



# How does social capital matter to the health status of older adults? Evidence from the China Health and Retirement Longitudinal Survey



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## ABSTRACT

This paper uses longitudinal data from China to examine the causal relationship between structural social capital and health among Chinese older adults. We employ various econometric strategies to control for the potential endogeneity of social capital and account for the possible contextual confounding effects by including community-level social capital. We use three indicators to measure individuals' general, physical, and mental health. Results indicate that social capital has a significant and positive effect on general and physical health. Based on our primary IV findings, a one standard-deviation increase in social capital leads to a 4.9 standard-deviation decrease in the probability of having bad health and a 2.2 standard-deviation decrease in physical activity limitations. Our results are robust to a series of sensitivity checks. Further analysis suggests heterogeneous effects by age but not by gender or area of residence.

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## 1. Introduction

With increasing life expectancy and decreasing fertility rate, population aging has become a global challenge in the 21st century. The process of population aging is usually accompanied by a higher prevalence of chronic diseases and disabilities among the elderly, which may consequently reduce economic performance and increase public health care expenditures (Sirven and Debrand, 2008). Among the various social policies instituted to cope with the health challenges associated with aging, social capital has been proposed as an important policy instrument (Oxley, 2009). The positive relationship between social capital and health is observed in many countries, for different measurements of social capital and various indicators of health (Folland and Rocco, 2014). However, there is no consensus on whether this relationship is causal and how large it is. This discussion is of particular significance to China because China has the largest aging population and one of the

highest aging rates in the world today (Zhao et al., 2013). If social capital does have a causal effect on the health of older adults in China, then providing them with easier access to social interactions and organizations will – in the long run – be a more effective health promotion strategy than merely increasing public health care expenditures.

Three possible mechanisms of why social capital may causally lead to better health have been identified in the literature (Scheffler and Brown, 2008; Folland, 2008). First, social capital helps to buffer individuals' mental stress by forming an environment that facilitates social interaction and builds mutual trust. Second, social capital helps individuals obtain information on health care and health, thus improving health production efficiency. Third, social capital can generate a sense of shared responsibility within families and communities and consequently reduces the likelihood of risky behaviors such as drinking and smoking.

The association between social capital and health has been examined in a number of countries, including the US (Schultz et al., 2008; Scheffler and Brown, 2008; Scheffler et al., 2007; Folland, 2007), Canada (Nakhaie and Arnold, 2010; Veenstra, 2000), the UK

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(Rocco, 2014; Borgonovi, 2010; Snelgrove et al., 2009; Petrou and Kupek, 2008; Poortinga, 2006b), Italy (Fiorillo and Sabatini, 2015), the Nordic countries (Lindstrom, 2009; Lindstrom and Mohseni, 2009; Islam et al., 2008; Iversen, 2008), Europe as a whole (Rocco et al., 2014; Ljunge, 2014; Sirven and Debrand, 2008, 2012; Rostila, 2007; Poortinga, 2006a), Japan (Murayama et al., 2013, 2015; Yamamura, 2011a,b; Ichida et al., 2009; Fujisawa et al., 2009), former Soviet Union countries (Goryakin et al., 2014; Habibov and Afandi, 2011; D'Hombres et al., 2010; Ferlander and Mäkinen, 2009; Rose, 2000) and Latin American countries (Ronconi et al., 2012; Hurtado et al., 2011). Despite many empirical arguments for the positive association between social capital and health, concerns over interpreting correlation as causation remain. First, spurious correlation may be caused by omitted variables. Unobserved heterogeneities such as time preference and personal traits could drive both social capital and health to move in the same direction. For example, people with low discount rates place high value on future benefits. These people are more likely to increase investments in social capital and health concurrently. Second, there may be reverse causality bias. On the one hand, people with better health are both physically and financially capable of engaging in more social activities and thus have greater social capital. On the other hand, people with relatively worse health may have increased incentive to invest in social capital because their opportunity cost of time is lower. Third, there may be measurement errors related to the subjective nature of self-reported health. Although self-reported health is commonly used in the current literature, misreporting bias still remains in the estimation. Fourth, it is difficult to distinguish social capital effects from other local contextual effects that potentially influence health. Social capital may vary between locations depending on the social and economic characteristics of a community, which may confound the effect of individual-level social capital on health (D'Hombres et al., 2010).

