Disentangling the complexities of modelling when high social capital contributes to indicating good health

Carlota Quintal [a,b,*], Luís Moura Ramos [a], Pedro Torres [a]

[a] *University of Coimbra, CeBER, Faculty of Economics, Portugal*
[b] *CEISUC, Portugal*

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ABSTRACT

The association between social capital and health is under continuous research. Based both on theoretical frameworks and previous empirical studies, the magnitude and sign of this association are ambiguous. Our main goal is to empirically investigate under which conditions is social capital relevant to obtain good or very good self-rated health, while acknowledging that different paths can lead to this outcome. The data used in this study come from the European Social Survey 2018 (47,423 observations for 29 European countries) and fuzzy-set qualitative comparative analysis was adopted.

Our results show that neither the presence of social capital (as measured in this study – 'Generalised trust' and/or 'Informal social connections'), nor its absence, is a necessary condition for good or very good self-rated health. While not being necessary, there are contexts where social capital is relevant for health and, whenever it is present, it positively contributes to good or very good self-rated health. However, our results further suggest that social capital alone is not sufficient to be healthy. The relevance of social capital is contingent on the presence, or absence, of other conditions. What works for some individuals does not work for others. And for any given individual, rarely there is only one way to be healthy. Additionally, our findings suggest that the impact of belonging to a minority ethnic group on health might be stronger than what has been hitherto recognised.

1. Introduction

Research on social capital and health has more than two decades and has been under continuous discussion. Despite the many studies on this topic, the paths from social capital to health are far from being fully understood. Social capital itself is a complex, and still evolving, concept. Most explanations provided in the literature point to a positive association between social capital and health, nonetheless, negative relationships are also possible, which contributes to the intricacy of this theme. In terms of empirical literature, there is abundant evidence linking social capital and health, though summarising the main results is difficult as there are several definitions of social capital and many ways of measuring it as well as various health outcomes to consider. Some studies conclude that social capital and health are positively related, while others, though fewer, point to the opposite result. Yet, other studies found no statistically significant association between those two variables, while it is also claimed that social capital is significantly related to health, however, the effects are consistently very small. Many empirical studies adopt linear models, however, the relevance of social

capital to achieve, or not, good health might be contingent on other conditions and several configurations might lead to the same outcome. Thus, our main goal is to obtain more insights regarding the association between social capital and health, while leaving room to accommodate any theoretical framework linking these two variables.

In this work, we focus on individual social capital and self-rated health (SRH). The study builds on data from the European Social Survey (ESS) and, differently from past research, uses a configurational approach to explore the following research questions: i) under which conditions is social capital relevant to obtain good or very good SRH? ii) is the contribution of social capital to good or very good SRH positive or negative? To the best of our knowledge, this is the first work to use configurational analysis to study this topic and we believe interesting results were obtained.

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2. Theoretical background

2.1. The concept of social capital

Social capital is a complex, and evolving, concept with no universally accepted definition. Moore and Kawachi (2017) provide a general overview of this concept. These authors consider that two broad perspectives have characterised public health research: the cohesion and network approaches. The former draws attention on trust, feelings of social belonging, and levels of civic or social participation. The latter relies on the measurement of social resources and networks, highlighting inequalities in access to social resources (Moore and Kawachi, 2017). However, the boundaries between the two perspectives are thin (Ehsan et al., 2019).

A common classification, linked to works such as Coleman (1990) and Putnam (1993), distinguishes between cognitive and structural social capital. Cognitive social capital is broadly associated with trust, solidarity, and reciprocity. Trust is a core aspect of cognitive social capital and here a further distinction has been made between generalised and particularised trust, that is, between trust in unknown and generalised others (related with a person's perceptions of the trustworthiness of the social environment) and trust in known others, which comes from specific interpersonal relations (Glanville and Story, 2018; Moore and Kawachi, 2017). Structural social capital is mostly associated with participation in social networks, though this refers to social capital at the individual level. At the macro level, it refers to the opportunities for individuals to engage in social activities, for example, via civic or neighbourhood associations (Moore and Kawachi, 2017). These two perspectives point yet to another distinction: between collective and individual social capital. For some, social capital is a resource of a group of people working together to achieve collective goals, while from another point of view individuals benefit directly from their own social networks (Poortinga, 2006).

Three further commonly used dimensions of social capital are bonding, bridging and linking social capital. Bonding and bridging fall into the category of horizontal social capital, involving the access to resources available to members of a network who see themselves as being similar and social resources that may be accessed across groups of different socioeconomic or sociodemographic attributes, respectively (Islam et al., 2006). In linking social capital, people are vertically connected across formal or institutionalised power or authority (Szreter and Woolcock, 2004). Binding social capital refers to long lasting and highly emotional relationships (Widmer, 2007).

