

# Social Contacts of Older People in 27 European Countries: The Role of Welfare Spending and Economic Inequality

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**Abstract:** Social contacts of older people have consistently been associated with good health and longevity. The extent of individual social contacts, however, varies considerably between countries. We study why countries differ in amounts of social contacts of older adults. Using theory on income inequality and neo-materialism, we expect the amount of social contacts of older people to be highest in countries with low income inequality and comprehensive welfare spending. Furthermore, we hypothesize that the impact of country characteristics on social contacts differs with individual income and age. We combine individual-level data from the European Social Survey with country-level data from Eurostat, and test two dimensions of social contacts of people aged  $\geq 60$  years: having a close contact and meeting socially. Cross-national comparison of 27 European countries is realized through linear and logistic multilevel modelling. The results reveal partial support for our expectations. Income inequality and old-age poverty reduce the likelihood of having a close contact. Welfare spending, specifically expenditure on care for older adults and health services, has the potential to cancel out some of these negative effects. However, there were only small differences between age groups. The implications of these findings are being discussed.

## Introduction

Western societies are currently confronted with rapid population aging: by 2050, one of three citizens will be aged  $\geq 60$  years (United Nations, 2009). This is expected to have a drastic impact on the economic and social situation in these countries. Some of the strains that come with population aging, however, may potentially be relaxed by a stronger integration of older adults into economic and social safety nets in the private sphere.

A considerable research body in social science has shown that healthy aging is partly realized through social participation and social contacts (House *et al.*, 1988; Michael *et al.*, 1999; Berkman *et al.*, 2000; Holt-Lunstad *et al.*, 2010). Individual socio-economic antecedents of social contacts have been studied extensively, e.g. the highly educated, the employed, and those with high income are more strongly socially embedded (Van

Oorschot and Arts, 2005; Christoforou, 2011). However, research has also established that social contacts of older people seem to differ across countries and regions therein (Gierveld and Havens, 2004; Kohli *et al.*, 2009; Litwin, 2010) and between the different European welfare regimes (Scheepers *et al.*, 2002). Still, communities and states in which people are more socially integrated have the lowest mortality rates (Kawachi *et al.*, 1997). The present study aims at finding explanations for existing differences in the amount of social contacts of older adults among countries.

This research studies the group of people aged  $\geq 60$ . This group is sometimes distinguished into the young-olds, middle-olds, and old-olds in the literature on aging (Chou and Chi, 2002; Depp and Jeste, 2006). Furthermore, the age of 60 years is the average retirement in the countries under study (Romans, 2007). The focus on older people is motivated by the reason that

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recent research demonstrated a significantly higher benefit of social capital for health of people aged  $\geq 60$  years than for younger people (Muckenhuber *et al.*, 2012). This suggests that health-promotion policies for older people need to target low levels of social contacts (Sirven and Debrand, 2008; Muckenhuber *et al.*, 2012).

This study advances previous knowledge in several ways. First, we study economic inequality and welfare indicators relevant for older adults (e.g. country spending on care for older adults), which complements findings from the gerontological literature typically focusing on individual-level predictors of social contacts (Depp and Jeste, 2006). Second, our investigation includes 27 countries, a number sufficient for multilevel analysis of both country-level indicators and cross-level interactions with individual-level predictors. This is an important contribution, as in previous research, income inequality has been used to explain differences in health and social problems on the country level (e.g. rates of imprisonment and mental illnesses; Wilkinson and Pickett, 2009; Präg *et al.*, 2014), but only rarely for explaining social contacts on the individual level. Research on welfare regime effects has often relied on theory-based classifications of countries into welfare types, rather than studying actual welfare spending (Scheepers *et al.*, 2002; Kumlin and Rothstein, 2005; Kääriäinen and Lehtonen, 2006; Van der Meer *et al.*, 2009; Lancee and Van de Werfhorst, 2012). These classifications, however, obscure differences among countries and require high comparability of countries across a wide range of welfare policies within regime type.

Finally, we examine multiple aspects of social contacts, as previous findings appear to be inconsistent and conditional on the outcome variables used (e.g. Kääriäinen and Lehtonen, 2006). We focus on social contacts in the private sphere such as informal contacts with (close) friends, family, and work colleagues (Van der Meer *et al.*, 2009). Note that we deliberately exclude involvement in the public sphere such as community life and neighbourhood events, as well as formal membership of voluntary organizations. These forms of participation of older people have been intensively studied (e.g. Erlinghagen and Hank, 2006; Sirven and Debrand, 2008; Hank, 2011b); we will instead focus on having close contacts and the frequency of meeting friends and relatives.

In the remainder of this article, we will first present two complementary mechanisms that offer explanations for the previously indicated country-specific variation in social contacts: the income inequality approach (Pichler and Wallace, 2009; Wilkinson and Pickett, 2009; Wilkinson and Pickett, 2010), and the neo-materialist

approach to welfare spending (Lynch *et al.*, 2000). We will also discuss the possible moderating role of household income and age, and derive a number of hypotheses. Next, we present results based on the European Social Survey (ESS) data and multilevel modelling. Finally, we will discuss the scientific and societal implications of our findings.

## Theoretical Framework

### Income Inequality Reduces Social Contacts

The inequality approach, sometimes labelled neo-Durkheimian approach (Muntaner and Lynch, 1999), is mainly advertised by Richard Wilkinson and offers a psychosocial explanation as to why income inequality in a country reduces the amount of social contacts (Kawachi *et al.*, 1997; Kawachi and Kennedy, 1999; Wilkinson, 1999; Uslaner and Brown, 2005; Wilkinson and Pickett, 2009). Material inequality is intertwined with social hierarchy, which increases the social distance between individuals, reduces the likelihood of shared interests, norms, and trust, and eventually lessens social interactions among citizens. Stratification and perceived socio-economic status gaps further trigger competition and feelings of threat, anxiety, and stress. Because social hierarchy correlates with minority backgrounds, ethnic diversity has been argued to affect social contacts in a similar vein (Delhey and Newton, 2005; Hooghe *et al.*, 2009). Importantly, inequality operates independently of a nation's absolute wealth or poverty; it is the variation in (not amount of) income that demoralizes members within and across strata that triggers social problems (Wilkinson and Pickett, 2009), erodes the sense of community, and eventually diminishes investments in social relationships with peers and neighbours.

As a consequence, income inequality can reduce amounts of social contacts and hence 'successful' aging (Hank, 2011a; Brandt *et al.*, 2012). Cross-sectional research in the United States shows that income inequality reduces generalized trust in others, which in turn decreases social contacts (Kawachi *et al.*, 1997; Rothstein and Uslaner, 2005; Uslaner and Brown, 2005). In addition, studies using cross-national survey data underpin the negative association between within-nation inequality (measured with Gini and social class) and social contacts (Pichler and Wallace, 2009; Lancee and Van de Werfhorst, 2012), but do not focus on the older population.