A number of studies have attempted to disentangle the causal relationship between social capital and health by employing several identification strategies. These strategies include the use of lagged values in longitudinal data to control for reverse causality bias (Sirven and Debrand, 2012; Nakhaie and Arnold, 2010) and the instrumental variable (IV) approach (Fiorillo and Sabatini, 2015; Ljunge, 2014; Rocco et al., 2014; Goryakin et al., 2014; Yamamura, 2011b; D'Hombres et al., 2010; Schultz et al., 2008). The most frequently used instrument is community-level social capital. However, this instrument may not satisfy the exclusion restriction condition because there may be possible contextual effects of social capital on health at the community level. Higher community-level social capital usually indicates a better living environment, which could have a positive effect on individuals' health.

Our study aims to contribute to the literature in several ways. First, this is the first empirical study in the Chinese context to examine the causal relationship between social capital and health using national longitudinal data. Second, we take into account the potential endogeneity resulting from unobserved heterogeneity and reverse causality by using fixed effects (FE) and IV estimators. Third, we account for the possible contextual effects by including community-level social capital. Fourth, we explore the heterogeneous effects of social capital on health by gender, age, and area of residence. Our study shows that structural social capital has a significant and positive effect on general and physical health but not on mental health. The effect of social capital on physical health tends to be stronger for older-old adults (aged 60 or above).

This paper proceeds as follows. Section 2 reviews the relevant literature. Section 3 describes the data and variables. Section 4 presents the empirical methodology. Section 5 reports results, robustness checks, and heterogeneity. Section 6 concludes.

## 2. Literature review

### 2.1. The definition and measurement of social capital

The concept of social capital was first put forward by Bourdieu (1986) and further popularized by Coleman (1990) and Putnam (2000). Despite some disputes on its definition, social capital is commonly understood to encompass social networks, norms, and trust that facilitate cooperation between individuals in a community (Putnam, 1993). Some researchers suggest that social capital has cognitive and structural dimensions (Harpham et al., 2002). Cognitive social capital relates to people's perceptions of interpersonal trust, solidarity and reciprocity, whereas structural social capital refers to the extent and intensity of participation in associations and other forms of social activity (Rostila, 2007). Structural social capital is particularly conducive to generating the beneficial effects of social capital because participation in social groups may facilitate the transmission of knowledge and increase trust between members of society (Alesina and La Ferrara, 2000; Putnam, 1993). Therefore, social participation is one of the most frequently employed measures of social capital in the empirical literature (Sirven and Debrand, 2008, 2012; Borgonovi, 2010; Berry and Welsh, 2010; Ronconi et al., 2012).

### 2.2. Empirical studies on social capital and health

Although numerous studies have linked social capital to positive health outcomes, the empirical relationship between different forms of social capital and health is mixed at best. For instance, with regard to the relationship between structural social capital and health, some studies show a positive association between social participation and health (Borgonovi, 2010; Berry and Welsh, 2010; Petrou and Kupek, 2008), whereas others do not find such a relationship (Meng and Chen, 2014; Hurtado et al., 2011; D'Hombres et al., 2010; Snelgrove et al., 2009; Yip et al., 2007; Norstrand and Xu, 2012). Furthermore, some studies observe that cognitive social capital is positively related to self-reported health and that structural social capital is positively related to somatic symptoms (Goryakin et al., 2014; Yamaoka, 2008).

As noted above, several studies use longitudinal data and an IV approach to address the potential endogeneity of social capital. Based on respective longitudinal data for Europe and Canada, Sirven and Debrand (2012) and Nakhaie and Arnold (2010) use lagged social capital instead of current social capital to control for reverse causality bias. They both observe that social capital contributes to better health. Using an IV approach, most studies obtain larger coefficient estimates on social capital than in the OLS estimation. Folland (2007) uses state-level characteristics such as employment per capita, geographic latitude, and state government contributions to colleges per capita as IVs and finds social capital to be highly correlated with a number of health measures in the US. In their study on the US population, Schultz et al. (2008) use residence years and religiosity variables as IVs. Their results suggest that individual-level social capital is a significant predictor of self-rated health. A similar approach is followed by Yamamura (2011b), who finds social capital to have a significant and positive influence on health for people without a job in Japan. Ronconi et al. (2012) use transportation conditions as IVs and note a significant and positive relationship between social capital and health in Argentina. Rocco et al. (2014) instrument social capital with crime victimization and physician density in the community and obtain a causal and positive relationship between social capital and health in European countries. These findings are further confirmed by Fiorillo and Sabatini (2015), Goryakin et al. (2014) and D'Hombres et al. (2010), who address the endogeneity issue by employing community-level social capital as IVs. Ljunge (2014) uses ancestral

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