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A perspective from mental health of older adults in rural China

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Abstract

Purpose – The purpose of this paper is to investigate the impact of social capital on the mental health of older adults in rural China. The authors also examine potential heterogeneous effects and two possible pathways from social capital increase to mental health improvement.

Design/methodology/approach – Based on a panel data of China Health and Retirement Longitudinal Study, this paper employs a fixed effect model to examine the impact of social capital on health. A two-stage instrumental variable approach is adopted to alleviate the issue of endogeneity.

Findings – Results demonstrate that social capital has improved the mental health of older adults in rural China significantly. The beneficial effect is stronger for female, people with lower income, aged people and mainly observed in the central and western regions. Social capital affects the mental health of rural older adults through raising the awareness of healthy behavior and lowering the searching cost of health-related information.

Practical implications – Social capital plays a vital role in improving the mental health of older adults in rural China and is necessary for the construction of beautiful countryside in China. The authority should increase the investment in both the hard and soft infrastructure to improve the mental health of rural residents and narrow the inequality in health status.

Originality/value – This study enriches the empirical literature on the relationship between social capital and mental health by providing new evidence from China. Also, we choose the social activities and communications of individuals to construct a standardized index for social capital, which can better capture the social capital at the individual level.

Keywords Mental health, Social capital, Rural China, Older adults, New structural economics

Paper type Research paper

1. Introduction

Since the reform and opening-up, the regional structure of factor endowments, particularly in labor resources, has changed dramatically in China as the rapid development of urbanization and continuous upgrading of industrial structural. Manufacturing and service sectors absorbed massive labor forces from the agricultural sector, especially young adults in the rural area, which makes the phenomenon of migrant workers become prevalent and older adults become the primary labor supply in rural areas (Figure 1). This trend lowers the opportunity for older adults to be attended and results in “empty nester” phenomenon in many rural areas.

Up to the end of 2017, there are 0.24bn people aged 60 and above in China, accounting for 17.3 percent of the total population. Old people are at a higher risk of having mental illnesses such as dementia and depression due to their deteriorating physiological functions.

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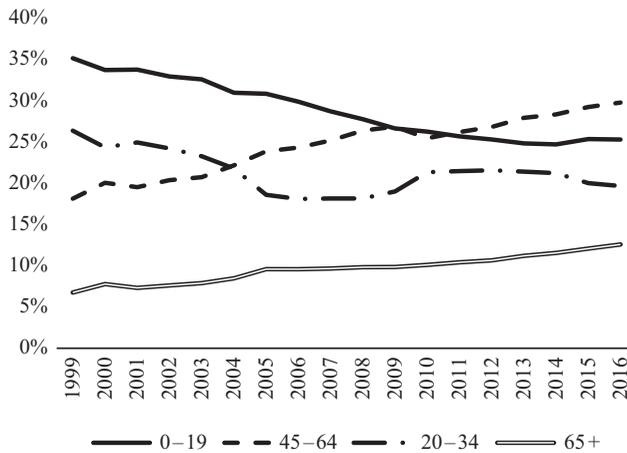


Figure 1.
Rural population by
age groups

The World Health Organization reports that older adults with mental health problems, such as loneliness, self-doubt and depression, tend to have symptoms of incapacitation (Lei *et al.*, 2014). Meanwhile, mental illness is the leading cause of suicide (Zhang *et al.*, 2010), and nearly half of suicides in China have serious issues of mental health. The rural older adults' suicide caused by mental issues, like Geriatric depression, is continuously striking the public perceptions of ageing society. The mental health of this population needs to be concerned due to its direct association with the development and stabilization of rural society. The targeted poverty reduction under the new structure should not only focus on material poverty but also spiritual impoverishment.