### Individual material resources

Some researchers have maintained that everybody (explicitly including those at the top of the income

distribution) should suffer from social distance (Wilkinson and Pickett, 2010). However, previously demonstrated positive effects of individual income on social contacts among older persons (Evans *et al.*, 2008) raise the question as to whether the poor are more strongly affected by contextual conditions than the rich. Inequality-centred theorizing implicitly states the following: particularly those located at the bottom of the social hierarchy and those who find it difficult to cope on their income are likely to feel frustrated about perceived inequalities and status competition. In a similar vein, a number of scholars made a case that those at the top of the income distribution should suffer *less* from social distances and provided empirical evidence for this claim (Pichler and Wallace, 2009; Lancee and Van de Werfhorst, 2012). Also Wilkinson and Pickett (2008) showed that the effect of income on health varied by income inequality in the United States, with stronger effects of income on health in more unequal states.

### Age

As people age and face health issues, generation and cultivation of their social contacts may become increasingly difficult. Importantly, common opportunity structures that provide younger people with possibilities for having social contacts (e.g. school, work) are largely lacking after retirement (Riley *et al.*, 1994; Steverink and Lindenberg, 2006). Research on aging shows that the relative salience of certain social needs and the availability of resources for fulfilling them change during the life course (Steverink *et al.*, 1998; Steverink and Lindenberg, 2006). With rising age, and especially after retirement, it becomes more difficult to satisfy social status needs. It has been shown that people low in status often partly compensate for status loss by putting more effort into social relationships and activities that provide affection and behavioral confirmation (Nieboer and Lindenberg, 2002), i.e. engagement in voluntary work, church activities, and care for grandchildren (Dykstra, 1995). The same is expected with rising age. Based on the relatively stronger focus on fulfillment of needs for affection and behavioural confirmation, older people in an unequal society may perceive status competition and social stratification as less salient and hence less stressful than their younger counterparts. Therefore, we expect a weakened effect of income inequality on social contacts with rising age. Based on the inequality approach we formulate a first set of hypotheses:

#### *Hypothesis 1a*

Income inequality is negatively associated with amounts of social contacts.

#### *Hypothesis 1b*

The negative association between income inequality and social contacts is stronger for the economically weak compared with the economically strong.

#### *Hypothesis 1c*

The negative association between income inequality and social contacts is weaker for the old-olds compared with the young-olds.

A number of scholars argued that the inequality-centred argument is incomplete and raises conceptual and empirical problems (Hall and Taylor, 2009; Lynch *et al.*, 2000; Muntaner and Lynch, 1999). The interpretation of associations between income inequality and social contacts should not merely focus on (usually unobserved) perceptions of inequalities but also on the material causes of these inequalities on the country level. Specifically, differences in public expenditure and social security may generate differences in conditions of life and welfare on the societal and individual level, which may adversely affect social contacts. Still, although many welfare-state policies aim at compressing stratification, the positive effects of these policies on social contacts have been shown to exceed the mere effect of reduced income inequality (Vergolini, 2011; Lancee and Van de Werfhorst, 2012).

### Welfare-State Policies Promote Social Contacts

According to the neo-materialist interpretation, variations in social contacts are based on differences in the material world (Muntaner and Lynch, 1999; Lynch *et al.*, 2000). The specific design of welfare states and the redistribution of resources therein, such as spending on old-age pensions and care for older people, shape the opportunity structure for social contacts (e.g. higher pensions may allow participation in costly leisure activities like going to the theatre). Policies aiming at redistribution are assumed to have a positive effect over and above the sheer reduction in income inequality (Scheepers *et al.*, 2002; Kumlin and Rothstein, 2005; Kääriäinen and Lehtonen, 2006; Van der Meer *et al.*, 2009; Lancee and Van de Werfhorst, 2012). Deprivation in social contacts on the state level reflects a combination of lack of individual resources, along with a state's systematic underinvestment across a wide range of human, physical, and social infrastructures. The neo-materialist explanation assumes that welfare spending invariably implies redistribution. In the conservative welfare regimes, however, welfare policies also focus on

upholding stratification to a certain degree (Kääriäinen and Lehtonen, 2006).

Because of its central focus on welfare-state policies, comparative research based on the neo-materialist resource explanation has mostly been carried out in the context of European welfare regimes (Scheepers *et al.*, 2002; Koster and Bruggeman, 2008; Van der Meer *et al.*, 2009; Van Oorschot and Finsveen, 2009; Vergolini, 2011; Lancee and Van de Werfhorst, 2012). It is argued that more generous welfare-state policies (as in the Nordic countries) have a positive effect on social contacts.

However, the empirical pattern appears to be inconsistent. Kääriäinen and Lehtonen (2006) found many but weak contacts in the Nordic regime, and more close informal contacts in the Mediterranean countries—perhaps because in the latter countries strong family bonds substitute low amounts of formal social contacts (Pichler and Wallace, 2007). Availability of social and health services was found to strengthen informal support in families, but crowd out medically demanding care to professional providers (Brandt *et al.*, 2009). Scheepers *et al.* (2002) came across the *least* social contacts (i.e. meeting friends and family) of >60-year-old people in the Nordic type. Van Oorschot and Finsveen (2009) found no noteworthy differences between welfare regimes. Because of these inconsistencies, scholars have discussed the reverse effect: Welfare-state institutions may crowd out social contacts. As the state takes over the role of the main welfare provider from family and friends, supportive social networks are no longer needed as an economic safety net. Again, however, evidence for the *crowding-out hypothesis* is mixed at best (Scheepers *et al.*, 2002; Van Oorschot and Arts, 2005; Kääriäinen and Lehtonen, 2006; Koster and Bruggeman, 2008; Brandt *et al.*, 2009; Van der Meer *et al.*, 2009).

One reason for these inconsistent findings may be the variability in defining and measuring social contacts. Strong family ties and familialism, for instance, are more pronounced in Southern European countries. Another reason is that often general welfare-state typologies, rather than country-specific welfare spending, are used. Furthermore, the effect of welfare spending may vary with individual socio-economic backgrounds, most importantly income and age.

#### Individual material resources

The economically weak benefit most from welfare policies that are effective in redistributing material resources. Such policies aim at reducing stratification and compensating for the negative effects of income differences for deprived populations, for example, through guaranteeing a minimum pension and universal

access to health care, thereby integrating people into society. In contrast, people from high-income groups enjoy their social lives more independently from a country's welfare spending (but their income is likely reduced by taxation). In support of this reasoning, previous research has demonstrated the buffering effect of social security on the relationship between individual income and social contacts with the extended family (Van der Meer *et al.*, 2009).

#### Age

Similar to the economically weak, we expect older people to be the beneficiaries of well-developed social transfer systems, partly based on their (often reduced) socio-economic status and on their age-related needs for extensive (and expensive) health care. Note that current income might not fully capture the financial situation of the older people, as they can also often draw on accumulated savings and institutional resources. Therefore, when studying older populations, it is more appropriate to look into the effects of the perceived adequacy of the financial situation rather than objective measures of current income (Litwin and Sapir, 2009).

