IS SOCIAL CAPITAL ASSOCIATED WITH HEALTH? EVIDENCE FROM A STUDY ON THE ELDERLY ITALIANS

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Abstract. *In the last decades there had been undoubted improvements in medicine and living conditions, still the distribution of health within and between regions is facing an increasing unbalance and many researchers from different fields have tried to understand why some individuals are more exposed to disease and mortality than others. An increasing interest on social capital as a key determinant for health has recently developed. This paper analyzes the association between social capital and self-perceived health among older adults in Italy. We used a multilevel approach to take into account the hierarchical structure of the population: individuals are nested in families which are nested into regions. Multilevel logistic regressions are performed using data on the fourth wave of the Survey on Health and Retirement in Europe. Two components of social capital are considered, bonding and bridging, in order to understand if relations inside or outside an individual's inner circle are associated differentially with his/her health. The results demonstrate that both bridging and bonding are associated with self-reported health status. Consequently, in Italy, social capital plays an important role in explaining the heterogeneity in health perception among individuals.*

Keywords: *Health, Older adults, Social capital, Mixed effects logistic model.*

1. INTRODUCTION

The identification of the determinants of health inequalities has become a very relevant topic for policy makers, to the extent that in 2008 the World Health Organization (WHO) Regional Office for Europe established the Commission on Social Determinants of Health in order to "support countries and global health partners to address the social factors leading to ill health and inequities".

In countries where ageing is a compelling issue (Italy is among them), it is very important to understand the health dynamics in the sub-population of the elderly.

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Increased longevity is one of the greatest achievements of modern societies and it's having a huge impact on most policy areas, like welfare, labor market and public finance. It is of crucial importance to understand which are the determinants of an *healthy* ageing: public finance would certainly succumb under the burden of an ageing population suffering of multiple chronic diseases whereas the whole society would benefit from an active old population. For policy makers the key question is not "which interventions should be taken to increase life expectancy" rather "which are the drivers for an increase in the years spent in good health?". The dramatic truth is that the sustainability constraint of public finance imposes an *active* ageing which can be realized only through a *healthy* ageing.

This paper contributes to this important debate by shedding light on the role of one potentially influential factor of healthy ageing, namely social capital (SC) focusing on Italy where, to our knowledge, no one has ever investigated whether or not this link exists. A multilevel approach is used in order to take into account the hierarchical structure of the data: individuals nested in families which are nested in geographical regions. A three-level logistic regression was performed using data from the fourth wave of the Survey on Health and Retirement in Europe. The data were collected in 2010.

The rest of the paper is organized as follows. In Section 2 we begin by recalling the definition of SC and revise the main contributions of the literature on it and then we move to the analysis of the patterns from SC to health. In Section 3 we describe the model along with the data used. In Section 4 we present the results, in Sections 5 and 6 we highlight some limitations and further developments respectively; finally we discuss our findings in Section 7.

2. SOCIAL CAPITAL AND HEALTH

2.1 SOCIAL CAPITAL: DEFINITIONS AND MEASUREMENT ISSUES

It is difficult to identify when the concept of social capital was first introduced. Probably it was with the contribution of the sociologist Hanifan (1916), who emphasized the importance of social structure to people with a business. In the last twenty years the concept of social capital leaked the boundaries of sociology and a flourishing multidisciplinary literature on the topic has blossomed.

Researchers agree that social capital is the synthesis of three different points of view (Grootaert and van Bastelaer, 2001): the first, due to Putnam (2000), defines social capital as those characteristics of social communities, such as networks of individuals and families together with norms that create externalities for the society as a whole; the second interpretation, referred to by Coleman (1988), defines social

capital as a "variety of different entities which all consist of some aspect of social structure and which facilitate certain actions of actors -whether personal or corporate actors- within the structure"; the third is associated with Olson (1982) and North (1990) and includes the social and political environment that shapes social structure and allows for the development of norms.

Theoretical research identifies a bonding and a bridging dimension of social capital (Putnam, 1995): the first refers to the relations that an individual has within his/her "inner circle" whereas the second relates to ties with people outside of the closest circle. In other words, bonding SC refers to the trusting and co-operative strong relations among individuals who recognize to be similar in terms of social identity (family ties are an important example of this category); bridging SC comprises relations among people who know they are not alike in some socio-demographic sense (Szreter and Woolcock, 2004).