China's medical sector is still underdeveloped, and the social security system is not comprehensive yet, manifested by a considerable shortage of medical services in mental health. The enormous aged population is expected to bring huge burden to the medical and social security systems. Before the urban-rural dual structure being completely eliminated, the older adults are not only the primary labor supply of rural areas but also solid support and an important family foundation for the migrant workers in urban areas. Problems regarding rural older adults' health have to be appropriately addressed to guarantee the maximization of benefits under the current structure of factor endowments in China. However, the negative externalities, caused by industrial upgrading, on the agricultural sector cannot be addressed spontaneously and adequately by the market, which calls for a facilitating government to coordinate and assist (Lin, 2011).

Research on developed economies shows that sufficient social capital plays a vital role in enhancing the living quality and maintaining psychological soundness for older adults (Hamano *et al.*, 2010; Johnson *et al.*, 2017; Fiorillo and Sabatini, 2015). As proposed by Putnam (2000), no field linked to social capital such closely as health. From this perspective, social capital could be a complement to existing medical and social security systems in improving residents' mental health. On the other hand, social capital, as an important component of soft infrastructure, should be fully considered by the authority in promoting regional economic growth (Lin, 2012). However, there is little literature on the relationship between social capital and older adults' mental health in rural areas. Also, developing countries are quite different from developed countries regarding social institutions, economic development status and other aspects. Thus, it awaits further empirical investigation on whether the relationship between social capital and mental health still holds in developing countries.

Therefore, this study explores the impact of social capital on the mental health of older adults in rural China, the largest developing country, by using the China Health and Retirement Longitudinal Study (CHARLS) data. This work adds to the literature in the following ways. First, this study enriches the empirical literature on the relationship between social capital and the mental health of rural older adults by providing new evidence from China. A non-balanced panel data is constructed based on a large micro-level tracking survey data, which can alleviate the heterogeneity issue generally seen in cross-section data which are widely used in existing literature. Second, we choose the social activities and communications of individuals to construct a standardized index for social capital, which can better capture the social capital at the individual level. Third, we further examined whether the social capital has different impacts on residents' mental health according to their gender, income levels, age and regions, which reflects a more comprehensive relationship between social capital and mental health. During the transition of realizing healthy aged-care, it is essential to make the utmost of social capital this kind of informal institution as additional measures in a traditional and *guanxi*-dominant society of China. This paper could further address the problem on the providing for the aged in rural China.

The rest of the paper is organized as follows. Section 2 is a literature review for this field. Section 3 introduces the data used, variables specified, and the empirical design. Empirical results are presented in Section 4, while Section 5 concludes the paper and provides some discussions.

2. Literature review

Most of the literature on residents' health is based on the theory of the demand for health (Grossman, 1972) to explore the determinants of health from dimensions like age, gender, marriage status, income level and social support, etc. (Zhao, 2006; Cutler and Lleras-Muney, 2010; Rocco *et al.*, 2014; Lei *et al.*, 2014; Qin *et al.*, 2018). However, it is rarely seen in the literature whether social capital affects residents' mental health. Existing literature on social capital and mental health problem can be summarized as three kinds of views.

The first kind of view is that social capital could improve mental health status. Hamano *et al.* (2010) investigated the relationship between social trust in the neighborhood and mental health, after considering potential individual confounders, by using a multilevel method. He found that cognitive and structural social capital may influence the mental health of Japanese. Forsman *et al.* (2012) shed light on the positive relationship between structural and cognitive social capital and depression in later life. Nielsen *et al.* (2015) focused on adolescents and found that social trust could alleviate mental health problems. Landstedt *et al.* (2016) believe that involvement in social networks promotes mental health and may have different meanings and consequences across gender. Hollard and Sene (2016) found a positive promoting effect of social capital on mental health. Johnson *et al.* (2017) investigated the migration data of Sweden and found that social capital explained mental health inequalities between immigrants. They also highlighted that social capital could effectively mediate psychological distresses of immigrant groups. Kazemi *et al.* (2017) proposed that the improvement in social engagement and public trust could significantly promote the state of mental health in families with disabled members.