First, compared with relatively younger populations, older people depend on state pensions after labour force withdrawal: greater expenditure on pensions, lower dependency on personal savings, and reduced risk of relative old-age poverty are expected to directly foster social contacts. Second, comprehensive access to home care and social work for older people—for example, assistance in daily activities and the provision of technical aids—may hamper the negative effects of aging and deteriorating health on social contacts.

Based on the neo-materialist resource explanation we formulate a second set of hypotheses:

#### *Hypothesis 2a*

Welfare spending is positively associated with amounts of social contacts.

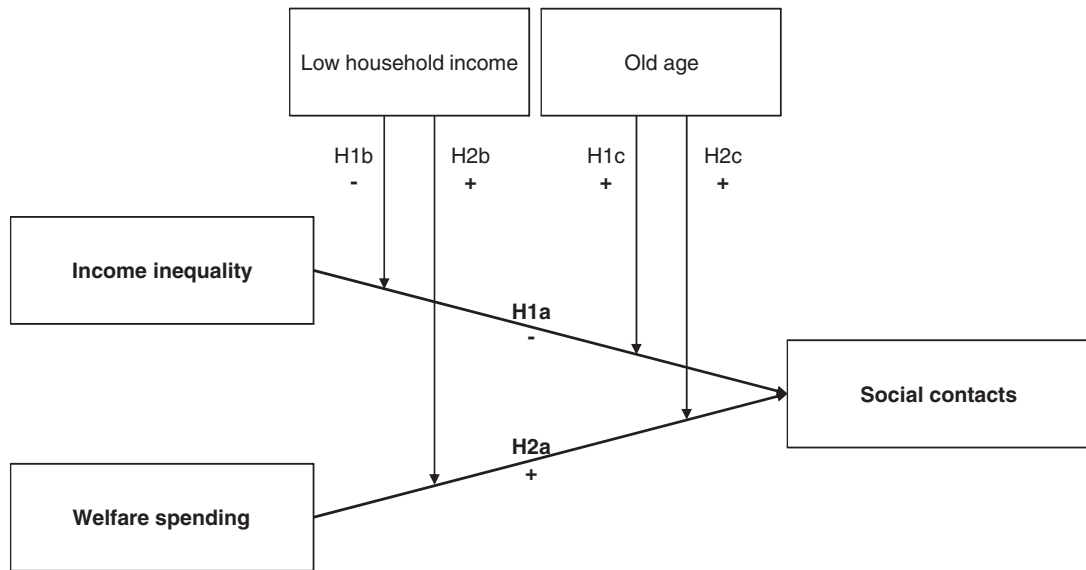
#### *Hypothesis 2b*

The positive association between welfare spending and social contacts is stronger for the economically weak compared with the economically strong.

#### *Hypothesis 2c*

The positive association between welfare spending and social contacts is stronger for the old-olds compared with the young-olds.

Figure 1 summarizes the proposed mechanisms.



**Figure 1** Overview of main hypotheses and interaction hypotheses

## Data and Methods

### Data

Individual-level data come from the first four rounds of the ESS, which were collected in 2002, 2004, 2006, and 2008.<sup>1</sup> To ensure representativeness and comparability across countries and time, in each country a random sample was interviewed using essentially the same questionnaire. The data cover >30 nations inside and outside of Europe. We used the cumulative data file (version ESS1-4e01) as provided on the ESS website and added data from countries not included in the cumulative file (Hungary, Latvia, Romania, and Iceland) to maximize the number of countries in our study. We excluded countries where comparable country data are not available. Because the present study focuses on the population of older people, we restricted our sample to respondents aged  $\geq 60$  years. Furthermore, we removed cases with any missing values. Our analytical sample consists of 28,368 respondents in 27 countries. Mean age was 70.6 (standard deviation,  $SD=7.6$ ), and 55.7 per cent of the sample were female.

We supplemented the individual-level ESS data with country-level data from Eurostat. The information combined was as detailed as possible, that is, data were extracted per country and per year of interview (not per survey round). The year of interview was a more precise measure, as each survey round stretched over several years.

### Outcome Variables

Social contacts were operationalized with two items, which tap distinct, yet theoretically related, aspects of possible social ties. First, the variable *close contact* measured whether respondents had anyone with whom they could discuss intimate and personal matters (yes=1 and no=0). This variable closely resembles the name generator commonly used for eliciting strong ties. A distinction between kin and non-kin relations would have been preferable, but it was not possible with the data at hand. Second, the variable *meeting socially* measured how often respondents met socially with friends, relatives, or work colleagues on a scale from 1 ('never') to 7 ('every day'). Both outcome variables are only weakly correlated ( $r=0.17$ ) and therefore analyzed separately.

### Predictor Variables

#### Income inequality

Three indicators were retrieved from Eurostat. First, *income inequality in the general population* is assessed with the Gini coefficient of equalized disposable income, which ranges from a minimum value of 0, when all incomes are equal, to a maximum of 100. These coefficients are derived from the EU-SILC survey, ensuring a high degree of comparability among countries. Second, *old-age income inequality* is measured as the ratio of total equalized disposable income received by

the 20 per cent of the older population (aged  $\geq 65$  years) with the highest income (top quintile) to that received by the 20 per cent of the older population with the lowest income (lowest quintile). The two measures of inequality are provided in different metrics by Eurostat (Gini coefficient versus quintile ratio). Third, we wanted to rule out that *old-age poverty*, rather than inequality, is related to social contacts. Poverty was assessed as the share of older people (aged  $\geq 60$  years) with an income—including retirement and survivor's pensions—below the risk-of-poverty threshold, which is set at 60 per cent of the national median. The thresholds of age differed slightly between the latter two measures because, again, Eurostat provided these metrics only.<sup>2</sup>

### Welfare spending

Three indicators relevant for the older population were drawn from Eurostat. The first indicator, *care for older people*, measures the percentage share of social protection expenditure devoted to old-age care in gross domestic product (GDP). These expenditures covered care allowance, accommodation, and assistance in carrying out daily tasks. The second indicator, *health services*, subsumes the percentage shares of social protection expenditure devoted to sickness/health care, disability, and survivors in terms of GDP. The third indicator, *pension expenditure*, informs about the per-capita spending on people aged  $\geq 65$  on old-age pension, disability pension, and early-retirement benefits (in purchasing power standard, because this indicator specifically concerns people aged  $\geq 65$  years, we divided the spending by the number of people aged  $\geq 65$  years in a country to control for differences in the demographic structure).<sup>3</sup>

### Individual-level moderators

Respondents' *age* was measured in years. As a measure of income, we used perceived household income. Respondents were asked which description came closest to how they felt about their household income: (i) 'living comfortably', (ii) 'coping', (iii) 'finding it difficult', or (iv) 'finding it very difficult' on their present income. Answer categories were recoded so that a high score indicates a comfortable living on one's income. In the following, we will refer to this variable as *perceived income adequacy*. Two main advantages come with this measure. First, it contained only relatively few missing data points, whereas the current household income variable had a substantial amount of missing data (27.3 per cent item-nonresponse, with great variation across countries), and thus limited usability for the analyses. The correlation between the objective and the perceived measures was  $r = 0.51$ .