2.2. Pathways from social capital to health

Individual social capital might improve individuals' health through increased access to information and material resources, on the one hand, and through social support, on the other (Trujillo-Alemán et al., 2022). Socialising may make it easier to access health-related information, while trust may facilitate the exchange of this information, such as how to navigate health services or which food or physical exercises are health improving. The structural dimension of bonding social capital may make it easier to get support, either in the shape of informal care, or emotional/psychological support or even in the form of financial support. Social capital may also reduce stress, hence, contributing to better health, through supportive relationships, trust, and the benefits of socialising (Campos-Matos et al., 2016; Ferlander, 2007; Folland, 2008; Kawachi and Berkman, 2000; Rocco et al., 2014). Strong social relationships may encourage healthier choices and reduce risky behaviours as there is an interdependence between the wellbeing of all individuals involved (Folland, 2008). Strong relationships may also increase the value attached to life itself, leading to healthier lifestyles (Folland, 2006). Collective social capital may impact on health via healthy norms and social control (Kawachi et al., 1999) or through lobbying efforts and coordination to obtain health-enhancing goods and

services (Kawachi et al., 1997). Glanville and Story (2018), discussing the impact of particularised versus generalised trust on health, say that the role of generalised trust in shaping health might not be so straightforward, but it becomes clearer when one considers the interaction between trust and social networks. For instance, bridging social connections have the potential to increase access to new information, nonetheless, the value of this information is likely dependent on one's trust in the source of the information. These authors further note that the idea that the effects of trust and social networks on health may be conditional on one another has generally been overlooked in the literature (Glanville and Bienenstock, 2009; Glanville and Story, 2018).

Despite the various arguments sustaining a positive association between social capital and health, a negative association cannot be ruled out. This can happen within closed networks, with peer pressure to engage in risky behaviours, exchange of wrong information or exclusion of outsiders (Rostila, 2011). The same can happen in familial contexts due to conflicting goals or excessive demands (Alvarez et al., 2017). Social capital can be harmful for health in disadvantaged neighbourhoods (Almedom, 2005). Other mechanisms that may explain negative relationships might be related to restrictions on individual freedoms, downward levelling norms, social contagion and cross-level interactions between social cohesion and individual characteristics (Villalonga-Olives and Kawachi, 2017). For instance, individuals who have low trust might have detrimental health consequences in contexts with high-community or country-level trust (Villalonga-Olives and Kawachi, 2017). In the same line, there is evidence of a negative association between bridging and linking social capital and health for individuals with low socioeconomic status and minority groups, especially if the latter live in areas with high bridging and linking contextual social capital (Uphoff et al., 2013).

The magnitude and direction of the impact of social capital on health are likely to vary depending on the position occupied by everyone in the society. According to the 'buffer hypothesis', social capital will be more beneficial for poorer than for richer individuals (Story and Glanville, 2019). For instance, in areas of high density of ethnic minorities, social networks (bonding social capital) may protect one's health from the negative effects of discrimination and stigmatisation (Pickett and Wilkinson, 2008). In contrast, according to the 'dependency hypothesis', social capital is of greater benefit for more affluent than for deprived individuals because economic and cultural capital are needed to accumulate and take advantage of social capital (Uphoff et al., 2013). Regarding the specific question of ethnic density, on one hand, living with co-ethnics might promote social integration and cohesion, facilitating the above-mentioned mechanisms of transmission of health information, material and psychological support and the minimisation of risky behaviours. But, on the other hand, increased levels of deprivation are found in areas with high proportions of ethnic minority residents, which also tend to have high crime rates (Pearson and Geronimus, 2011; Pickett et al., 2009; Yang et al., 2018).

As a result of these potential pathways connecting social capital and health, the overall effect of social capital on health is theoretically ambiguous (Xue et al., 2020).

3. Previous evidence on the association between social capital and (self-rated) health

Bearing in mind that there are several definitions of social capital and many ways of measuring it as well as various health outcomes to consider, the objective of this section is to provide an overview of the main results regarding the association between social capital and SRH, with an emphasis put on evidence generated from the ESS.

Notwithstanding the theoretically ambiguous effect of social capital on health, Ehsan et al. (2019) conclude, in their systematic review, that the evidence for positive relationships outweighs the negative and non-significant relationships. In the meta-analysis carried out by Gilbert et al. (2013), the overall weighted effect size for SRH suggests that an

average one-unit increase in social capital will increase the odds of reporting good health by 29 percent. In contrast, Xue et al. (2020), concluded that social capital is significantly related to a variety of positive health outcomes, but the effects are consistently very small. However, the authors did not isolate the association specifically for the case of SRH. Regarding the 'dark side' of social capital, Villalonga-Olives and Kawachi (2017) found some evidence of a negative relationship between social capital and health, though gender seems to be a relevant factor in this context. An increase in social participation might be harmful particularly for women given that they are overburdened with the provision of informal care, thus, bonding social capital imposes a burden on people's already stressful lives (Eriksson and Ng, 2015; Kishimoto et al., 2013).

