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The role of personal social networks on health inequalities across European regions

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A B S T R A C T

The role of personal social networks on health inequalities is little understood. Theoretically, the characteristics of social network features can contribute to, both, increase and attenuate health inequalities. Few empirical studies that focus on the interaction between socioeconomic position and social networks provide little insight on the topic. Using data from the Survey of Health, Ageing and Retirement in Europe, this study analyses the moderation role of personal social networks on health inequalities in later life among northern, central, and southern European regions. Social advantages of higher socioeconomic individuals are re-enforced by the quality of social connections and the provision of social support. In turn, health inequality is attenuated by marital partnership and participation on social activities that benefits more the health of people at lower socioeconomic positions. Furthermore, results suggest that the influence of social network features on health inequalities is shaped by regions' different policy commitments to familiarization/defamilialization pressures.

1. Background

1.1. Social networks and health inequalities: theoretical pathways

For many years, researchers have been collecting evidence that social ties influence personal health. Personal social networks can influence what we do, how we feel, or the help we can get to cope with life events which have direct and indirect implications for our health and wellbeing (Berkman et al., 2000; Thoits, 2011). Some authors state that these associations are even more relevant among the aged population (Waite and Das, 2010).

Social networks can also influence health inequalities. DiMaggio and Garip (2012) reviewed the literature on how social networks contribute to social inequality. According to the authors, the influence of personal social networks on inequality is particularly important when people make decisions. In this line of reasoning health inequalities are affected by social learning, normative influences, or networks' contingent resources (networks externalities) that tend to promote healthier behaviours especially for individuals in higher socioeconomic positions. Freese and Lutfey (2011), in turn, pointed out how social networks can increase health disparities irrespective of the agency of individuals ("spill over effects"), by affecting differential access to healthier contexts (neighbours, work places), the embodiment of social structures in individual subjectivities (habitus concept), or the differential benefits that social groups derive from institutions that tend to privilege higher socioeconomic groups. The interaction between different kinds of resources related to socioeconomic position is aligned with predictions of the Theory of Cumulative Advantage/Disadvantage. This theory frames the multidimensionality of social inequality in a life-course perspective. Accordingly, people of higher socioeconomic positions are expected to have advantages in multiple social domains throughout their lifetime. Advantages in socioeconomic resources therefore accumulate with advantages related to closer, bigger, and more diverse social networks (Dannefer, 2003).

Bourdieu's understanding of social distinction can also contribute to this topic. In his theory, different interactions of multiple capitals (economic, social, and cultural) are fundamental in the reproduction of social inequality. Social advantage in different fields depends on the activation and interaction of all those types of capital and therefore higher socioeconomic positions tend to convey social advantages across fields or social settings (Bourdieu, 1984; Abel, 2008).

The notion of social capital introduced by Bourdieu grew out from sociology, and then spread to a wider disciplinary domain. This field offers theoretical and empirical arguments that can be connected to the understanding of how social networks contribute to health inequalities. Social networks refer as a specific type of capital –"bonding social capital" – related our peers (e.g. Villalonga-Olives and Kawachi, 2015).

Social capital has been connected to health through different links including: (1) the provision of social and material support; (2) the dissemination of health-enhancing social norms and information; (3) the pressure to control deviant health behaviours; or the (4) efficacy in collective bargaining or other collective strategies to ensure access to

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local services and amenities (Kawachi and Berkman, 2000). Under this perspective social networks influence health throughout resources and power known to be unevenly distributed across social strata. Therefore health inequalities can be reinforced by the differentials in social capital in the personal networks of higher and lower socioeconomic people, neighbourhoods and communities.

In addition, personal social networks have been identified as important dimensions for building resilience to social disadvantage for individuals and communities (e.g. Hildon et al., 2008, Poortinga, 2012). Social networks can plausibly contribute to buffer the negative effects associated with social disadvantage in health and, therefore, contribute to attenuate the differences in health between higher and lower socioeconomic groups. The beneficial effects of social networks on health may be particularly relevant for lower class individuals due to a higher level of exposure to stressful events (Matthews et al., 2010; Uphoff et al., 2013). Social networks can provide connections to more resourceful social groups or contexts positively influencing the health chances of lower socioeconomic individuals (DiMaggio and Garip, 2012).