Second, besides empirical considerations, objective current income might not be as salient for reflecting older people's economic situation, as accumulated savings over the life course might be a more accurate assessment. Importantly, Litwin and Sapir (2009) have shown that perceived income adequacy, i.e. the perception that one's income makes ends meet, is a robust indicator of objective financial capacity. They conclude that practitioners may rely on self-rated income, as it provides meaningful and valid information on actual financial distress in a household.

### Control Variables

We controlled for *GDP per capita* to allow income inequality to operate independently from a country's absolute wealth, as proposed by the theory. GDP is a measure for economic activity and was indexed per capita in Purchasing Power Standards (as retrieved from Eurostat). We first divided this variable by 1,000 and then log-transformed it to constrain the impact of extreme countries, specifically Luxembourg.

We also controlled for a number of individual-level characteristics that have previously been shown to affect social contacts (Kääriäinen and Lehtonen, 2006; Lancee and Van de Werfhorst, 2012). Controls included *female gender* (1=female, 0 = male), level of *educational attainment* (ranked from (1) primary to (5) tertiary education), *employment status* (paid work, retired, other not on the labour market<sup>4</sup>), *marital status* (married/cohabiting, never married, divorced/separated, widowed), *household size* (number of people living in respondent's household), living with *children* (1=yes), *urbanization* (big city, town, suburb, village, farm), physical or mental *impairment* (1=yes), attend *religious services* [ranging from 1 ('never') to 7 ('every day'), after reversing the original coding]. Furthermore, we included dummy variables to control for differences in social contacts between the *survey rounds* (2004, 2006, 2008, using 2002 as the reference).

### Analytical Approach

Our hypotheses predict the effects of country-level characteristics on individual social contacts. Because the data set is hierarchically structured with respondents nested in countries, we use random-intercept models (Snijders and Bosker, 2012), which allow for dependence of observations within countries. The models allow for country-specific intercepts in, for instance, the frequency of social meetings. Therefore, country differences in the baseline of social contacts are accounted for in the variance component of the intercept, and countries are

**Table 1** Means for dependent and independent variables, and sample size (*N*) by country

Country	<i>N</i>	Meeting socially	Close contact	General inequality	Old-age inequality	Old-age poverty	Care for old <sup>a</sup>	Health services	Pension
Austria	1,407	4.56	0.79	26.63	3.98	14.77	0.96	11.51	16,592
Belgium	1,502	4.91	0.80	27.18	3.57	22.82	0.05	11.35	11,669
Bulgaria	432	4.31	0.77	31.20	3.50	19.90	0.03	5.52	2,782
Cyprus	493	3.73	0.82	28.52	4.56	48.77	0.00	6.34	10,013
Denmark	1,347	5.17	0.87	24.38	2.82	17.66	1.71	10.63	14,216
Estonia	1,005	4.05	0.80	35.19	3.34	24.44	0.08	5.21	3,611
Finland	1,767	4.92	0.86	25.91	2.97	20.43	0.69	10.87	11,917
France	1,127	5.02	0.81	28.52	4.21	13.42	0.34	12.39	17,339
Germany	1,516	4.33	0.93	28.33	3.69	13.70	0.16	12.60	12,627
Greece	1,746	3.36	0.87	33.98	5.36	28.68	0.09	8.32	8,606
Hungary	935	3.22	0.88	30.50	2.98	8.01	0.36	9.78	5,819
Iceland	94	5.43	0.88	25.10	3.00	9.20	1.76	11.19	10,651
Ireland	1,459	4.67	0.88	31.41	3.58	33.45	0.22	8.51	8,476
Italy	442	4.59	0.68	32.10	4.60	21.70	0.12	10.85	14,185
Latvia	359	3.76	0.71	35.40	4.80	33.30	0.14	4.35	3,673
Luxembourg	610	4.60	0.86	27.01	3.33	9.17	0.00	10.74	16,114
Netherlands	1,006	5.11	0.87	27.02	3.25	7.45	0.79	12.62	18,063
Norway	1,136	5.16	0.89	27.29	3.65	17.37	1.63	12.16	14,014
Poland	683	3.70	0.83	32.66	3.45	9.71	0.23	7.94	6,503
Portugal	2,280	5.41	0.82	37.15	5.76	26.59	0.24	10.48	9,080
Romania	201	3.17	0.55	36.81	5.17	28.06	0.04	5.44	4,207
Slovakia	621	4.44	0.79	24.95	2.49	9.49	0.37	7.12	7,512
Slovenia	708	3.97	0.83	23.55	3.55	20.58	0.16	10.45	7,203
Spain	1,998	5.08	0.85	31.12	4.30	28.56	0.36	9.93	7,839
Sweden	1,558	4.94	0.85	23.65	3.13	13.34	2.37	12.91	13,860
Switzerland	381	4.91	0.91	32.00	5.90	28.30	0.31	10.69	20,019
United Kingdom	1,555	5.09	0.87	33.25	4.69	26.57	0.74	11.02	16,061
Total	28,368	4.64	0.84	29.68	3.95	20.90	0.57	10.24	11,297

<sup>a</sup>Values for Cyprus and Luxembourg are small and near zero.

not restricted by the model to all have the same average. To avoid multicollinearity between some of the country-level variables, we tested the six independent country-level variables separately.<sup>5</sup> We used a linear model for the outcome of meeting socially and a logistic model for the dichotomous outcome of close contact.

In addition to our main analyses we conducted several sensitivity tests. First, this included an analysis on the younger population aged <60 years to allow comparison against the older population. There were pronounced differences regarding the effects of many control variables and some differences regarding the country-level variables. For example, general inequality and old-age poverty affected the old but not the young in the model on close contact. Second, we reran the analysis using 50 years (instead of 60 years) as an alternative age cut-point to check the robustness of our findings against different age thresholds. This analysis did not yield different conclusions, suggesting insensitivity of our findings against alternative cut-points. These additional models are presented in the Supplemental Material.

## Results

Table 1 presents the descriptive statistics for the dependent variables and the independent country characteristics by country. The pattern shows that, on average, people living in the Mediterranean (i.e. Portugal, Spain) and Nordic countries (i.e. Iceland, Norway, Denmark) reported the highest scores for meeting socially. Furthermore, Nordic countries (together with Germany and Switzerland) scored highly on having a close contact. The lowest scores on social contacts were observed among the Eastern European states. Table 2 shows that the three

indicators of inequality are positively interrelated, and correlate negatively with indicators of welfare spending.

