey. *Clin Pract Epidemiol Ment Health*. Available online at <http://www.cpementalhealth.com/content/1/1/9>. Accessed 23 Oct 2006
- Lenze EJ, Rogers JC, Martire LM, Mulsant BH, Rollman BL, Dew MA, Schulz R, Reynolds CF (2001) The association of late-life depression and anxiety with physical disability: a review of the literature and prospectus for future research. *Am J Geriatr Psychiatry* 9:113–135
- McCabe CJ, Thomas KJ, Brazier JE, Coleman P (1996) Measuring the mental health status of a population: a comparison of the GHQ-12 and the SF-36 (MHI-5). *Br J Psychiatry* 169:517–521
- Multran EJ, Reitzes DC, Mossey J, Fernandez ME (1995) Social support, depression, and recovery of walking ability following hip fracture surgery. *J Gerontol B Soc Sci* 50B(6):S354–S361
- Oxman TE, Berkman LF (1990) Assessment of social relationships in elderly patients. *Int J Psychiatry Med* 20:65–84
- Oxman TE, Hull JG (1997) Social support, depression, and activities of daily living in older heart surgery patients. *J Gerontol B Psy Sci* 52B(1):P1–P14
- Oxman TE, Berkman LF, Kasl S, Freeman DH Jr, Barrett J (1992) Social support and depressive symptoms in the elderly. *Am J Epidemiol* 135:356–368
- Oxman TE, Hull JG (2001) Social support and treatment response in older depressed primary care patients. *J Gerontol B Psy Sci* 56B(1):P35–P45
- Penninx BW, van Tilburg T, Boeke AJ, Deeg DJ, Kriegsman DM, van Eijk JT (1998) Effects of social support and personal coping resources on depressive symptoms: different for various chronic diseases? *Health Psychol* 17(6):551–558
- Primomo J, Yates BC, Woods NF (1990) Social support for women during chronic illness: the relationship among sources and types of adjustment. *Res Nurs Health* 13:153–161
- Prince MJ, Reischies F, Beekman ATF, Fuhrer R, Jonker C, Lively SL, Lawlor BA, Lobo A, Magnusson H, Fichter M, Van Oyen H, Roelands M, Skoog I, Turrina C, Copeland JRM (1999a) Development of the EURO-D scale—a European Union initiative to compare symptoms of depression in 14 European centres. *Br J Psychiatry* 174:330–338
- Prince MJ, Beekman ATF, Deeg DJH, Fuhrer R, Kivela SL, Lawlor BA, Lobo A, Magnusson H, Meller I, Van Oyen H, Reischies F, Roelands M, Skoog I, Turrina C, Copeland JRM (1999b) Depression symptoms in late life assessed using the EURO-D scale. *Br J Psychiatry* 174:339–345
- Silverstein M, Cong Z, Li S (2006) Intergenerational transfers and living arrangements of older people in rural China: consequences for psychological well-being. *J Gerontol B Soc Sci* 56B(5): S256–S266
- Tesch-Römer C, Kondratowitz HJv (2006) Comparative ageing research: a flourishing field in need of theoretical cultivation. *Eur J Ageing* 3:155–167
- Travis LA, Lyness JM, Shields CG, King DA, Cox C (2004) Social support, depression, and functional disability in older adult primary-care patients. *Am J Geriatr Psychiatry* 12(3):265–271
- Tsang HY, Mann AH, Cheng ATA (2007) Family support and elderly depression: a community study in Taiwan. Paper presented at the XIth congress of the international federation of psychiatric epidemiology, May 3–6, 2007, Göteborg, Sweden
- Umberson D (1992) Relationship between adult children and their parents: psychological consequences for both generations. *J Marriage Fam* 54:664–674
- Walker AJ, Pratt CC, Eddy L (1995) Informal caregiving to aging family members: a critical review. *Fam Relat* 44(4):402–411
- Weissmann MM, Klerman GL (1977) Sex differences and epidemiology of depression. *Arch Gen Psychiatry* 34:99–111
- Zunzunegui MV, Béland F, Llacer A, León V (1998) Gender differences in depressive symptoms among Spanish elderly. *Soc Psychiatry Psychiatr Epidemiol* 33:195–205
- Zunzunegui MV, Béland F, Otero A (2001) Support from children, living arrangements, self-rated health and depressive symptoms of older people in Spain. *Int J Epidemiol* 30:1090–1099