The role of personal social networks in health inequality has received little attention in scientific literature (Uphoff et al., 2013; Islam et al., 2006). Only a few studies focus on the interaction effects between socioeconomic positions and health and it is difficult to draw general conclusions within the empirical evidence collected, given the lack of uniformity in operationalizing key variables and the somewhat mixed findings. For example, some researchers identified a negative accumulated effect of economic hardship and low social integration on different health indicators suggesting that lower socioeconomic individuals benefit less from social integration (Sun et al., 2009; Ahnquist et al., 2012); yet other studies suggest that social integration can be more relevant for less advantaged social groups, such as the unemployed (Gorman and Sivaganesan, 2007). Gorman and Sivaganesan (2007) conclude that family contacts have a more positive influence on the health of individuals with higher levels of education. Similarly, Sun et al. (2009) found that reciprocity and social support were associated with self-rated health only in the “non-poor” sample, suggesting family and social support exchanges contribute to enhance inequalities. Yet Geckova et al. (2003) found no socioeconomic differences in the influence of perceived social support on health and Huurre et al. (2007) identified the quality of parental relations as a protective factor for depression only for adults from lower socioeconomic backgrounds.

The association between individuals or communities of lower socioeconomic and lower levels social capital has been systematically reported, as well as its negative implications for health (e.g. Elgar et al., 2011). Researchers also have reported important contextual variations in the influence of social networks on health. Some research shows that geography and social policies shape how networks features affect exposure to health risks in very different domains. For example, having family members that smoke increases the risk of second hand smoke exposure more in settings with less restrictive (smoke) norms and policies than in more restrictive settings (e.g. Allem et al., 2015); syringe sharing risk among drug users is shown to be higher among large networks in some residential settings than in others (e.g. Boodram et al., 2015; German et al., 2007; Latkin et al., 2013). Findings also suggest that individual social capital indicators are more influential in settings (neighbourhoods, areas, states) with higher levels of contextual social capital (e.g. Poortinga, 2006; Deindl et al., 2015; Mansyur et al., 2008).

Despite these advances, the role of personal social networks in health inequalities is poorly understood. Concerning both theoretical and empirical research on the topic, studies should attend to: (i) different features of social network influence, since the associations between social networks and health occur via multiple pathways; and (ii) the implications of social context, since macro and micro contextual dimensions shape these associations. However very few studies consider these two dimensions of analysis. This study addresses this gap by assuming a multidimensional operationalization of social networks to account for positive and negative links between social connections and health (and health inequalities). These effects are studied among older adults and in respect to key features that define social networks in later life (Fiori et al., 2006). Additionally, a macro level of analysis is added by comparing results across settings in which social welfare policies ascribe different roles to personal social networks for individuals. The approach contributes to a better understanding of health inequalities and emphasizes the need to adopt contextual reasoning in developing policies to reduce health inequalities.

1.2. Social policy and the role of personal social networks on health inequalities

Socio-political contexts are important components of health inequality, having implications for the definition of social disadvantage and its influence on health. The welfare state regime defines the role of the state in sectors that greatly influence individuals’ health and wellbeing (such as education, health care, social policy) aggregating important macro-contextual features (Eikemo and Bambra, 2008; Olasfsdottir and Beckfield, 2010).

Welfare state regimes differ in the type and the degree of social protection provided, and in the sharing of responsibilities amongst the state, the market, and the family in ensuring population wellbeing. Esping-Andersen, (1990, 1999) identified distinct logics of the organization and stratification of nations, rooted in different historical traditions of political class coalitions. Based on these differences, the author proposed a typology of welfare state regimes that became undeniably influential in social sciences (Arts and Gelissen, 2002). Esping-Andersen, (1990, 1999) considered as defining criteria the states’ role in (i) decommodification (the degree of independence of individuals’ welfare to the labour market), (ii)social stratification, and (iii) in the sharing of responsibilities between the market and families at the provision of welfare services (social protection and social support). With this framework, the author identified three different clusters among Western countries: Liberal, Conservative, and Social Democratic. Esping-Andersen's seminal work introduced a fresh perspective in comparative research, and triggered a wide debate concerning the principles and the methods which should be used in welfare modelling (Arts and Gelissen, 2002). One of the most consistent criticisms of this Three Worlds’ typology concerns the misspecification of the role of the family and personal connections in the provision of welfare. This issue led to the addition of a fourth principle to the framework that considers the level of independence from familial relationships to achieving a reasonable standard of living – i.e. defamiliarization. In more familialistic regimes (lower defamiliarization) the family is the main entity responsible for the support and care of its members, and its role is endorsed by the state through social policy and social norms. In more defamiliarized regimes, in turn, the state promotes independence of individuals from their family caring roles, providing means or services to complement family care.