Cultural/country specificities may also play a relevant role. Many studies which found a negative association between social capital and SRH used Japanese samples, such as Furuta et al. (2012), Kishimoto et al. (2013) and Murayama et al. (2012). According to Villalonga-Olives and Kawachi (2017), p.120), the "Japanese society is often noted to be a society with very strong levels of social control". A high "level of social cohesion that is overly strong may result in stress and frustration".

Regarding the evidence generated by studies based on data from the ESS, one of the main results is the negative (positive) association between individual generalised trust and poor (good) health (Backhaus et al., 2019; Campos-Matos et al., 2016; Delaney et al., 2007; Koutsogeorgou et al., 2015; Poortinga, 2006). A protective effect was also obtained when trust was measured by a ten-item scale, including not only generalised trust but also trust in institutions (Pinillos-Franco and Kawachi, 2018). Another frequently explored association is that between participation in informal social networks (meeting with friends, relatives, or work colleagues) and SRH. The evidence (Backhaus et al., 2019; Delaney et al., 2007; Koutsogeorgou et al., 2015) has shown that both are positively, or negatively, associated depending on whether SRH represents good or poor health, respectively. Pinillos-Franco and Kawachi (2018) used a second measure for informal social connections (having people to discuss intimate and personal matters) as well as participation in social groups, concluding that the latter decreased the prevalence of fair/poor health among men, while not impacting on women's health. For women, it was more beneficial the involvement in intimate discussion networks. Poortinga (2006) found that individuals with high levels of civic participation (voluntary work) were more likely to report good or very good health in countries with high civic participation rates than people with low levels of civic participation but were less likely to do so in countries with low civic participation rates. Cultural and country specificities on social capital and society structure and health systems organisation may play a relevant role in this diversity (Story and Glanville, 2019).

4. Data and methods

4.1. Data

Data come from the European Social Survey, Round 9 (ESS Round 9, 2018a), conducted in 2018, covering 29 countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the non-European Union countries: Iceland, Montenegro, Norway, Serbia, Switzerland, United Kingdom). The survey involves strict random probability sampling, a minimum target response rate of 70% and rigorous translation protocols. Data were collected through face-to-face interviews to representative samples of the general population, aged 15 and older, living in private households in the participating countries. The survey seeks to capture comparable data on attitudes, beliefs, and behaviours (ESS Round 9 and European Social Survey, 2021). After dropping cases with missing values in any of the variables used (2096 observations, corresponding to 4.2% of total sample), the final global

sample used in the current study consists of 47,423 observations, encompassing the 29 countries indicated above. With the sole purpose of testing the robustness of the findings obtained in the global analysis, we replicate it, using single country samples. The selection of countries was based on previous works about social capital and health in which the authors grouped the countries included in the ESS, according to their welfare state regimes and levels of egalitarianism in societies (Koutsogeorgou et al., 2015; Pinillos-Franco and Kawachi, 2018; Trujillo-Alemán et al., 2022; Vis et al., 2019). Consequently, we selected France (from the group with Bismarckian welfare regimes), Italy (Southern country), Poland (Eastern European), Sweden (selected from the group of Scandinavian countries) and UK (Anglo-Saxon country). The single country samples, for France, Italy, Poland, Sweden, and UK, consist of 1969, 2571, 1431, 1486, and 2096 observations, respectively.

4.2. Conditions

The condition 'Healthy' is based on the health outcome measure, SRH, which was assessed from the answer to the question 'How is your health in general?', which ranged from 'very good', 'good', 'fair', 'bad' to 'very bad'. To account for the presence or absence of social capital, two variables were used, measuring what can be identified as structural and cognitive dimensions of social capital. Structural social capital was measured as informal networks (this can also be regarded as a form of bonding social capital), assessed from the answer to the question: 'How often do you meet socially with friends, relatives or work colleagues?' The response alternatives ranged from 'never' to 'every day'. Cognitive social capital was measured as general trust, from the answer to the question: 'Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?' The original response categories ranged from 1 ('you can't be too careful') to 10 ('most people can be trusted'). Other studies based on data from the ESS also adopted generalised trust (the same single item used here or an average of three items related with generalised trust) to account for structural social capital (Campos-Matos et al., 2016; Delaney et al., 2007; Koutsogeorgou et al., 2015; Lyytikäinen and Kemppainen, 2016; Rocco et al., 2014; Sarracino and Piekałkiewicz, 2021; Tegegne and Glanville, 2019; Trujillo-Alemán et al., 2022, 2022van der Wel et al., 2018). Regarding cognitive social capital, other studies have measured this dimension of social capital based on the answer to the same question considered in this study alone (Koutsogeorgou et al., 2015; Olsen and Dahl, 2007, 2007van der Wel et al., 2018; Vis et al., 2019) or in combination with the aspect of having people to discuss intimate and personal matters (Delaney et al., 2007; Pinillos-Franco and Kawachi, 2018; Sarracino and Piekałkiewicz, 2021).