The second kind of view believes that social capital has adverse effects on mental health. Yu *et al.* (2008) suggest that the collective-level interaction between members of society amplifies some members' psychological burden and therefore leads to a decrease in the level of mental health. Mitchell and Lagory (2010) found that while bridging social capital displays a small inverse relationship with distress, bonding social capital appears to increase an individual's level of mental distress in an impoverished community. Bae (2015)

pointed out that the social capital obtained from non-spouse family members does not positively, even might negatively, influence health status.

The third kind of view suggests that social capital is not correlated with mental health. Ziersch *et al.* (2005) found that trust and reciprocity do not necessarily affect health. Veenstra *et al.* (2005) show that the participation of government and non-government organizations does not affect subjective senses of health and depression at all. Wang *et al.* (2013) argued that current evidence is not sufficient to conclude that structural social capital could improve the mental health of older adults. Xue and Liu (2012) used the older adults' sample of China Family Panel Studies data in 2012 to investigate the impact of social capital on health and found that the organizational involvement has no significant impact on older adults' health.

These studies provide valuable references for this paper, while there are still some problems wait to be resolved. Existing literature generally has relatively limited sample coverage, and empirical studies based on panel data are rarely seen. Few scholars dealt with the problem of endogeneity in the variable of social capital appropriately, which might lead to biases in the estimation. Therefore, this study adopts a panel data from the CHARLS in the year 2011, 2013 and 2015 to evaluate the impact of social capital on the mental health of rural residents. The mental health status is measured by the Centre for Epidemiological Studies Depression (CES-D) Scale. Various regression techniques are employed to alleviate the potential problem of endogeneity and individual heterogeneity. We also analyze sub-samples to explore whether the social capital affects health conditions of different groups differently.

3. Empirical design

3.1 Data issues

The data in this study are drawn from CHARLS database which is collected by the National School of Development of Peking University through conducting a nationwide field survey every two years since 2011. This survey covers 150 counties, 450 villages and about 17,000 people in 10,000 families. This paper constructed a non-balanced panel data by using the tracking survey data in the year 2011, 2013 and 2015, which has 4,642, 4,645 and 3,378 observations, respectively.

3.2 Variable specifications

3.2.1 Dependent variable: mental health. We use the simplified version of the CES-D Scale (Radloff, 1977) to measure whether the respondent is positive and optimistic, or anxious and depressed. This scale is widely applied in studies on mental health (Zimmerman and Katon, 2005; Lei *et al.*, 2014; Qin *et al.*, 2018). Lei *et al.* (2014) verified the credibility and validity of the simplified CES-D Scale by using CHARLS data and proved that the scale is applicable to studies on Chinese population. The simplified CES-D Scale requires the respondent to choose from following four option to tell how often they have felt or behaved this way during the past week[1]: rarely or none of the time (less than 1 day); some or a little of the time (1–2 days); occasionally or a moderate amount of time (3–4 days); and most or all of the time (5–7 days). The four options correspond to 1, 2, 3 and 4 scores, respectively, while the fifth and eighth questions have the inverse order, namely, 4, 3, 2 and 1 score, respectively. The CES-D Scale is just the summation of these scores which ranges from 10–40 scores, with the higher scores indicating more depression symptoms and worse mental health status. People with 20 scores or above is generally believed to have a poor mental health and a tendency to be depressed (Andresen *et al.*, 1994). Thus, a negative coefficient would indicate an improvement in mental health, which has to be noticed when analyzing the results.

3.2.2 Key variable: social capital. Social capital includes cognitive social capital and structural social capital. The cognitive social capital is not involved in the CHARLS questionnaire, this study therefore only considers individual structural social capital. Considering rural China is an acquaintance society, and social trust is relatively high, social communication and engagement are good choices to represent individual social capital for rural older adults.