This added indicator underlines the importance of the type of support alongside the amount of support provided by the state (Bonoli, 1997). Several authors attend to compile and organize cross-country differences according to different arrangements in the availability of social services and different commitments to familiarization and defamilialization pressures (e.g. Ferrera, 1996; Anttonen and Sipilä, 1996; Leitner, 2003; Saraceno, 2008). Table 1 compiles a set of welfare state regime typologies to demonstrate the regional variability of social policies in Europe.

Cross national variation on how social benefits are delivered and organized was carefully considered in Ferrera's approach to welfare state regime types (Ferrera, 1996). The author takes into consideration the rules of access to social security systems, the conditions in the access to social benefits, the regulations of financing social protection, and the organization of different security schemes (Ferrera, 1996). By

Table 1
Selected references on welfare state policies by European region.

Authors	European region			
Main Criteria	British Isles	Northern European	Western Europe	Southern Europe
Ferrera (1996) Social benefits organization and delivery	(Anglo-Saxon) Social assistance delivered by means-tested benefits, financed by public and private funds, in an integrated system managed by public administration.	(Scandinavian) Social security systems provide universal coverage accessed on the basis of citizenship, financed through fiscal revenues, and described by strong organizational integration between different systems	(Bismarckian) Social entitlements are strongly linked to positions of labour, and social protection schemes are financed by income-related contributions and mainly governed by unions and employer organizations.	(Southern) Social protection is delivered by a fragmented system composed by multiple income schemes. Southern countries also ensure health-care as a citizenship right, and have a higher reliance on family and charity entities in the provision of welfare services
Anttonen and Sipilä (1996) Formal and informal support availability	(Anglo-Saxon) A combination of informal care-giving with public (for target groups in need) and private services	(Scandinavian) Structured universal care-giving system ensuring equality in the availability of care; (Optional Familialism) Generous	(Western European) Family considered primary responsible for care of elderly and child care, ensured with financial support from the state (Explicit familialism regimes)	(Mediterranean) Residual (public and private) social care-giving services and high reliance on informal support provided mostly by family members. (Implicit Familialism)
Leitner (2003) Modalities of the family role in the provision of care	(De-familialism) Private and public solutions are available do unburden the family of its caring function but the right of family care is not ensured.	professional and financial services are provided to support individuals through cash-for-care programmes. Families can choose the request for formal care to secure the welfare of their relatives and close ones.	Responsibility of care is explicitly attributed to the family. Some support from cash benefits and the provision of only a few formal support services, such as domiciliary care.	Strong normative system based on filial and moral obligations re-enforced by the residual provision of formal support (public and private).

Note. Regional correspondence across typologies is based on country aggregations proposed by the authors.

considering the combinations of formal and informal support availability in Europe, Anttonen and Sipilä (1996) also distinguished four modalities in European context separating Scandinavian, 'Anglo-Saxon', Western European, and Mediterranean countries.

Leitner (2003), in turn, proposed another framework to account for the several modalities of familialism in the provision of care, also taking European states as examples. Four types of familialism were distinguished by the author: de-familism, optional, explicit, and implicit familialism.

Table 1 presents a description of each of these categories and the correspondence among typologies based on the European regions that aggregate states with similar policy features. These typologies identify important regional variability in the level of dependency on personal connections for provision of social support and resources to cope to adversity and illness. These contextual features plausibly shape the role of personal networks in health inequalities.

This study addresses this variability by examining the contribution of social network characteristics in moderating the association between socioeconomic position and health across European regions. More specially, two hypotheses are considered. The first is that socioeconomic position's influence on health interacts with social network features in later life. The second predicts regional differences. Lower impacts of social networks on health inequalities are expected in the northern region due to higher commitments to defamiliarization policies in these states, especially via effects on family ties and exchanges of social support.