In *Hypothesis 1a* we expected negative effects of income inequality in a country on social contacts. The results provide mixed support for this expectation. In Table 3, the odds of having a close contact were slightly lower in countries characterized by high inequality in the general population [Model 2: Odds ratio (OR)=0.96,  $P<0.05$ ] and high poverty among the old population (Model 6: OR=0.98,  $P<0.05$ ). In contrast, Table 4 shows that frequency of meeting socially (Model 4:  $B=0.15$ ,  $P<0.01$ ) was actually *higher* in countries with high inequality among the older population.

In *Hypothesis 1b*, we expected the association between income inequality and social contacts to be strongest among low-income individuals. The significant interaction with perceived income adequacy in Table 4 (Model 4:  $B=0.03$ ,  $P<0.05$ ) confirms our expectation: In countries with higher old-age inequality, older people with lower income adequacy reported fewer social meetings than those with higher income adequacy, see also Figure 2. The small significant interaction effect between general inequality and income adequacy (Model 2) points in the same direction.

In *Hypothesis 1c*, we expected the negative association between income inequality and social contacts to be weakest in the old population. The results in Table 3 (Model 2 and 6) yield some support regarding close contacts, and the graphs in Figure 2 show that the slopes of general inequality and old-age poverty are slightly less steep for the oldest-old than for the young-olds. In countries with high inequality and old-age poverty, the oldest-old even more often report a close contact than the young-olds.

In *Hypothesis 2a*, we argued for a positive effect of a country's welfare spending (i.e. care, health services, and

**Table 2** Correlations between the dependent and independent variables at the country level ( $N_{\text{countries}}=27$ )

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) General inequality							
(2) Old-age inequality	0.75***						
(3) Old-age poverty	0.55**	0.64***					
(4) Care for older people	-0.56**	-0.40*	-0.37				
(5) Health services	-0.53**	-0.17	-0.57**	0.51**			
(6) Pension	-0.40*	0.04	-0.30	0.37	0.81***		
(7) Close contact	-0.39*	-0.27	-0.23	0.31	0.53**	0.38*	
(8) Meeting socially	-0.26	-0.08	-0.21	0.52**	0.64***	0.60***	0.17***

\* $P<0.05$ , \*\* $P<0.01$ , \*\*\* $P<0.001$ , two-sided.



**Table 3** Logistic multilevel analyses on inequality indicators with close contact as dependent Variable ( $N_{\text{individuals}} = 28,369$ ,  $N_{\text{countries}} = 27$ )

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Individual characteristics												
Age	0.99***	0.00	0.99***	0.00	0.99***	0.00	0.99*	0.00	0.99***	0.00	0.99**	0.00
Income adequacy	1.25***	0.03	1.24***	0.03	1.25***	0.03	1.25***	0.03	1.25***	0.03	1.25***	0.03
Gender (1 = female)	1.52***	0.06	1.52***	0.06	1.52***	0.06	1.52***	0.06	1.52***	0.06	1.52***	0.06
Education	1.15***	0.02	1.15***	0.02	1.15***	0.02	1.15***	0.02	1.15***	0.02	1.15***	0.02
Employment status (ref. = retired)												
Employed	1.02	0.07	1.02	0.07	1.02	0.07	1.02	0.07	1.02	0.07	1.03	0.07
Not working	0.92	0.05	0.91	0.05	0.91	0.05	0.91	0.05	0.92	0.05	0.92	0.05
Marital status (ref. = married/cohabitating)												
Divorced/separated	0.61***	0.04	0.60***	0.04	0.61***	0.04	0.61***	0.04	0.61***	0.04	0.60***	0.04
Widowed	0.50***	0.03	0.50***	0.03	0.50***	0.03	0.50***	0.03	0.50***	0.03	0.50***	0.03
Never married	0.40***	0.03	0.40***	0.03	0.40***	0.03	0.40***	0.03	0.40***	0.03	0.40***	0.03
Living with child	0.81**	0.06	0.81**	0.06	0.81**	0.06	0.81**	0.06	0.81**	0.06	0.81**	0.06
Household size	1.15***	0.04	1.15***	0.04	1.15***	0.04	1.15***	0.04	1.15***	0.04	1.15***	0.04
Urbanization (ref. = big city)												
Suburb	1.03	0.07	1.03	0.07	1.03	0.07	1.03	0.07	1.03	0.07	1.03	0.07
Town	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05	1.00	0.05
Village	0.99	0.05	0.99	0.05	0.99	0.05	0.99	0.05	0.99	0.05	0.99	0.05
Farm	0.94	0.07	0.94	0.07	0.94	0.07	0.94	0.07	0.94	0.07	0.94	0.07
Impairment	0.79***	0.03	0.79***	0.03	0.79***	0.03	0.79***	0.03	0.79***	0.03	0.79***	0.03
Religious services	1.06***	0.01	1.06***	0.01	1.06***	0.01	1.06***	0.01	1.06***	0.01	1.06***	0.01
ESS round (ref. = 2002)												
Round 2004	1.11	0.07	1.10	0.07	1.07	0.07	1.07	0.07	1.10	0.07	1.10	0.07
Round 2006	1.14	0.08	1.14	0.08	1.10	0.08	1.10	0.08	1.12	0.08	1.12	0.08
Round 2008	1.10	0.09	1.09	0.09	1.06	0.08	1.05	0.08	1.07	0.08	1.07	0.08
Country characteristics and cross-level interactions												
GDP per Capita	1.44	0.28	1.42	0.27	1.55*	0.27	1.55*	0.27	1.57**	0.27	1.56*	0.27
General inequality	0.98	0.01	0.96*	0.02								
General inequality × age			1.00*	0.00								
General inequality × income			1.01	0.00								

(continued)

Table 3 Continued

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Old-age inequality			0.93	0.05								
Old-age inequality × age							0.90	0.07				
Old-age inequality × income							1.00	0.00				
Old-age poverty							1.00	0.02				
Old-age poverty × age									1.00	0.01	0.98*	0.01
Old-age poverty × income											1.00*	0.00
Variance components and fit											1.00	0.00
Country-level variance	0.15***	0.05	0.15***	0.05	0.15***	0.04	0.15***	0.04	0.15***	0.04	0.15***	0.04
-2 Log likelihood	23,184.18		23,177.66		23,183.88		23,183.62		23,185.38		23,180.66	
Likelihood-ratio test $\chi^2$		6.51*				0.25						4.72

Likelihood-ratio tests were done for the following: Model 1 nested in Model 2, Model 3 nested in Model 4, and Model 5 nested in Model 6.

\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ , two-sided.

pensions) on social contacts in older people. The results yield support for this hypothesis: greater spending on care for older people and higher expenditure on health services were related to both an increase in the probability of having a close contact (Table 5, Model 2: OR=1.56,  $P < 0.01$ ; Model 6: OR=1.25,  $P < 0.001$ ) and in the frequency of meeting socially (Table 6, Model 2: B=0.35,  $P < 0.01$ ; Model 6: B=0.06,  $P < 0.05$ ). Greater expenditure on pensions, however, did not affect any of the dimensions of social contacts.