Another important issue discussed in theoretical literature is on the level of relevance of its tenure and measurement: the sociologist Pierre Bourdieu defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships" (Bourdieu, 1985). As argued by Andrew (2005), Bourdieu's conceptualization of social capital as a durable network of relationships is consistent with the idea that social capital is a resource which can be measured at an individual level. According to Bordieu "the volume of social capital possessed by a given agent thus depends on the size of the network of connections he can effectively mobilize and the volume of the capital possessed by each of those to whom he is connected" (Bourdieu, 1985). Also according to Lin (1999), who says that "social capital is captured from the embedded resources in social networks", social capital is more properly captured at the individual level. In other conceptualizations, social capital is considered in purely collective terms. For example in Kawachi and Berkman (2000) it is argued: "social capital inheres in the structure of social relationships; in other words it is an ecological characteristic" which "should be properly considered a feature of the collective (neighborhood, community, society) to which an individual belongs".

Whether SC has more an individual or a collective origin is a very relevant question *per se* and in empirical research. We concur with the point of view of Putnam, Lin and Bordieu as we believe that SC gushes from individuals and *only afterward* society absorbs and endorses it. That is why we believe that SC is an individual characteristic, and it should be treated this way for the analysis. We also think that the Bourdieu's definition is particularly suited for our research. In fact, those "embedded resources" are surely not captured in the same way by everyone.

It could well be that some individuals don't catch them at all. This might explain why, all other conditions equal, there is still much variability in health. This claim immediately calls for an accurate selection of potential confounders: if we want to understand the role played by social capital we have to control for all the covariates that have an impact on health. The selection we made, see subsection 3.2, is consistent with the literature.

Although some authors consider social capital more relevant at an individual level (Bourdieu, 1985; Dayton-Johnston, 2003; Pevalin, 2003; Portes, 1998; Veenstra, 2000) whereas others at collective level (Kawachi and Berkman, 2000; Lochner et al., 1999; McKenzie et al., 2002; Szreter and Woolcock, 2004) and the appropriate level at which it should be measured remains uncertain, the literature on social capital and health shows that differences in health could be better predicted by individual level social capital (De Silva et al., 2005).

2.2 THE PATHS BETWEEN SOCIAL CAPITAL AND HEALTH

An increasing interest on social capital as one of the drivers of health has recently spread out among researchers (d'Hombres et al., 2010; Folland, 2007; Rocco and Suhrcke, 2012; van Groezen et al., 2011) and some authors have focused their attention on the elderly (Andrew, 2005; Poulsen et al., 2011).

The theoretical literature identifies two major ways in which social capital influences health (Veenstra, 2005; Veenstra et al., 2005): the first, also known as "compositional" health effect of social capital, is a direct pathway to individual health whereas the second, the so called "contextual" health effect of social capital, exerts its influence only indirectly.

On behalf of the first, durable networks impact people behavior through four primary pathways: 1) social support; 2) social influence; 3) social engagement and attachment; and 4) access to resources and material goods. These behavioral processes have direct pathways to health status: 1) direct physiological stress responses, 2) psychological states and traits (for example self-esteem, self-efficacy, security), 3) health behaviors (for example they inhibit damaging habits like tobacco or alcohol consumption and foster healthy behavior such as appropriate health service utilization, medical adherence, and exercise) (Berkman et al., 2000).

Another interesting point of view that sheds lights on the compositional health effect and that is particularly suited for our purposes is given by the Social Production Function (SPF) theory applied to ageing (Ormel, 2002; Ormel et al., 1999; Steverink and Lindenberg, 2006). The SPF theory identifies three basic social needs: affection, behavioral confirmation, and status; the overall well being increases as these three needs are satisfied. In particular, affection is fulfilled by

relationships that give the feeling of being loved, trusted and accepted; behavioral confirmation results primarily from the feeling of doing the "right" thing in the eyes of relevant others and oneself; and the need of status is fulfilled by relationships that give one the feeling to be treated with respect, taken seriously etc. In the light of the SPF theory, bonding social capital would benefit health because it fulfills affection whereas bridging SC behavioral confirmation and/or status. The variables we chose to measure SC, see subsection 3.2, are consistent with this theory.