2. Method

2.1. Sample

Data is taken from the Survey of Health, Aging, and Retirement in Europe (SHARE), a multidisciplinary and cross-national panel database of micro data on health, socio-economic status, and social and family networks (Börsch-Supan et al., 2013). The research relies on the sample collected in the fourth wave of the survey (2010/2011), which contains the specific module dedicated to social networks. The sample is composed of 33489 individuals, aged 50–111 years (M=66.31; SD=10.04), from 11 European countries (Austria, Belgium, Denmark, Estonia, France, Germany, Italy, The Netherlands, Portugal, Spain, and Sweden).

2.2. Main variables

2.2.1. Region

Countries were grouped in three European regions according to the differences in welfare state regimes, taking as reference Ferrera's (1996), Anttonen and Sipilä (1996), and Leitner (2003) proposals. Data from Sweden and Denmark are grouped in the Northern region (N=4170), referring to Scandinavian countries or regimes of Optional familialism. Data from Austria, Germany, The Netherlands, France, and Belgium are grouped in the Central region (N=20270) referring to Bismarckian, Western European, or Explicit familialist countries. Finally data from Spain, Italy, and Portugal was considered to represent the Southern region (N=9049), referred as Southern, Mediterranean or Implicit familialism regimes (Ferrera, 1996; Anttonen and Sipilä, 1996; Leitner, 2003).

2.2.2. Socioeconomic position

Socioeconomic position (SEP) refers to the place of an individual in a hierarchy based on social and economic characteristics, expressed as access to resources and valued goods. Educational level was measured as the number of years in which participants were enrolled in full-time, formal education. Income was measured as the sum of individual and household income components including wages, pensions, benefits, and others. The wealth variable was calculated as the sum of all

financial and real assets minus liabilities. The variables Income and Wealth were adjusted for household size (divided by the squared root of household size) and divided in quintiles within each country sample. Perceived income adequacy was defined based on a subjective measure of income availability (Is household able to make ends meet?). The four variables were combined using principal component factor analysis in order to generate the SEP factor. The procedure was conducted in each country separately to allow different weightings of the four variables in the factor, in order to have a country-specific measure. The computed factor (regression method) was used as the socioeconomic position variable, wherein higher values mean higher social standings. Summary statistics concerning SEP variables by region are presented in Table 2.

2.2.3. Health

Health was measured along three dimensions that underpin lay conceptions of health: the subjective dimension related to perceptions of strength or energy (health as positive vitality or well-being), (2) the functional dimension, related to what people are able to do (health as the ability to carry out daily tasks), and (3) the biomedical dimension related to medical diagnosis (health as the absence of illness) (Hughner and Kleine, 2004a, 2004b). Three variables were selected to account for these thematic dimensions, namely, self-perception of health (rated in a five point scale, wherein higher values mean worse health perceptions), number of difficulties in activities of daily living[1] (ADL), and number of chronic conditions,[2] respectively. A Health factor was generated by combining these three variables via a factor analysis (principal component analysis). The first component was retained, in which self-perceived health scores the highest factor loading. The computed factor was used to represent the health variable, wherein higher values mean worse health. Summary statistics concerning health variables by region are presented in Table 3.

2.2.4. Social networks

Social networks are conceptualised in this research as a set of social relationships that are important for the individual, i.e. “close/strong” ties (Ferlander, 2007). Eleven indicators were selected to assess the three key features of social networks among older adults based upon the literature on social network types– the structure of the social network, the quality of ties, and the exchanges in terms of social support (e.g. Fiori et al., 2006). The structural characteristics of the social network were described with four variables, namely: Size (number of members in the personal network), Partner (living in the same household), Child (have children), and Social participation (participation in social activities in the last 12 months). The quality of ties were assessed by the level of overall satisfaction of the social relations considered in the network (Satisfaction, measured in a 10 point scale); and the existence of at least one relation in the network considered extremely close (Emotional closeness). Finally, social support exchanges were considered: having received and having provided financial support in the 12 months prior to data collection; the provision of instrumental help (help with personal care or household chores, for/from inside or outside the household); and the existence of daily contacts (Daily contact).