The conditions 'Old' and gender ('Female') are based on age and sex, which are two variables found in basically all studies about social capital and health using individual-level variables. Health deteriorates with age and, for the same objective measures of health status, women are more likely to self-rate their health as poor compared to men (Pinillos-Franco and Kawachi, 2018).

Belonging to a minority ethnic group was assessed from the answer to the question 'Do you belong to a minority ethnic group?'. As clarified in the ESS Questionnaire (ESS: European Social Survey, 2018b), 'belong' refers to attachment or identification, thus, it depends on the respondent's perception. This variable was also used by Campos-Matos et al. (2016), Tegegne and Glanville (2019) and Vis et al. (2019).

Finally, the condition 'Wealthy' is based on income, measured as perceived income, assessed from the answer to the question 'How you feel about your household's income nowadays?'. The response alternatives ranged from 'living comfortably', 'coping', 'finding it difficult' or 'finding it very difficult'. As noted by Sarracino and Piekałkiewicz (2021, p. 1589), 'after controlling for income, financial dissatisfaction is shaped by relative concerns, thus reflecting social comparisons, i.e. individual achievements with respect to what other people—with whom the respondent compares him- or her-self—get'. Previous evidence

shows that those who feel difficulties in living with their present income are more likely to report poor health (Backhaus et al., 2019; Campos-Matos et al., 2016).

4.3. Method

We used fuzzy-set qualitative comparative analysis (fs/QCA) to identify whether the presence or absence of simple antecedent conditions (and their combinations) are consistent with the presence of high levels of SRH. Fs/QCA differs from more linear approaches and entails a reorientation of thinking (Furnari et al., 2021), it considers possible asymmetric effects. This method takes into consideration that, in some configurations, the presence of a given condition might contribute to reaching the outcome and, in other configurations, it might be its absence that leads to the outcome. Therefore, it recognises that alternative paths can bring about the same outcome.

If a configuration is a consistent superset of the outcome it corresponds to a situation of necessity, while a configuration that is a consistent subset of the outcome corresponds to a situation of sufficiency (Greckhamer et al., 2018). Usually, the analysis of necessary conditions precedes the sufficiency analysis (Rihoux and Ragin, 2009). The output quality of fs/QCA is assessed using "two key statistics that vary between '0' and '1': coverage and consistency" (Fainshmidt et al., 2020, p. 457). A condition can be considered necessary if it shows a very high consistency and a non-negligible coverage (Ragin, 2008). For sufficiency analysis, a consistency threshold of 0.80 is recommended (Ragin, 2008), but the consistency threshold for necessary condition analysis should be more demanding. To be considered necessary, a condition should surpass the 0.95 consistency threshold and present a coverage score of at least 0.65 (Muñoz and Dimov, 2015).

Fs/QCA requires the calibration of raw scores into fuzzy scores (which are defined in the [0–1] interval). This implies the specification of both the full membership and the full non-membership thresholds and a cross-over point (i.e., the point of maximum ambiguity). The data was measured and calibrated as follows. Regarding the condition 'Healthy', the categories good or very good SRH define full membership; bad or very bad SRH, jointly, correspond to the threshold of non-membership; and when SRH is fair, the condition 'Healthy' is neither present nor absent (cross-over point). Dichotomising SRH is a common procedure in the empirical literature, with some nuances regarding the middle category. For example, Campos-Matos et al. (2016) grouped the categories 'bad' and 'very bad', while Pinillos-Franco and Kawachi (2018) and Backhaus et al. (2019) considered these two categories together plus 'fair'. In the condition 'Informal social connections', full membership is defined by the categories 'every day' and 'several times a week' while non-membership is defined by the categories 'never' and 'less than once a month'. Two cross-over points were defined, one at 0.66 corresponding to the categories once a week and several times a month and the other at 0.33 corresponding to the category once a month. In previous studies, this variable was dichotomised, where high levels of networks corresponded to meeting at least once a week (Koutsogeorgou et al., 2015; Sarracino and Piekałkiewicz, 2021), while Vis et al. (2019) assumed it as a continuous variable. Our approach lies in between the dichotomous and continuous assumptions. For the condition 'Generalised trust', since it is based on a variable with a continuous range of values (0 = you can't be too careful; 10 = most people can be trusted), we used the 90th, 10th and 50th percentiles of the values of the original distribution to define the full membership and non-membership thresholds and the crossover point, respectively. Our procedure is more in line with Campos-Matos et al. (2017), who dealt with trust as a continuous variable than with Koutsogeorgou et al. (2015), who dichotomised trust (where low level corresponded to the range 0–5).