The second pathway, i.e. the "contextual" health effect of social capital, has an impact on individual health indirectly through its influence on socio-economic and environmental factors of the community as a whole. These elements are determinants of health themselves. For example social capital is known to generate overall economic prosperity and wealth (Woolcock, 1998) and there is evidence for a link between community wealth and health (see for example Kaplan et al., 1996; Lynch et al., 1998; Veenstra, 2003; Wilson and Daly, 1997).

3. DATA AND METHODS

3.1 DATA

We used the fourth wave of the Survey on Health 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 of more than 85,000 individuals aged 50 or over. SHARE involves 18 European countries plus Israel and aims at analyzing the process of population ageing in depth.

The method used to run the interviews (CAPI) assures a high quality and reliability of the responses. Furthermore a group of experts in sampling strategies supported all national governments on the decision of the more appropriate sampling design. For Italy it was chosen a multi-stage design based on regional/ local population registers. The overall response rate varies by country, spanning from a minimum of 73.7% in Spain to a maximum of 93.3% in France. Italy is placed towards the bottom with a 79.7% of responses.

Our inferences are based on a sample of 3,116 individuals interviewed in 2010 who are aged 55 or more at baseline. Due to the presence of missing data on variable 'NUTS2', it is possible to identify only 18 regions out of 20. The missing regions are Molise and Valle d'Aosta. We also excluded Abruzzo because the sample size was too low to allow for inferences (only 3 observations).

There are 2,112 families in the sample ranging from a minimum of 38 in Liguria to a maximum of 268 in Lombardia. From the descriptive statistics of the sample (see Table 1) we notice that women are slightly more than men (53.56%)

and that there is a prevalence of people with a good or excellent self-perceived health (in fact only 44.01% declares to have a fair/poor self-perceived health).

The survey data does not comprise the institutionalized elderly, i.e. those who live in nursing homes or homes for the elderly. As a consequence it could be objected that, since we are excluding a part of the population who is likely to have very high rates of morbidity, we are underestimating the model coefficients. Although the objection is correct, the underestimation is negligible due to the small percentage of elderly who live in institutions: according to the Italian National Institute of Statistics (Istat, 2014) in 2012 the proportion of institutionalized people aged 65+ ranges from 1.25% for men to 2.78% for women. Such a low percentage testify the role of the family in Italy, which is still the core of the social organization and takes responsibility for the care of close relatives.

Table 1: Descriptive statistics of the variables considered in the sample. Panel A refers to categorical variable and panel B to quantitative variables

Panel A	**Nr obs**	**%**	**Min**	**Max**
Self-perceived fair or poor health	3,115	44.01	0	1
Ends meet easily/fairly easily	3,116	42.68	0	1
Female	3,116	53.56	0	1

Panel B	**Nr obs**	**Mean**	**St. Dev.**	**Min**	**Max**
Age	3,116	68.62	8.75	55	100
N. symptoms	3,115	1.91	1.97	0	12
N. chronic diseases	3,116	1.76	1.51	0	9
Years of educations	3,082	7.94	4.21	0	24
Bridging SC	3,111	-0.12	0.89	-2.62	4.80
Bonding SC	3,111	-0.40	1.08	-2.11	4.07
BMI	3,072	26.57	4.29	11.72	56.89
Pollution	3,111	16.35	3.51	7.5	23
Doctors per inhab.	3,111	7.67	0.65	6.46	8.67

3.2 VARIABLES

The dependent variable is the self-perceived health (SPH) which takes value 1 if an individual perceives to be in fair or poor health and value 0 if the perception is for a good or very good or excellent health. We decided to use SPH because it appears to be in close association with the presence of a disease (Goldberg et al., 2001)) and

it is a good predictor of mortality (Idler and Benyamini, 1997). In the light of this literature, we refer to the perceived health as a proxy for the overall individual health state.

We considered two kind of independent variables: the first group controls for individual characteristics (age, gender, income, physical health, body mass index, years of education and social capital) whereas the second for contextual features (poverty, pollution, health care system).

CONTEXTUAL CHARACTERISTICS. The claim that social capital exerts an effect on some socio-economic and environmental characteristics (subsection 2.2) that are themselves determinants of health, implies that we need to control for them as they are confounders. An interesting paper of Pirani and Salvini (2012) highlights how individual factors do not fully explain health inequalities among the elderly Italians. We reviewed the literature on territorial health inequalities (Ecob and Macintyre, 2000; Macintyre et al., 2002; Mitchell et al., 2000; Pirani and Salvini, 2012) and the main features identified are environmental pollution and the level of deprivation of the area.