2.3. Analysis

Moderation effects can be studied in regression models as interaction effects (variables resulting from the product of the moderator and the independent variable) (Baron and Kenny, 1986). In this study moderation effects were tested using multi-factorial regression models, assuming age, gender, and country as covariates in all models. The moderation effects were considered relevant if the interaction term reached statistical significance in the model and if its addition contributed significantly to improving the goodness of fit of the model (relevant decrease of Cui-Square goodness of fit statistic). The procedures were applied to regional sub-samples separately. Analyses were made using SPSS.20 statistical software and Excel from Microsoft Office 2011.

3. Results

The descriptive statistics of demographic and social networks variables are presented in Table 4. The average age of participants was similar across regions at around 66 years, and there was a high percentage of women in each region. Having a partner and having children were prevalent in all samples, especially in Southern Europe (79% and 91%, respectively). Participants tended to report two to three members in their personal networks in all regions, but the size of social networks was higher in the Northern and Central regions. Participants presented high levels of satisfaction and almost three quarters of the samples reported having at least one (extremely) close emotional tie. Daily contact was very frequent, especially in the Southern European region. More people provided social support than received it. The northern European sample showed the highest percentages of financial and instrumental help provision (39.3% and 37.0%, respectively). A similar trend is found in the receipt of financial support which was particularly low in the Southern European sample.

Table 5 presents the regression coefficients concerning Model 1 and 2. In all regions Factor SEP is negatively correlated to the Health factor, indicating a systematic association between higher SEP and better health across regions (Model 1). In the northern European region, participation in social activities ($B=-.23$, $p < .05$) and satisfaction level with the social network ($B=-.05$, $p < .05$) were associated with a decrease in the health factor, which indicates a beneficial effect on health. In the central European region, having children ($B=-.08$, $p < .05$), is also associated with better health scores additionally to social participation ($B=-.18$, $p < .05$), and satisfaction ($B=-.03$, $p < .05$). In this region associations with poor health were found between daily contacts ($B=.06$, $p < .05$) and the provision of financial ($B=.07$, $p < .05$) and instrumental help ($B=.05$, $p < .05$). Positive and negative associations are found in the southern region: social participation is associated with better health ($B=-.12$, $p < .05$), and the provision of social support to worse health scores (daily contacts: $B=.09$, $p < .05$; financial: $B=.09$, $p < .05$; instrumental: $B=.18$, $p < .05$).

In understanding moderation effects (Model 2), it is important to note that given how our variables were constructed in this study, the negative coefficients of interactive effects suggest that a social network variable combined with high socioeconomic position is beneficial for health (increasing health inequality). In turn, positive coefficients indicate an increase of health advantages related to social networks with low socioeconomic position (decreasing health inequality).

In the Northern European sample no interaction terms reached statistical significance suggesting that the associations between social network's features and health factor are not shaped by the socioeconomic position in this region. In the central European region the interaction terms concerning the variables Partner ($B=.07$, $p < .05$), Social Participation ($B=.05$, $p < .05$), Satisfaction ($B=-.01$, $p < .05$) and

[1] Any difficulty because of physical, mental, emotional, or memory problems in the last 12 months that lasted or are expected to last more than 3 months, in (1) Dressing (including putting on shoes and socks); (2) Eating (such as cutting up your food); (3) Using the toilet (including getting up and down); (4) Bathing and showering; (5) Getting in and out of bed; (f) Walking across a room.

[2] Chronic conditions such as (1) A heart attack including myocardial infarction or coronary thrombosis or any other heart problem including congestive heart failure; (2) High blood pressure or hypertension; (3) High blood cholesterol; (4) A stroke or cerebral vascular disease; (5) Diabetes or high blood sugar; (6) Chronic lung disease such as chronic bronchitis or emphysema; (7) Asthma; (8) Arthritis, including osteoarthritis, or rheumatism; (9) Osteoporosis; (10) Cancer or malignant tumour, including leukaemia or lymphoma, but excluding minor skin cancers; (11) Stomach or duodenal ulcer, peptic ulcer; (12) Parkinson disease; (13) Cataracts; (14) Hip fracture or femoral fracture; (15) Other fractures; (16) Alzheimer's disease, dementia, organic brain syndrome, senility or any other serious memory impairment; (17) other.

Table 2
Summary statistics concerning SEP variables by region.