Regarding the condition 'Old', we also used the 90th (76 years), 10th (25 years) and 50th (52 years) percentiles of the values of the original distribution to define the full membership and non-membership thresholds and the crossover point, respectively. The conditions 'Female' and 'Member of a minority ethnic group' are both dichotomous. For the condition 'Wealthy' the category 'Living comfortably on present income' defines full membership and 'Finding it very difficult on present income' corresponds to the threshold of non-membership. Two cross-over points were defined, one at 0.66 that corresponds to 'Coping on present income' and the other at 0.33 that corresponds to 'Finding it difficult on present income'. Considering these four thresholds is in accordance with the procedure followed by, for instance, Campos-Matos et al. (2016), who included separately the four categories for income in their analysis.

The sufficiency analysis is conducted using a 'truth table' that includes all logically possible configurations of conditions and requires setting thresholds for both the frequency of cases and the consistency level. Considering the size of the sample, a frequency cut-off of 100 cases was used for the main sample. Consistency cut-offs were found through identifying gaps occurring in the range of consistency scores, above the 0.80 threshold. Antecedent conditions were classified as core or peripheral using the following criteria: "core conditions are those that are part of both parsimonious and intermediate solutions, and peripheral conditions are those that are eliminated in the parsimonious solution and thus only appear in the intermediate solution" (Fiss, 2011, p. 403). This classification enables further insights, since core conditions can be considered "decisive causal ingredients" (Misangyi et al., 2017, p. 276).

In the analysis by country, we also test the predictive validity of a model with high consistency drawn from the findings within each country on the data of the other four countries (i.e. data not used in creating the model) (Brenes et al., 2017; Pappas and Woodside, 2021).

In this work we use secondary and publicly available data, therefore, there was no need for ethical approval. Regarding primary data, the ESS European Research Infrastructure subscribes to the Declaration on Ethics of the International Statistical Institute (ESS, n.d.).

5. Results

Table 1 presents the results for the QCA analysis on the necessary conditions for good/very good SRH.

For all the conditions, both presence and absence ("~") could emerge as necessary conditions. From the results in Table 1, no condition came up as necessary. '~ Member of a minority ethnic group' presents the highest consistency value (0.932), closer to the threshold (0.95) defining necessity. Thus, not being a member of an ethnic minority might be often one of the conditions that are part of configurations leading to good/very good self-rated health. None of the two forms of social capital included in the analysis is, per se, necessary to achieve good or very good SRH.

The next step is to analyse sufficiency. Table 2 reports the results of the configurational analysis, and it also addresses the predictive validity of the different configurations. Multiple configurations explain high levels of SRH and the consistency of each configuration is always above 0.86, which indicates acceptable consistency. Analysing raw and unique

Table 1
Analysis of necessary conditions for good or very good self-rated health.

	C1	C2
Old	.480	.755
~Old	.582	.915
Female	.476	.806
~Female	.524	.770
Member of a minority ethnic group	.068	.705
~ Member of a minority ethnic group	.932	.793
Generalised trust	.606	.871
~ Generalised trust	.468	.812
Informal social connections	.764	.844
~Informal social connections	.291	.795
Wealthy	.755	.869
~ Wealthy	.323	.802

Note: C1 = Consistency; C2 = Raw coverage. The tilde "~" represents negation.

Table 2
Configurations for good or very good self-rated health for 29 European countries.

	H1	H2	H3	H4	H5	H6
Old	⊗				⊗	
Female				●		
Member of a minority ethnic group	⊗	⊗	⊗	⊗		
Generalised trust		●				●
Informal social connections				●	•	•
Wealthy			●		●	•
C1	.924	.876	.873	.864	.944	.921
C2	.536	.568	.709	.342	.429	.462
C3	.037	.030	.070	.018	.009	.006
Overall C1	.844					
Overall C2	.891					

Note: C1 = Consistency; C2 = Raw coverage; C3 = Unique coverage. Black circles ("●") indicate the presence of a condition; circles with a cross-out ("⊗") indicate its absence; blank spaces indicate "don't care".
Large circles indicate core conditions and small ones indicate peripheral conditions. H = Very good self-rated health.

coverage, configuration H3 ('Living comfortably on present income' and not being a 'Member of a minority ethnic group') is the one that is most frequently associated with good or very good SRH.

Both indicators of social capital used in this study are either part of the configurations or are indifferent. The absence of any of them is never a requisite to be healthy. Altogether, social capital conditions ('Generalised trust' and 'Informal social connections') are present in four, out of the six, configurations and are core conditions in three configurations (H2, H4 and H6). There is one configuration (H6) where both are present, though, in this case only 'Generalised trust' is core condition. 'Generalised trust' appears in two configurations but whenever it is present, it is core. 'Informal social connections' in turn is present in three configurations but in two of them it is peripheral. Social capital (as measured in this study) alone is never sufficient to achieve good or very good SRH; its relevance is contingent on the presence of other conditions. Still, in configuration H2, there are only two conditions, of which 'Generalised trust' is the core condition. Configuration H6 also entails only one additional condition on top of social capital (though here the two forms of social capital are present) and again 'Generalised trust' is the core condition. In configuration H4, in which 'Informal social connections' is core condition, it is combined with two additional conditions, 'Female' and not being 'Member of a minority ethnic group'.