To control for this contextual effect we used an indicator of pollution seriousness (the percentage of families who report issues with any form of pollution), the incidence of households in a position of relative poverty, the number of doctors per inhabitants and the number of elderly in home care per inhabitant aged 65 or more. The two latter indicators capture the level of territorial deprivation with respect to the health care system.

INDIVIDUAL CHARACTERISTICS. We included a vast set of individual variables, spanning from demographic (age and gender) to socio-economic (years of education, income, social capital), lifestyle (body mass index) and physical health (number of chronic diseases and number of symptoms). Income was proxied by the four level categorical variable "ability to make ends meet"(With great difficulty/With some difficulty/Fairly easily/Easily).

The reason for including physical health among the regressors is that most of the variability in self rated health is indeed due to physical health (Hardy, 2014) and the exclusion of it would not estimate the effect of the other regressors properly. In particular, the coefficients of those covariates that could surrogate physical health (for example, BMI, Age etc) would suffer a bias. This is particularly important if we consider that the population under investigation is characterized by a high prevalence of objective health problems.

The inflation of the estimates of some covariate coefficients and the fact that the association between SC and health is preserved, though not published on this work, have been verified on our data and the results are available upon request.

A delicate point to be deepened is the measurement of social capital. In applied research there is no uniformity among researchers: in some cases it is measured as a single indicator (just to give few examples see Alesina and La Ferrara (2002); d'Hombres et al. (2010); Kan (2007)), while in others it is a synthesis of a plurality of variables (Onyx and Bullen, 1998; Poulsen et al., 2011; Sirven and Debrand, 2012).

In our work we decided to follow the principle that social capital is a multivariate concept and that it cannot be adequately proxied by only one measure (Grootaert and van Bastelaer, 2001). Therefore we selected those variables in SHARE that can capture as much of the underlying concept of social capital as possible in order to construct a composite indicator. In doing so, the main advantages are: 1) it contains a vast range of empirical proxies for the theoretical components of social capital and therefore is a good reflection of the multidimensional concept, 2) it allows one to measure the level of intensity of social capital rather than simply its presence/absence, as has commonly been the case in previous existing work (see for example Sirven and Debrand (2008, 2012)).

The measurement process consisted in two steps. First we selected those variables in SHARE that could capture as much as possible of the underlying concept of social capital. They are 1) frequency of family contacts, 2) family members in social network, 3) frequency of charity or voluntary work in the last 12 months, 4) frequency of attendance of an educational or training course in the last 12 months, 5) frequency of attendance at a club in the last 12 months. Conceptually the first two are related to bonding SC whereas the other three to bridging SC. As a second step we performed a principal component analysis (PCA) on the five variables listed and it emerged that the first component was related to bonding SC and the second to bridging SC (see table 2 for the loadings).

Table 2: Loadings from the PCA on social capital dimensions

	Component 1	**Component 2**
Family contacts	*0.6176*	-0.3403
Family members in SN	*0.6023*	-0.3749
Charity	0.2930	*0.5168*
Course	0.2676	*0.4588*
Club	0.3136	*0.5158*

3.3 MODEL SPECIFICATION

We specified a three level random intercept logistic model for SPH with individual *i* nested into household *j* which is nested into regions *k* as:

$$logit\left\{Pr\left(Y_{ijk}=1|X_{ijk},W_k,\xi_{jk}^{(2)},\xi_k^{(3)}\right)\right\}=\gamma+\sum_{h=1}^{9}\beta_h X_{hijk}+\sum_{m=1}^{4}\alpha_m W_{mk}+\xi_{jk}^{(2)}+\xi_k^{(3)} \quad (1)$$

In equation 1, *X* and *W* are the covariates at individual and at regional level respectively. As it is common in mixed effect models, we assumed that the random part is normally distributed ($\xi_{jk}^{(2)} \sim N\left(0,\psi^{(2)}\right)$ and $\xi_k^{(3)} \sim N\left(0,\psi^{(3)}\right)$), independent (either mutually and across regions and households as well) and uncorrelated with the covariates.

We decided to use a mixed effects model because the hierarchical structure of the sample is a violation of the independence assumption (Rabe-Hesketh and Skrondal, 2008) and it has to be incorporated in order to get exact estimates of the standard deviation of the coefficients.