In *Hypothesis 2b*, it was expected that, particularly, individuals from lower income groups would benefit from welfare spending. In line with this, the significant interaction effects in Table 6 show that negative effects of individual differences in the perceived income adequacy on meeting socially are evened out by a country's greater investment in care for older people and health services (Model 2: B=-0.08,  $P < 0.001$ ; Model 6: B=-0.01,  $P < 0.05$ ). The effect of health services also point into this direction for having a close contact (because this effect is small it is not shown in Figure 2). This hypothesis is partially supported.

Finally, *Hypothesis 2c* suggested the positive effect of welfare spending to be stronger for the old population than for the younger population. The findings do not provide support for this assumption. The merely small significant interaction effect—for having a close contact, between care for older adults and age—actually points into the opposite direction (Table 5, Model 2: OR = 0.99,  $P < 0.001$ ).

## Discussion and Conclusion

Social contacts have previously been shown to contribute to aging healthily and to generate access to resources of informal support for older people (Berkman *et al.*, 2000; Holt-Lunstad *et al.*, 2010). Over and above individual influences on amounts of social contacts, country characteristics play a significant role in attenuating or boosting the social cohesiveness of societies. Based on the income inequality approach and the neo-materialistic approach (Kumlin and Rothstein, 2005; Wilkinson and Pickett, 2010), we argued that lower income inequality and higher welfare spending relate to greater amounts of social contacts among older adults (aged  $\geq 60$  years).

The present findings underscore theorizing with regard to crowding-in rather than crowding-out effects of comprehensive welfare states. The discussion on the influence of welfare state expansion involves two arguments, which at first sight seem to oppose one another (Brandt *et al.*, 2009). On the one hand, the welfare state

**Table 4** Linear multilevel analyses on inequality indicators with meeting socially as dependent variable ( $N_{\text{individuals}} = 28,369$ ,  $N_{\text{countries}} = 27$ )

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Constant	4.67***	0.11	4.68***	0.11	4.71***	0.11	4.73***	0.11	4.69***	0.11	4.69***	0.11
Individual characteristics												
Age	-0.01***	0.00	-0.01***	0.00	-0.01***	0.00	-0.02***	0.00	-0.01***	0.00	-0.01***	0.00
Income adequacy	0.15***	0.01	0.14***	0.01	0.15***	0.01	0.16***	0.02	0.15***	0.01	0.15***	0.01
Gender (1 = female)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Education	0.05***	0.01	0.05***	0.01	0.05***	0.01	0.05***	0.01	0.05***	0.01	0.05***	0.01
Employment status (ref. = retired)												
Employed	-0.11**	0.03	-0.11**	0.03	-0.11**	0.03	-0.10**	0.03	-0.11**	0.03	-0.11**	0.03
Not working	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03
Marital status (ref. = married/cohabitating)												
Divorced/separated	0.18***	0.04	0.18***	0.04	0.18***	0.04	0.18***	0.04	0.18***	0.04	0.18***	0.04
Widowed	0.16***	0.03	0.16***	0.03	0.16***	0.03	0.16***	0.03	0.16***	0.03	0.16***	0.03
Never married	-0.08	0.04	-0.08	0.04	-0.08	0.04	-0.08	0.04	-0.08	0.04	-0.08	0.04
Living with child	0.01	0.04	0.00	0.04	0.01	0.04	0.00	0.04	0.01	0.04	0.01	0.04
Household size	-0.05**	0.02	-0.05**	0.02	-0.05**	0.02	-0.04**	0.02	-0.05**	0.02	-0.05**	0.02
Urbanization (ref. = big city)												
Suburb	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04
Town	0.06	0.03	0.06*	0.03	0.06	0.03	0.06*	0.03	0.06*	0.03	0.06*	0.03
Village	0.10***	0.03	0.11***	0.03	0.10***	0.03	0.11***	0.03	0.11***	0.03	0.11***	0.03
Farm	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04
Impairment	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02
Religious services	0.06***	0.01	0.06***	0.01	0.06***	0.01	0.06***	0.01	0.06***	0.01	0.06***	0.01
ESS round (ref. = 2002)												
Round 2004	-0.13***	0.04	-0.12***	0.04	-0.08	0.04	-0.08*	0.04	-0.10*	0.04	-0.10*	0.04
Round 2006	0.00	0.05	0.01	0.05	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.05
Round 2008	-0.19***	0.06	-0.19**	0.06	-0.15*	0.06	-0.15**	0.06	-0.15*	0.06	-0.15*	0.06
Country characteristics and cross-level interactions												
GDP per Capita	0.80***	0.19	0.77***	0.20	0.74***	0.19	0.74***	0.19	0.69***	0.19	0.70***	0.19
General inequality	0.01	0.01	0.02	0.01								
General inequality × age			-0.00	0.00								
General inequality × income			0.01*	0.00								
Old-age inequality					0.10**	0.03	0.15**	0.05				
Old-age inequality × age							-0.00*	0.00				
Old-age inequality × income							0.03*	0.01				

(continued)

Table 4 Continued

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Old-age poverty									0.01	0.00	0.01	0.01
Old-age poverty × age											0.00	0.00
Old-age poverty × income											0.00	0.00
Variance components and fit												
Individual-level variance	2.48***	0.02	2.48***	0.02	2.48***	0.02	2.48***	0.02	2.48***	0.02	2.48***	0.02
Country-level variance	0.28***	0.08	0.28***	0.08	0.28***	0.08	0.28***	0.08	0.29***	0.08	0.29***	0.08
-2 Log likelihood	106,434.90		106,427.56		106,428.20		106,418.70		106,432.88		106,429.74	
Likelihood-ratio test $\chi^2$		7.35*				9.48***						3.15