Not being 'Member of a minority ethnic group' is an important condition, since it is often part of the configurations leading to good or very good SRH. Interestingly, it is peripheral when combined with 'Generalised trust' (configuration H2), otherwise not being part of an ethnic minority is a core condition. The condition 'Wealthy' appears in three configurations, twice as core condition. When combined with the two forms of social capital, in configuration H6, being wealthy becomes a peripheral condition. Also, comparing the configurations H2 and H3, 'Generalised trust' and 'Wealthy'' are alternatively combined with absence of 'Member of a minority ethnic group'.

Regarding age, although older individuals tend to have worse health than younger, there are four configurations (H2, H3, H4, H6) in which being old is indifferent. That is, provided that 'Old' is combined with other conditions, it does not hinder the achievement of good or very good SRH. Furthermore, being young is not sufficient to obtain good or very good health, as shown by configurations H1 and H5. In one case (H1), 'Old' and 'Member of a minority ethnic group' must be simultaneously absent, in the other case (H5), the absence of 'Old' must be combined with 'Wealthy' and peripherally with 'Informal social connections'. Being female is generally indifferent to achieve good/very good health. Only in one configuration (H4), 'Female' appears as core

condition, in which 'Informal social connections' is also core condition.

The configurations for good or very good SRH for the five countries selected from the whole sample can be found in Table 3. Overall, consistency of the configurations is very high, ranging from 0.786 (the only coefficient below 0.80) to 0.970. The number of configurations varies from one in Poland to five in Italy and France. But, despite this variation, the relevance of the indicators of social capital used in this study is confirmed in the context of single countries as well. 'Generalised trust' appears in seven out of 16 combinations; it is present in four configurations being a core condition in three of them, two of these belonging to Great Britain and one to Italy. 'Informal social connections' is included in 11 out of 16 configurations and it is core in Italy and Sweden. As in the analysis for the whole sample, absence of 'Informal social connections' is never a requisite for good or very good SRH, while the absence of 'Generalised trust' appears in Italy and France, though, as a peripheral condition.

Looking more closely at each country, in Great Britain, in two out of three solutions, both forms of social capital appear combined with two other conditions. In Italy, the configuration ITH2 has two core conditions, 'Female' and 'Informal social connections', and not being a 'Member of a minority ethnic group' is a contributing condition. In ITH3, the dimensions of social capital also play a central role (two in three conditions). The results for Poland are unusual given that only one configuration leads to very good SRH, which in turn is composed of two conditions alone. Both forms of social capital are indifferent to very good SRH, in this country. Sweden has two possible configurations leading to very good SRH and, in both, 'Informal social connections' is the core condition. Finally, in France, three configurations (FRH1, FRH4 and FRH5) share the core condition 'Living comfortably on present income'. In this country, our measures of social capital are never core conditions, and the role of 'Informal social connections' is clearer than 'Generalised trust', as it appears four times and always in a positive way (presence). Not being a 'Member of a minority ethnic group', which is a core condition in three of the six configurations in the whole sample (Table 2), is a core condition only in Great Britain and France, though it still appears in 12 solutions and in the five countries.

Table 4 presents the testing for predictive validity. The results support the generalisability of our findings with just one exception - the configuration PL1 has high predictive ability for all country samples, except in the French sample.

Table 3
Configurations for good or very good self-rated health per country.

	GBH1	GBH2	GBH3	ITH1	ITH2	ITH3	ITH4	ITH5	PLH1	SEH1	SEH2	FRH1	FRH2	FRH3	FRH4	FRH5
Old			⊗	⊗			●				⊗		⊗	⊗	⊗	●
Female		⊗				●		⊗			⊗			●	⊗	⊗
Member of a minority ethnic group	⊗			⊗	⊗	⊗	⊗	⊗	⊗	⊗		⊗	⊗	⊗		⊗
Generalised trust		●	●			●		⊗				●		⊗		⊗
Informal social connections		●	●	●	●	●				●	●	●	●	●	●	●
Wealthy	●	●	●				●	●	●	●	●	●			●	●
C1	.842	.908	.954	.970	.890	.927	.786	.868	.837	.912	.955	.830	.910	.893	.891	.847
C2	.772	.253	.294	.494	.360	.464	.353	.199	.821	.735	.191	.600	.294	.218	.208	.139
C3	.446	.012	.022	.034	.031	.017	.044	.019	.821	.574	.030	.183	.035	.011	.033	.014
Overall C1	.846			.850					.837	.913		.823				
Overall C2	.828			.777					.821	.765		.720				

Note: C1 = Consistency; C2 = Raw coverage; C3 = Unique coverage. Black circles ("●") indicate the presence of a condition; circles with a cross-out ("⊗") indicate its absence; blank spaces indicate "don't care". Large circles indicate core conditions and small ones indicate peripheral conditions. GBH = Very good self-rated health in Great Britain; ITH = Very good self-rated health in Italy; PLH = Very good self-rated health in Poland; SEH = Very good self-rated health in Sweden; FRH = Very good self-rated health in France.