The appropriateness of a three level specification was verified by means of two likelihood ratio tests; the first compared a simple logistic regression versus a two level random effects model and the second compared a two level versus a three level model.

4. RESULTS

To understand the role of social capital in explaining health inequalities, we estimated three models: a) the null model (i.e. a model with no covariates), b) the model with individual and contextual covariates but without social capital variables, and c) the full model.

In the null model (*a*) health inequalities are captured only by the random intercepts and therefore, by inserting the individual and contextual covariates (model *b*), we can see what part of unobserved heterogeneity is absorbed by the covariates. Similarly, by comparing the unexplained variability in models *b* and *c* we will understand the role of social capital in explaining health inequalities.

Coming to the results, first of all let's note that education, age, physical health and income have a significant (at 5% level) association with health (see Table 3) and the sign of the coefficients is consistent with the literature (Grundy and Slogget 2003, Huisman et al. 2003, Olsen and Dahl 2007, Simsek et al. 2014): it is well known that self-perceived health worsens with age and is severely influenced by physical diseases and illness. Furthermore, as expected, income plays an important role as individuals with higher income have better self perceived health.

On behalf of the contextual covariates, only the number of doctors per 10,000 inhabitants and the percentage of families who report issues with any form of pollution are significant at 5% level[2].

Regarding social capital, we will first look at the coefficients of the full model (Table 3) and then we will comment on the random part. We can see that bridging and bonding SC both exert a protection effect as their odds ratios are smaller than one; this means that for a one unit increase in the endowment of SC, an individual decreases his/her odds to have a poor SPH. The bonding component of SC is the one with the higher Wald statistic,[3] suggesting the higher expected association with SPH.

Table 3: Estimated coefficients for the full model

	OR	**Std. Err.**	**p-value**
INDIVIDUAL LEVEL VARIABLES Years of education	0.963	0.016	0.018
BMI	0.998	0.014	0.864
Age	1.049	0.008	0.000
Nr of chronic diseases	1.600	0.056	0.000
Nr of symptoms	1.813	0.051	0.000
Bonding SC	0.730	0.058	0.000
Bridging SC	0.813	0.068	0.002
Gender (ref: Male)			
Female	1.068	0.111	0.555
Ends meet (ref: With great difficulty)			
With some difficulty	0.732	0.173	0.070
Fairly easily	0.497	0.188	0.000
Easily	0.568	0.248	0.022
CONTEXTUAL VARIABLES			
Percentage of families who report issues with any form of pollution	1.044	0.019	0.028
Doctors per 10,000 inhabitants	0.676	0.103	0.000

Legend: * $p < .05$; ** $p < .01$; *** $p < .001$

This result means that in Italy the family displays a crucial role in health perception of the older people: all the beneficial effects that come from the possession of a durable network are more effective when they come from the family.

Further insight on the importance of social capital in explaining health

[2] In Table 3 we report the coefficients of the model which includes only the significant contextual variables; the results do not change much if we estimate the model with all the contextual variables.

[3] (ln(0.730)/0.058 = –5.46 for bonding and ln(0.813)/0.068 = –3.03 for bridging)

inequalities can be drawn by focusing on the random part of the model and in particular on: a) the region and family-level variance $\Psi^{(3)}$ and $\Psi^{(2)}$ respectively (Table 4), b) on the estimated intraclass correlation coefficient (Table 5) and c) on the random effects $\xi_k^{(3)}$ (Figure 1) and $\xi_{jk}^{(2)}$ (Figure 2).

The random effects $\xi_k^{(3)}$ and $\xi_{jk}^{(2)}$ summarize all the factors at regional and family level respectively that have not been observed and explained by the variables explicitly introduced in the model.

In Figure 1 there are the random effects with their confidence intervals for the three models (null, without SC variables, with SC variables).

These graphs (known as caterpillar plots) allow to rank the regions according to their latent propensity of having unobserved factors at regional level that increase (reduce) the risk of a bad health status perception. Regions with a negative value of the random effect are in a better position than the others.