	Northern		Central		Southern	
	M	SD	M	SD	M	SD
Education years	10.4	5.2	10.9	4.4	7.4	4.7
Income (€)	32156.54	19969.95	29937.89	38648.91	14786.53	31058.41
Wealth(€)	253664.78	328140.79	206473.94	316227.77	160022.64	277211.59
	Northern		Central		Southern	
	N	%	N	%	N	%
Perceived income adequacy						
Great difficulty	82	2.0	1212	6.0	1742	19.3
Some difficulty	429	10.4	3967	19.8	3316	36.7
Fairly easily	1227	29.8	7649	38.1	2854	31.6
Easily	2383	57.8	7228	36.0	1119	12.4

Note. M (Mean), SD (Standard Deviation). Income and wealth values adjusted for the square root of the size of household. N (Frequency), %(Percentage).

Table 3
Summary statistics concerning Health variables by region.

	Northern				Central				Southern			
	N	%	M	SD	N	%	M	SD	N	%	M	SD
Chronic diseases			1.45	1.36			1.68	1.52			1.84	1.58
ADL limitations			.19	.76			.24	.82			.37	1.13
Self perceived health												
Excellent	749	18.0			1600	7.9			428	4.7		
Verygood	1226	29.4			3824	18.9			1138	12.6		
Good	1078	25.8			8089	39.8			3094	34.2		
Fair	831	19.9			5079	25.1			2992	33.1		
Poor	286	6.9			1678	8.3			1397	15.4		

Note. N (Frequency), %(Percentage), M (Mean), SD (Standard Deviation).

Table 4
Descriptive statistics by regional sub-sample.

	Northern				Central				Southern			
	N	%	M	SD	N	%	M	SD	N	%	M	SD
Age			66.49	10.2			66.14	10.25			67.06	10.13
Gender												
Female	2247	53.9			11294	55.7			4958	54.8		
Male	1923	46.1			8976	44.3			4091	45.2		
Social Networks												
Partner	3020	72.4			13620	67.2			7146	79		
Children	3837	92.0			18039	89	2.67	1.68	8208	90.7		
Size			2.65	1.6							2.35	1.56
Social participation	2772	66.5			11279	55.6			2737	30.2		
Emotional closeness	2791	66.9			14181	70			6257	69.1		
Satisfaction			9.24	1.3			8.76	1.36			8.92	1.44
Dailycontact	3406	81.7			16017	79			8398	92.8		
Provided financial help	1786	42.8			7143	35.2			2104	23.3		
Provided instrumental help	1829	43.9			6453	31.8			2248	24.8		
Received financial help	583	14.0			3453	17			818	9		
Total	4170	100			20270	100			9049	100		

Note. N Frequency. % Percentage. M Mean. SD Standard Deviation.

Provided financial help (B=−.01, $p < .05$) were considered statistically relevant. The first two presented a positive coefficient, suggesting that social participation and having a partner are more beneficial for individuals in lower socioeconomic positions. Contrariwise, providing financial help and satisfaction with the social network appear to be more beneficial to individuals as the socioeconomic position increases. Being satisfied with the close network is more beneficial for health among people of higher socioeconomic positions. The health harming effect of providing financial help attenuated with increase of socioeconomic position. Finally, five moderation terms were shown to be statistically relevant in the Southern European sample. As socioeconomic position increases, there is an increase of the health-enhancing effect of having a child (B=−.10, $p < .05$), establishing daily contacts (B=−.09, $p < .05$), having emotional close ties (B=−.08, $p < .05$), or being satisfied with the network (B=−.02, $p < .05$). Socioeconomic position also shapes the influence of social participation variable (B=.09, $p < .05$), but the positive coefficient indicates that the positive association between social participation and health is enhanced among individuals of lower socioeconomic positions.

4. Discussion

This study focuses on the role of personal networks in moderating health inequalities among older adults across different European

Table 5
Main effects and interaction effects of social networks variables on the Health factor.