Table 4
Predictive validity.

Country	Model	Configuration	C1	C2
	GBH2	~Female*Trust*Informal social connections*Wealthy		
Great Britain			.908	.253
Italy			.931	.191
Poland			.934	.139
Sweden			.927	.311
France			.887	.212
	ITH2	Female*~ Member of a minority ethnic group*Informal social connections		
Great Britain			.874	.278
Italy			.890	.360
Poland			.898	.277
Sweden			.912	.406
France			.809	.342
	PLH1	~ Member of a minority ethnic group*Wealthy		
Great Britain			.842	.772
Italy			.838	.752
Poland			.837	.821
Sweden			.887	.877
France			.791	.725
	SEH1	~ Member of a minority ethnic group*Informal social connections*Wealthy		
Great Britain			.880	.573
Italy			.897	.580
Poland			.907	.472
Sweden			.912	.735
France			.830	.600
	FRH3	~Old*Female*~ Member of a minority ethnic group*Informal social connections		
Great Britain			.913	.169
Italy			.977	.236
Poland			.965	.182
Sweden			.951	.230
France			.893	.218

Note: C1 = Consistency; C2 = Raw coverage. The tilde "~" represents negation.

6. Discussion

This study aimed to investigate the relationship between social capital and self-rated health, starting from no single premise, given the theoretical and empirical ambiguity regarding the sign and magnitude of this relationship. We found that neither the presence of social capital, as measured in this study, nor its absence, is a necessary condition for good or very good SRH. While not being necessary, there are contexts where 'Generalised trust' and 'Informal social connections' are relevant for health and, whenever they are present, they positively contribute to good or very good SRH. Both forms of social capital appeared, jointly or separately, in several configurations. This is in line with previous studies, which found a positive association between social capital and health. However, our results further show that 'Generalised trust' and/or 'Informal social connections' alone is/are not sufficient to be healthy. The relevance of these forms of social capital are contingent on the presence, or absence, of other conditions. This finding may help to understand previous evidence regarding the small magnitude of the association between social capital and health (Xue et al., 2020), the non-linear relationships (Campos-Matos et al., 2016) or the ambiguous sign of the association between social capital and good or very good SRH. Depending on which conditions are simultaneously verified, each dimension of social capital might be a core condition or a peripheral condition, hence, it might be more, or less relevant. It might even be indifferent, hence, not relevant for good or very good SRH. But our results suggest that, when it comes to good or very good SRH, 'Generalised trust' and 'Informal social connections' are part of the solution, not the problem.

Based on our findings, the relevance of 'Generalised trust' for good or very good SRH is conditional on not being 'Member of a minority ethnic group' (though peripherally). Alternatively, it might be conditional on 'Informal social connections' and 'Wealthy' (both as peripheral conditions). The simultaneity of both forms of social capital in a single configuration agrees with the idea that the effects of trust and social networks may be conditional on one another (Glanville and Bienenstock, 2009; Glanville and Story, 2018). Still, our results show that simultaneity is not always a requisite. Moreover, the presence of both forms of social capital might not be sufficient to achieve good or very good SRH. For some individuals, socialising might facilitate access to health-related information; trust might ensure that they will act upon such information, but then income is instrumental to provide these individuals with the means to benefit from the useful and trusted information. This latter

view is in accordance with the 'dependency theory' (Uphoff et al., 2013). Still, in configuration H6, being wealthy is peripheral condition. Moreover, looking at Table 2, it is noticeable that when the presence of any type of social capital is core condition, being wealthy is either indifferent or is peripheral. The same applies to income. When 'Wealthy' is core, then, the indicators of social capital are either indifferent or are peripheral conditions. These findings are more in line with the 'buffer hypothesis' (Story and Glanville, 2019; Uphoff et al., 2013) than with the 'dependency hypothesis'. Configuration H4, in Table 2, suggests that the importance of 'Informal social connections' to achieve good or very good SRH is conditional on not being 'Member of a minority ethnic group' and being 'Female' (all core conditions). This result suggests that socialising might be beneficial for women, but only if they do not feel themselves as belonging to an ethnic minority. We know from the literature that social relationships might represent a source of burden to women given that they are more likely than men to provide support to other people (Pinillos-Franco and Kawachi, 2018). It might be that, in the European countries included in the sample, this effect is stronger among minorities (conservative view regarding the role of women). Finally, 'Iinformal social connections' emerges in association with 'Wealthy' and not being 'Old'. Hence, socialising seems to be peripherally relevant to achieve good or very good SRH for young people, but only if income is enough.