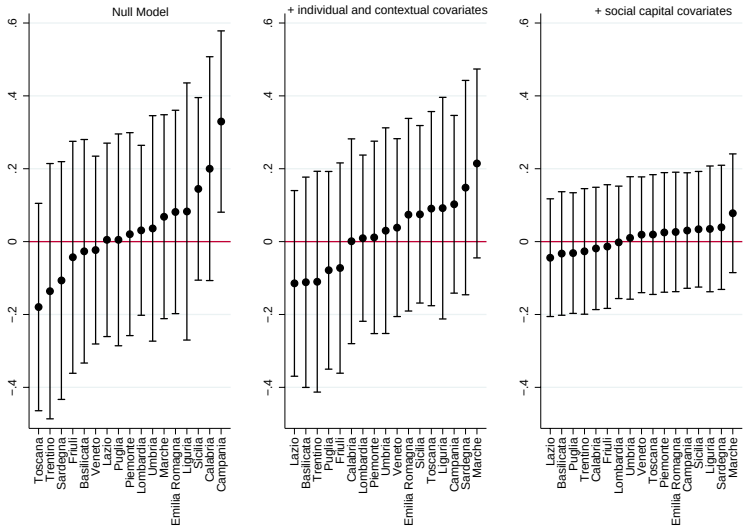

Figure 1: Predicted level three random effects and 95% confidence intervals for the null model (left panel), the model without SC variables (middle panel), full model (right panel).

Moving from left to right (i.e. from null to full model) we note that the bars tend to tighten up, giving the impression of a more compact behavior. This means that we are adding useful explanatory variables, which subtract unobserved heterogeneity. This trend is also noticeable going from the middle to the far right graph testifying the importance of social capital in explaining health inequalities among regions.

If we look at the caterpillar plot of model (*a*), we observe the usual dichotomization of the Italian regions: the South tend to be disadvantaged compared to the North. When moving towards the right (model *b* and *c*) we observe a change in the ranking. This implies that the covariates (including SC) explain the health variability and, more important, that SC can alleviate the initial position of disadvantage. An explanation is that it could be used to gain relevant information on health and to gain fast and efficient access to medical services.

The same reasoning and the same conclusions apply for the graphs in Figure 2.

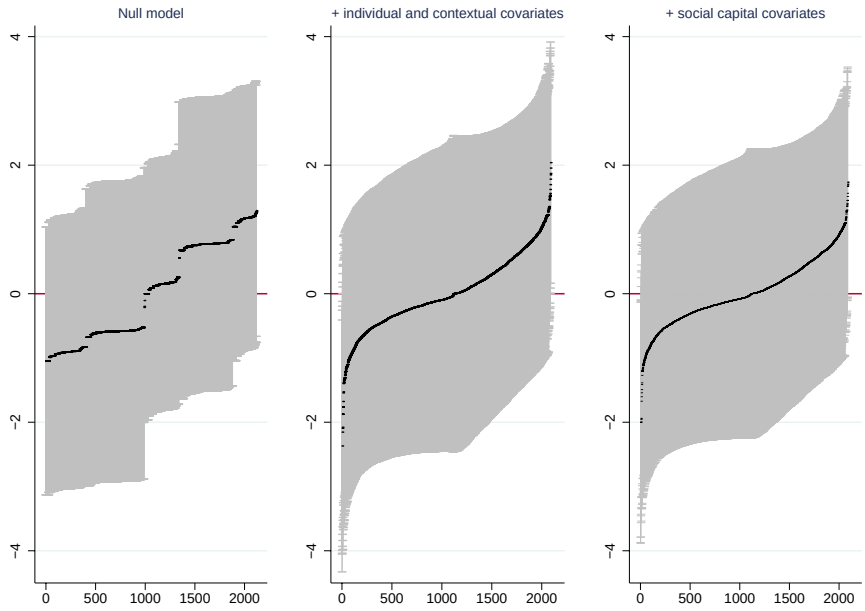

Figure 2: Predicted level two random effects and 95% confidence intervals for the null model (left panel), the model without SC variables (middle panel), full model (right panel)

In Table 4 we summarize the estimated variances of the random effects. By looking at the values we draw the same conclusions as before: adding the social capital covariates decreases the second and third level variability. This result supports our hypothesis of an association with health.

Let's look at the intraclass correlations in Table 5. The ICC is the percentage of total unexplained variation in health perception among Italian elderly due to the area of residence or to family. First of all, we point out that the variability at regional level is marginal with respect to the familial-level one. This is comprehensible if we

think that it is much more difficult to catch the differences among individuals in the same family rather than within the same region. Nevertheless, comparing the $ICC_{H,R}$ in the three models we note that inserting social capital leads to a reduction of the unexplained health inequalities of 2.46%.