		M1 Main effects		M2 Interaction effects		Model fit difference M1-M2	
Region		B	SE	B	SE	$\Delta \chi^2$	p
Northern	Factor SES	**−.22*****	**.02**				
	Partner	−.02	.04	.02	.03	.29	p > .05
	Children	−.03	.05	−.07	.05	1.48	p > .05
	Size	.00	.01	.00	.01	.00	p > .05
	Social participation	**−.23*****	**.03**	.02	.03	.40	p > .05
	Emotionalcloseness	−.03	.03	−.05	.03	2.16	p < .05
	Satisfaction	**−.05*****	**.01**	.00	.01	.08	p > .05
	Dailycontact	.06	.04	−.03	.04	.56	p > .05
	Provided financial help	.03	.03	.03	.03	.47	p > .05
	Provided instrumental help	.03	.03	.02	.03	1.00	p > .05
	Received financial help	−.02	.04	.02	.04	.18	p > .05
Central	Factor SES	**−.22*****	**.01**				
	Partner	−.02	.02	**.07*****	**.01**	**18.03**	**p < .05**
	Children	**−.08*****	**.02**	.03	.02	2.10	p > .05
	Size	.01	.00	.00	.00	.80	p > .05
	Social participation	**−.18*****	**.01**	**.05*****	**.01**	**9.61**	**p < .05**
	Emotionalcloseness	.01	.02	.00	.01	.00	p > .05
	Satisfaction	**−.03*****	**.01**	**−.01***	**.01**	**4.26**	**p < .05**
	Dailycontact	**.06*****	**.02**	.03	.02	2.68	p > .05
	Provided financial help	**.07*****	**.01**	**−.01***	**.01**	**3.78**	**p < .05**
	Provided instrumental help	**.05*****	**.01**	.03	.01	.03	p > .05
	Received financial help	.033*	.02	.00	.02	.04	p > .05
Southern	Factor SES	**−.22*****	**.01**				
	Partner	−.05	.03	.01	.03	.28	p > .05
	Children	.06	.04	**−.10*****	**.03**	**8.34**	**p < .05**
	Size	−.01	.01	.00	.01	.37	p > .05
	Social participation	**−.12*****	**.02**	**.09*****	**.02**	**14.83**	**p < .05**
	Emotionalcloseness	.04	.02	**−.08*****	**.02**	**11.29**	**p < .05**
	Satisfaction	−.01	.01	**−.02***	**.01**	**4.15**	**p < .05**
	Dailycontact	**.09***	**.04**	**−.09***	**.04**	**4.59**	**p < .05**
	Provided financial help	**.09*****	**.02**	−.04	.02	1.33	p > .05
	Provided instrumental help	**.18*****	**.02**	.03	.02	3.31	p > .05
	Received financial help	.05	.03	−.03	.03	.76	p > .05

Notes. Beta coefficients (B). Standard Error (SE). Significance statistics (p). Model 1 includes Intercept, Age, Gender, Country (dummies), Factor SEP, Partner, Children, Size, Social participation, Daily contact, Emotional closeness, Satisfaction, Provided financial help, Provided instrumental help, and Received financial help. Model 2 includes all variables from Model 1 and the interaction variable (Factor SES*Social Networks). Model fit difference based on cui-square statistics difference between models ($\Delta\chi^2$).**p < .01, Relevant interaction effects are shaded in grey.

* p < .05, Relevant interaction effects are shaded in grey.

*** p < .001. Relevant interaction effects are shaded in grey.

regions. In a first step the association between social network features and health is studied controlling for individual age, gender, country, and socioeconomic positions (Model 1). Features related to structure and quality of social connections were found to be associated with better health, whereas those related with exchanges of social support were associated with worse health scores. These results are in line with previous research on social support concerning the complex interplay between social connections and health. Social networks can provide resources and beneficial influences but can also be a source of conflict and demands such as those related to social support. Beneficial and health harming implications have been reported in previous research (e.g. Walen and Lachman, 2000; Smith and Christakis, 2008). Important similarities and differences across regions were observed. Social participation and satisfaction positively affect health across all European regions; however, the negative influence of social support provision and daily contacts were observed only in central and southern Europe, not in the northern region. The strong publicly-funded social support systems of northern European countries may reduce the negative impact of informal social support provision on health. Providing public formal support services or ensuring better conditions to families providing care (by ensuring monetary compensations for caregivers, for example) – present in these systems – can be pointed as relevant strategies to be applied in central and southern Europe to improve health of family caregivers.