A robust result of our analysis concerns the relevance of not being a 'Member of a minority ethnic group', which appears as core condition in half of the configurations in Table 2. This result agrees with previous evidence which found that being part of a minority (ethnic) group is associated with worse health (Campos-Matos et al., 2016). Nonetheless, this effect has not been very often explored in studies about social capital and health, particularly, studies using ESS data. It has been suggested that the 'buffer hypothesis' works in this context as well, given that ethnic minority groups often occupy lower positions on the social ladder (Uphoff et al., 2013). Nonetheless, our results are quite clear regarding the relevance of not being 'Member of a minority ethnic group'. The 'buffer hypothesis' might be represented to some extent in configurations H5 and H6, in Table 2, where the condition 'Member of a minority ethnic group' is indifferent. The question is that, in these two cases, both social capital (as measured in this study) and income seem to be required to compensate for the possible disadvantage of belonging to an ethnic minority. This result is in line with the theoretical perspective about ethnic density which recognises the protective role of social capital, against segregation, among these communities, while simultaneously acknowledging their frequent area-level deprivation (Yang et al., 2018). But our results mostly point to a detrimental health effect of belonging to a minority ethnic group. We must note that our sample is composed of European countries, while empirical evidence about a positive association between ethnic density and health has been generated mainly for the US (and even there some differences between Hispanics and Blacks have been reported) (Bécares et al., 2012). Additionally, based on data from ESS it is not possible to know whether individuals live in neighbourhoods with a high proportion of ethnic minority residents. Some migrants of the first and second generation are often physically separated from large shares of their families and friends, which makes many expressions of social capital more difficult, if not impossible.

In terms of the other characteristics included in our analysis, age, and income, in previous empirical studies they have been negatively and positively associated with good health, respectively. Our results are in line with this evidence, in the sense that both the absence of 'Old' and presence of 'Wealthy' appear in some configurations as core conditions. However, the methodology used in our work revealed that there are configurations where it is indifferent being old or coping/finding difficult to live on present income. These results might provide clues for future research on ageing and health. Despite the usually reported gender difference in SRH (Pinillos-Franco and Kawachi, 2018), our results suggest that the condition 'Female' is in general indifferent to achieve good/very good SRH and being male (~'Female') is not even

included in any configuration. Under our approach, it seems that the relevance of other conditions outweighs the impact of gender.

The results for the country analysis globally confirm the relevance and role of 'Generalised trust' and 'Informal social connections' to be healthy. Although we obtained evidence of the generalisability of results found within each country, our findings suggest that solutions might differ across countries. Because sufficiency conditions are not necessarily symmetrical to the conditions leading to good or very good SRH, we analysed the outcome bad/very bad health. Nonetheless, we did not find sufficiency models. For the all sample, for example, the maximum raw consistency is 0.654. Therefore, there is no combination of the considered antecedent conditions that is sufficient to explain bad/very bad health.

6.1. Limitations

Some limitations apply to our analysis. Regarding the selection of measures of social capital, although we carefully selected our indicators, providing support for choosing them, given the complexity of this concept, any measure reflects only a limited aspect of social capital. Thus, our results should not be generalised for further aspects of structural and cognitive social capital. We have considered only four conditions beyond social capital. Although we have followed previous literature to select these conditions, other characteristics, such as education and marital status, could also be relevant. Regarding the health outcome, one cannot exclude the possibility of some cultural differences in the reporting of SRH. However, this outcome has been extensively used in research about social capital and health. Plus, our focus is not on comparisons across countries. There are nonetheless other health outcomes, related with physical or mental health, which could unveil different combinations leading to good/very good health. Still, this kind of analysis would not be possible with ESS data. Despite these limitations, to the best of our knowledge, this is the first study using configurational analysis to investigate the association between social capital and health and we believe that interesting results were found with the identification of novel associations, with the potential to bring a fresh view on the relevance of social capital for health.

7. Conclusion

This study confirms that social capital is relevant to achieve good or very good self-rated health, but it also shows that this outcome can be reached from different paths. What works for some individuals does not work for others. And for any given individual, rarely there is only one way to be healthy. Social capital is neither sufficient nor necessary to be healthy. Moreover, its relevance is contingent on other conditions. Not being part of a minority ethnic group emerged as a very important condition to obtain good or very good SRH. Thus, our findings suggest that the role of this factor might be stronger than what has been hitherto recognised. Both forms of social capital analysed in this study retained their relevance in the single-country analyses, appearing as core conditions in several configurations, combined with more, or fewer, of the other conditions considered.

Credit author statement

All authors (CQ, LMR and PT) contributed to the conceptualisation of the study. CQ carried out the review of literature. LMR prepared the database. PT carried out the empirical analysis. All authors contributed to the interpretation of results and writing of the paper. All approved the final version of the revised manuscript.

Data availability

Data from the European Social Survey is publicly available

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