Table 4: Model comparison: 2nd and 3rd level variability

Multilevel model with random	2nd level variability (Family)		3nd level variability (Region)	
	$\psi^{(2)}$	(s.e.)	$\psi^{(3)}$	(s.e.)
Null model	1.414	0.136	0.204	0.079
+ individual and contextual covariates	1.253	0.170	0.167	0.115
+ social capital variables	1.222	0.172	0.090	0.154

Table 5: Model comparison: intraclass correlations

Multilevel model with random effects on family and region	Region		Region-Household	
	ICC_R	(s.e.)	$ICC_{H,R}$	(s.e.)
Null model	0.008	0.006	0.383	0.045
+ individual and contextual covariates	0.006	0.008	0.327	0.059
+ social capital variables	0.002	0.006	0.313	0.060

5. LIMITATIONS

When interpreting our results some caution is needed due to the existence of reverse causality between social capital (bridging and bonding) and health: persons with good perceived health can be naturally driven to have a greater number of contacts with their durable network. This endogeneity issue results in a bias of parameter estimates which hinder a correct estimation of the effect of social capital. The fact that we don't know in which direction this endogeneity would pull the estimates demands for further research. It is well possible that, once the endogeneity has been softened out, the effect of SC on health would reveal to be even stronger than we thought. This is not a singular idea as some authors had already unraveled this effect for countries different from Italy (d'Hombres et al., 2010).

6. FURTHER DEVELOPMENTS

So far we have not investigated the role of closeness of the social tie in the distinction between bridging and bonding social capital. If a person have a family tie that is not close and a bridging tie that is very close and strong, what would be

the implications for health? The fourth wave of SHARE is particularly suited for an in-depth analysis as the module records the role relationship of each social network member, and obtains information regarding residential proximity, frequency of contact and level of emotional closeness of the relationship as perceived by the respondent.

7. DISCUSSION

In this paper we have investigated the association between (bonding and bridging) social capital and individual self perceived health in Italy taking into account on one side the individual characteristics and on the other the contextual background where individuals live. We used a mixed effect logistic regression model with three levels of hierarchy. The multilevel structure of our model proved to be very effective to shed light on the relevant aspects of self perceived health.

The first result we obtained is that there exists an association between bridging and bonding social capital and self perceived health in older Italian adults. The bonding component seems to be the more effective one, confirming the crucial role of family in the Italian social structure.

The second result of our study, strictly connected to the first, is that there exist health disparities based on socio-economic status: people with a low level of education and low income are particularly exposed to poor health condition. Since, in Italy, healthcare services are in principle equally accessible by all citizens, these inequalities may be due on one side to the ability to acquire suitable health information (which depends on the individual endowments of human capital) and on the other side on the capability to find the right contacts in the right places, which in turn is influenced by the individual endowments of social capital. The accessibility to health care services (for example the time needed to receive a certain exam) and to high quality infrastructures or hospital centers could be particularly relevant in Italy and it is a good key to interpret the role of SC in alleviating the disadvantaged positions of the southern regions. In case of sickness, family and friends may play a fundamental role in ensuring access to healthcare services and facilities, for example through financial assistance, spur, transportation services or by making their own network available.

Furthermore, the relevance of social ties outside the inner circle could be interpreted in the light of SPF-SA theory. Our measure of bridging SC is based on three variables which could be interpreted in terms of behavioral confirmation: the frequency of voluntary or charity work, but also the frequency of other social and cultural activities could make people feel they are doing the Ôright' thing in the eyes of relevant others and himself. A confirmation of our results could be found in the

study of Steverink and Lindenberg (2006): they found that even when older people have high levels of affection, behavioral confirmation remains important for well-being and that the satisfaction of this need is linked to physical health rather than age.

What we found means that the main mechanism through which social capital influences health in Italy is the "compositional" effect and in particular through the peer influence on social behavior and the accessibility of useful information. Of course what we have just said is only a food for thought as our data does not allow for a direct prove of it.

Finally, we want to point out that due to the cross-sectional nature of the survey, our results only prove association rather than causation. A major effort should be done in order to purge social capital and health from the reverse causality issue and properly measure its impact on SPH.

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