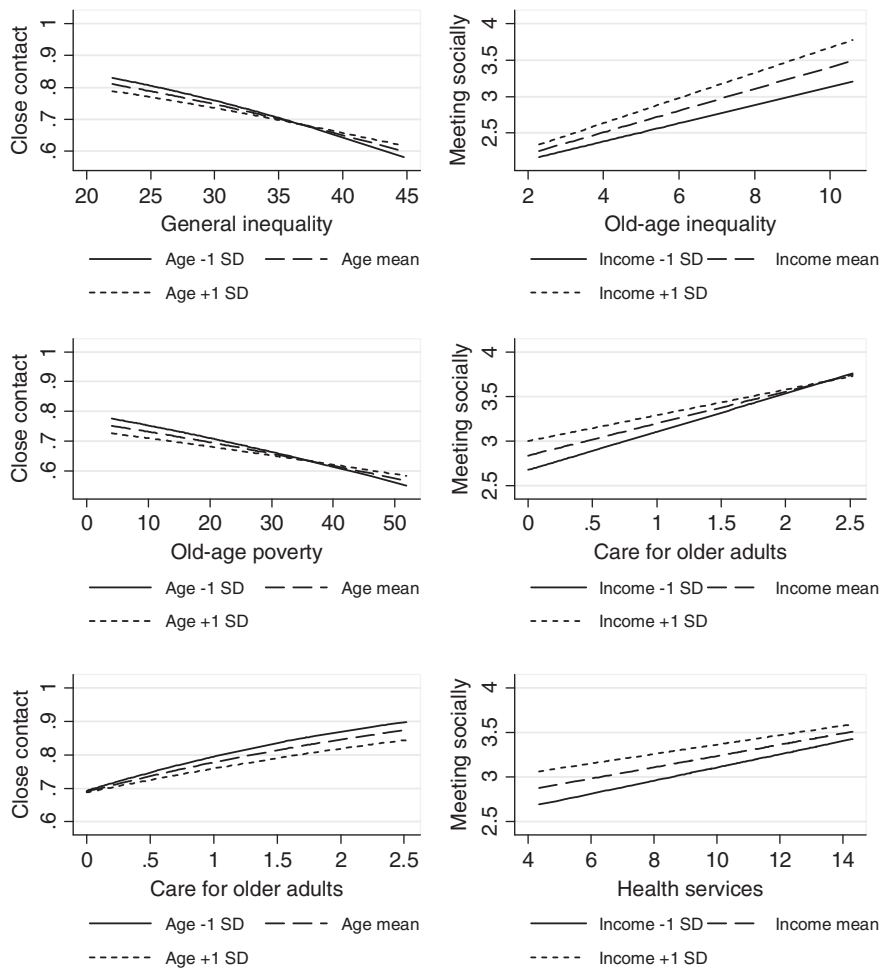
Likelihood-ratio tests were done for the following: Model 1 nested in Model 2, Model 3 nested in Model 4, and Model 5 nested in Model 6.

\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ , two-sided.

is assumed to substitute solidarity and undermine strong family bonds, as the state offers economic security in old age that has previously been provided by the family and friends (Kääriäinen and Lehtonen, 2006; Koster and Bruggeman, 2008; Van der Meer *et al.*, 2009). On the other hand, it has been suggested that the welfare state also induces a sense of social responsibility, so that care and support continues (Gelissen *et al.*, 2012). The highest volume of support for older adults was found in countries with more social services (Motel-Klingebiel *et al.*, 2005). Relief from time-consuming support activities by state institutions may even stimulate investment of time in other social domains, like volunteering. Although our results support crowding-in, following Brandt *et al.* (2009) we conclude that crowding-in and crowding-out are based on different mechanisms and should not be treated as mutually exclusive phenomena.

Social integration is a basic issue of older people that largely depends on cultural norms, demographical compositions, and opportunity structures provided by the state. In our study, high spending on care for older adults and on health services moderated the impact of deprived living conditions on social isolation. Yet, it should be noted that high amounts of social contacts are not a warrantor for feeling integrated and healthy. Older adults may still perceive deficits in their social contacts and feel lonely. According to socio-emotional selectivity theory (Carstensen, 1993), in later adulthood there is a growing need for familiar intimate relationships, so that relationship quality (i.e. close contacts) gains importance over relationship quantity (i.e. frequent contacts). The fact that we found hardly any differences for individual age emphasizes that older adults are affected by welfare-state policies in similar ways. Expanding welfare spending on care and health services likely conveys benefits to most individuals of the growing older population.

We cannot ignore our unexpected finding on the positive effect of a country's old-age inequality on meeting socially. Note that general inequality and old-age poverty showed either no effect or pointed in the hypothesized direction. We conclude that the income inequality approach (Wilkinson and Pickett, 2010) clearly needs theoretical elaboration and additional empirical underscoring. Specifically, the inequality prediction is underspecified and therefore likely holds only for particular settings, i.e. income inequality may put individuals of certain financial situations and life stages more at risk of social exclusion than other individuals. In our analyses, high inequality and poverty in old age reduced the amount of close contacts among the young-olds more drastically than among the old-olds.



**Figure 2** Cross-level interaction effects

Moreover, in stratified societies, cohesion and solidarity are *low* between people of *different* socio-economic positions, but *high* between people of *similar* socio-economic positions—possibly resulting in a mixed or a positive association between inequality and social contacts. Some even claim that the association between a nation's income inequality and social contacts is spurious altogether. Nations with neo-liberal tenets, which stress dominance of markets and autonomy of individuals, undermine certain welfare architectures and permit greater socio-economic inequalities (Coburn, 2000). Neo-liberal market-oriented ideologies generally invest less in social cohesion and thereby accept greater social strains among citizens.

The present study advances and contributes to previous research in several ways. First, it explicitly focused on a life stage (aged  $\geq 60$  years) particularly vulnerable to

social isolation and health issues. Second, instead of relying on aggregated data, for example, by grouping countries into theory-based welfare regime types, we used detailed country-level measures on welfare spending and income inequality for the older population. This was possible because, third, we could draw from an extensive data source covering 27 countries over four ESS rounds between 2002 and 2008. While the recently released fourth wave of the Survey of Health, Aging, and Retirement in Europe with its social networks module promises new insights into the social contacts of older Europeans, we believe that the ESS was the most appropriate data set for our analyses. The ESS still includes a substantially larger number of countries (27 vs. 17 countries) and thus constitutes the most suitable source of data for testing cross-national hypotheses.

Table 5 Logistic multilevel analyses on welfare indicators with close contact as dependent variable ( $N_{\text{individuals}} = 28,369$ ,  $N_{\text{countries}} = 27$ )

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	OR	SE	OR	SE	OR	SE
Individual characteristics						
Age	0.99***	0.00	0.99***	0.00	0.99***	0.00
Income adequacy	1.24***	0.03	1.25***	0.03	1.24***	0.03
Gender (1 = female)	1.52***	0.06	1.52***	0.06	1.52***	0.06
Education	1.15***	0.02	1.15***	0.02	1.15***	0.02
Employment status (ref. = retired)						
Employed	1.02	0.07	1.02	0.07	1.02	0.07
Not working	0.92	0.05	0.91	0.05	0.92	0.05
Marital status (ref. = married/cohabitating)						
Divorced/separated	0.61***	0.04	0.61***	0.04	0.60***	0.04
Widowed	0.50***	0.03	0.50***	0.03	0.50***	0.03
Never married	0.40***	0.03	0.40***	0.03	0.40***	0.03
Living with child	0.81**	0.06	0.81**	0.06	0.81**	0.06
Household size	1.15***	0.04	1.15***	0.04	1.15***	0.04
Urbanization (ref. = big city)						
Suburb	1.03	0.07	1.03	0.07	1.02	0.07
Town	1.00	0.05	1.00	0.05	1.00	0.05
Village	0.99	0.05	0.99	0.05	0.98	0.05
Farm	0.94	0.07	0.94	0.07	0.94	0.07
Impairment	0.79***	0.03	0.79***	0.03	0.79***	0.03
Religious services	1.06***	0.01	1.06***	0.01	1.06***	0.01
ESS round (ref. = 2002)						
Round 2004	1.11	0.07	1.12	0.07	1.08	0.07
Round 2006	1.14	0.08	1.14	0.08	1.20**	0.08
Round 2008	1.09	0.09	1.09	0.09	1.17	0.09
Country characteristics and cross-level interactions						
GDP per capita	1.47*	0.28	1.45*	0.27	1.82*	0.50
Care for old	1.15	0.15	1.56**	0.24		
Care × age			0.99***	0.00		
Care × income			0.96	0.03		
Pension			1.00	0.00	1.00	0.00
Pension × age					1.00***	0.00
Pension × income					1.00	0.00
Health services						
Health services × age					1.15***	0.04
Health services × income						
Variance components and fit						
Country-level variance	0.15***	0.05	0.15***	0.05	0.14***	0.04
-2 Log Likelihood	23,184.78		23,170.18		23,185.24	23,173.04
Likelihood-ratio test $\chi^2$		14.59***		12.21***		12.41***
					23,171.02	23,158.62
					0.16***	0.16***
					0.05	0.05
					0.96	0.96
					0.22	0.22
					1.09	1.09
					1.20**	1.20**
					1.17	1.17
					1.25***	1.25***
					1.00***	1.00***
					1.00	1.00
					0.05	0.05
					0.06	0.06
					0.01	0.01