In the second step of the regression modelling, interaction effects between socioeconomic position and social networks variables were studied. As predicted, the impacts of social networks on health inequalities are multidimensional, with some features intensifying inequalities and others to attenuating them. The health advantage of higher socioeconomic positions is reinforced by enhancing the effects of emotional closeness and by reducing the harmful effects of social support provision. These results are aligned with the theoretical premises of the accumulated advantage theory (Dannefer, 2003), interaction of capitals (Bourdieu, 1984; Abel et al., 2011), and the importance of "spill-over" effects (Freese and Lutfey, 2011) suggesting that more resourceful individuals have more opportunities to benefit more from their social connections than do less well-resourced individuals. These findings underline the importance of immediate social context in health chances. Social policy interventions aiming to address health inequalities should target socio-economically disadvantaged neighbourhoods and communities, with the aim to improve not only the availability of health and social services, but also the quality of public spaces and facilities, to promote positive social interactions and social cohesion opportunities.

Participation in social activities presented the opposite effect. Participation in social activities is less frequent among people of lower socioeconomic position, yet in the central and southern regions it not only had a positive association with health, but that association was magnified for those of lower socioeconomic positions. Participating in social activities promotes social integration, face to face contact, physical fitness, a sense of belonging, self-esteem, and exchange of valuable resources and information, which may be particularly relevant to individuals of lower socioeconomic positions, as it allows access to resources beyond the "limits" of close personal networks that tend to be less socially diversified (DiMaggio and Garip, 2012). This finding highlights the importance of social connections to cope with disadvantages mentioned in resilience studies (Hildon et al., 2008; Poortinga, 2012). In this line of reasoning, addressing access barriers that may inhibitit participation among people of lower socio-economic positions (cost, transportation, etc.) and ensuring that available activities align with the interesst of people of different backgrounds and cultures could help combat health inequalities.

Regions differed in these associations. No interaction effects were observed in the northern region. There, health inequalities among older adults appear not to be shaped by personal network features related to high levels of defamiliarization and the distinctive welfare state regime In contrast, the welfare state regimes of the central and southern regions share important features, and researchers are debating whether these two regions represent a single welfare state regime (e.g. Arts and Gelissen, 2002). Our findings show similarities between these regions in the negative impact of providing social support – that is, helping with personal care or household chores - on health and health inequalities. Nevertheless, how social benefits are delivered and organized is also important. In both regions social benefits are linked to labour earnings and the role of the market is marginalized as the role of the family is emphasized. Yet, Central Europe presents a more *explicit* familialist social policy than Southern Europe, according to Leitner (2003). This means that the state promote more directly family care, instead of indirectly (by absence or low response of public services, for example). Our findings express these regional disparities in the implications of certain family ties - having children in southern Europe becomes health-beneficial with the increase of social economic position whereas, and having a partner is shown as health-beneficial among individuals of lower socioeconomic positions in Central Europe. These findings allow us to identify specific vulnerabilities for elderly populations of lower socioeconomic strata in different regions. In Southern Europe, being an older adult of lower socioeconomic positions combined with having no living children is detrimental for health. In Central Europe, the risk of poor health is high for older adults of low socioeconomic position who are living without a partner. These situations represent double jeopardy for health, and they call for policy interventions tailored to these vulnerable groups.

These results also must be understood considering potential weaknesses. An important limitation concerns the strategy applied in comparing different European regions. Running the analysis by regions separately allowed us to describe the most relevant features in each region but not to identify the factors/dimensions responsible for regional variation. This could be assessed with multi-level regression analysis. Multi-level techniques were not suitable for this research due to the insufficient number of countries included in the fourth wave of SHARE survey (Hox, 1995), but the future extension of the survey to more countries will create new possibilities to analyze macro contextual effects in health inequalities. Additionally, the cross-sectional research design does not make it possible to analyze bi-directional associations between social networks and health. Longitudinal data can provide a more rigorous test of the study hypothesis (Sirven and Debrand, 2012).

This study relied on an international survey that considered social networks as a multidimensional concept. By acknowledging the independent associations of personal network structure, quality and interactivity it was possible to identify multiple contributors to intensification and the attenuation of health inequalities. Findings suggest that interaction effects are shaped by different policy commitments to familiarization/defamilialization pressures. Future studies should explore this hypothesis in more depth by considering the implications of variables such as gender and type of support and the interactions with other contextual features.

This research highlights the role of social policy in shaping social and health inequalities in older populations. Enhancing the positive impacts of social networks on health and reducing difficulties in coping among older people of lower socioeconomic status are important strategies to decrease health inequalities in familiarized settings. Political interventions that emphasize active aging policies and informal support provision should be included in state policies to reduce health inequalities.

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