Likelihood-ratio tests were done for the following: Model 1 nested in Model 2, Model 3 nested in Model 4, and Model 5 nested in Model 6.

\* $P < 0.05$ , \*\* $P < 0.001$ , \*\*\* $P < 0.0001$ , two-sided.

**Table 6** Linear multilevel analyses on welfare indicators with meeting socially as dependent variable ( $N_{\text{individuals}} = 28,369$ ,  $N_{\text{countries}} = 27$ )

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Constant	4.70***	0.10	4.72***	0.10	4.68***	0.11	4.69***	0.11	4.70***	0.10	4.73***	0.10
Individual characteristics												
Age	-0.01***	0.00	-0.01***	0.00	-0.01***	0.00	-0.01***	0.00	-0.01***	0.00	-0.02***	0.00
Income adequacy	0.15***	0.01	0.14***	0.01	0.15***	0.01	0.15***	0.01	0.15***	0.01	0.15***	0.01
Gender (1 = female)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Education	0.05***	0.01	0.05***	0.01	0.05***	0.01	0.05***	0.01	0.05***	0.01	0.05***	0.01
Employment status (ref. = retired)												
Employed	-0.11**	0.03	-0.10**	0.03	-0.11**	0.03	-0.11**	0.03	-0.11**	0.03	-0.11**	0.03
Not working	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03	-0.08**	0.03
Marital status (ref. = married/cohabitating)												
Divorced/separated	0.18***	0.04	0.17***	0.04	0.18***	0.04	0.18***	0.04	0.18***	0.04	0.18***	0.04
Widowed	0.16***	0.03	0.16***	0.03	0.16***	0.03	0.16***	0.03	0.16***	0.03	0.16***	0.03
Never married	-0.08	0.04	-0.08	0.04	-0.08	0.04	-0.08	0.04	-0.08	0.04	-0.08	0.04
Living with child	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.00	0.04
Household size	-0.05**	0.02	-0.05**	0.02	-0.04**	0.02	-0.04**	0.02	-0.04**	0.02	-0.04**	0.02
Urbanization (ref. = big city)												
Suburb	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04	0.06	0.04
Town	0.06	0.03	0.06*	0.03	0.06	0.03	0.06*	0.03	0.06	0.03	0.06	0.03
Village	0.10***	0.03	0.11***	0.03	0.10***	0.03	0.11***	0.03	0.10***	0.03	0.10***	0.03
Farm	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.04
Impairment	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02	-0.20***	0.02
Religious services	0.06***	0.01	0.06***	0.01	0.06***	0.01	0.06***	0.01	0.06***	0.01	0.06***	0.01
ESS round (ref. = 2002)												
Round 2004	-0.13***	0.04	-0.14***	0.04	-0.13***	0.04	-0.14***	0.04	-0.15***	0.04	-0.15***	0.04
Round 2006	0.02	0.05	0.02	0.05	-0.00	0.05	-0.00	0.05	0.03	0.05	0.03	0.05
Round 2008	-0.15**	0.06	-0.15**	0.06	-0.19***	0.06	-0.19***	0.06	-0.15**	0.06	-0.15**	0.06
Country characteristics and cross-level interactions												
GDP per Capita	0.60**	0.19	0.59**	0.19	0.57*	0.24	0.56*	0.24	0.56**	0.19	0.53**	0.19
Care for old	0.31*	0.13	0.35**	0.13								
Care × age	-0.00	0.00	-0.00	0.00								
Care × income	-0.08***	0.02										
Pension					0.00	0.00	0.00	0.00				
Pension × age												
Pension × income												
Health services												
Health services × age									0.09**	0.03	0.06*	0.03
Health services × income											0.00	0.00
											-0.01*	0.01

(continued)

Table 6 Continued

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Variance components and fit												
Individual-level variance	2.48***	0.02	2.48***	0.02	2.48***	0.02	2.48***	0.02	2.48***	0.02	2.48***	0.02
Country-level variance	0.24***	0.07	0.24***	0.07	0.26***	0.07	0.26***	0.07	0.24***	0.07	0.24***	0.07
-2 Log likelihood	106,430.56		106,416.36		106,435.20		106,433.90		106,425.80		106,418.64	
Likelihood-ratio test $\chi^2$	14.21***					1.28				7.17*		

Likelihood-ratio tests were done for the following: Model 1 nested in Model 2, Model 3 nested in Model 4, and Model 5 nested in Model 6.  
\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ , two-sided.

Besides these contributions, the present research was challenged by a few shortcomings. The measure of pension spending may not have fully grasped aspects of social security, as it did not relate to social contacts. There is large variation between countries in the comprehensiveness of old-age benefits and the design of public saving schemes. Future studies may look into social contacts within and across groups of different socio-economic positions to better understand the relationship between inequality and social cohesion.

We conclude that social contacts remain an important subject of study in the context of aging societies. Health problems, economic hardships, and social isolation in old age are often the result of accumulated disadvantages over the life span. Policies need not only target current living conditions of (old) people, but aim at enduring social protection throughout the life course.

## Notes

1. <http://www.europeansocialsurvey.org>
2. Measures of inequality were retrieved from the following Eurostat tables. General inequality: ilc\_di12; old-age inequality: ilc\_di11; old-age poverty: ilc\_li02.
3. Measures of welfare were retrieved from the following Eurostat tables. Care for the older: tsdde530; health services: spr\_exp\_sum; pension: spr\_exp\_pens and demo\_pop.
4. The 'other not on the labour market' category included the categories of unemployment, housework, education, community/military service, and sickness.
5. All variables were centered at the grand mean. Individual-level variables were centered over the whole sample; country-level variables were centered over the sample of countries.

## Supplementary Data

Supplementary data are available at *ESR* online.

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