The social capital variable is mainly based on the question “Did you participate in the following social activities in the past one month?” Stock trading and online surfing are excluded from the ten social activities since these two are not highly correlated with social engagement and therefore cannot reflect social capital properly. The remaining eight social activities such as interacted with friends, played Ma-jong, played chess, played cards, went to community club or took part in a community-related organization are considered in this study. Dummy variables are created for these activities, which take value one if participated in the activity, otherwise, take value zero. We add up these dummy variables and then standardize them to represent residents’ social capital (Ronconi *et al.*, 2012), with a higher value indicating more social capital.

3.2.3 Control variables. Many factors could affect health status, and most scholars believe that factors like age, gender, marriage status, income level and social security system would influence rural residents’ health (Grossman, 1972; Cutler and Lleras-Muney, 2010; Rocco *et al.*, 2014). We also include these factors as control variables to reduce potential biases. Control variables could be divided into three categories. The first category is the individual characteristics, namely, age, gender, marriage status, education attainment and whether retired. The second category is the social and economic factors. This study mainly controlled the dummy variable for medical insurance, average family income, family size, family medical expenses in the last year and family expenses on health maintenance in the last year. In addition, it has been proved that lifestyle has a significant impact on health (Cockerham, 2009; House, 2002). This study incorporated three lifestyle indicators, namely, smoke or not, drink or not and sound sleep or not. Sound sleep is considerably important to mental health. Table I shows the definition and some descriptive statistics of main variables used in our analysis.

Variables	Specifications	Mean	SD
Health	CES-D score	18.618	5.360
SC	Social capital	0.784	0.923
Gender	Male = 1, female = 0	0.492	0.500
Age	Age	60.924	9.891
Marriage	Married = 1, otherwise = 0	0.776	0.417
Education	Illiteracy = 0, primary school graduated or partially = 1, junior high school graduated = 2, senior high school graduated = 3	0.563	0.812
Retire	Retired = 1, not retired = 0	0.021	0.143
Insurance	Has medical insurance = 1, has no medical insurance = 0	0.936	0.245
lnwage	Average family income (10,000)	1.720	37.927
Size	Family size	3.946	2.121
Hospital	Family medical expenses in the last year	0.231	0.818
Protect	Family expenses on health maintenance in the last year	0.019	0.115
Smoking	Smoking = 1, not smoking = 0	0.300	0.458
Drink	Drink = 1, no drink = 0	0.346	0.476
Sleep	Take value 1 if sleeping time is 6–9 h, otherwise 0	0.616	0.486

Table I.
Variable specifications
and descriptive
statistics

3.3 Empirical model

To investigate the relationship between social capital and health status, we construct an empirical model as follows:

$$\text{Health}_{it} = \alpha_i + \beta_1 \text{SC}_{it} + Z_{it}\theta + \mu_{it}, \quad (1)$$

where Health_{it} is the mental health status of the i th observation in year t . Similarly, SC_{it} is the social capital possessed by the i th observation in year t . Z_{it} represents a group of control variables and μ_{it} is the stochastic error term. The coefficient β_1 is the interest of this paper and indicates the impact of social capital on mental health. The Hausman test is applied to determine which model is more appropriate, namely, the fixed effects model or the random effects model. The pooled regression model is reported as well to make a comparison.

The potential endogeneity of social capital could be attributed to two reasons. First, omitted variable bias. Unobservable characteristics of individual or community affect the social capital and mental health simultaneously. Second, reverse causality. The mental health might reversely affect older adults' participation in social activities, and therefore determine the level of social capital. We introduce the instrumental variable (IV) method to eliminate the problem of endogeneity and identify the pure effect of social capital on health. The IV employed in this study is the mean of other community members' social capital. We argue that the mean value can reflect the activeness of other community members in participating in social activities, which is highly correlated with individual social capital. Meanwhile, the activeness of other community members does not correlate with individual health status. Therefore, this measurement satisfied the essential feature of IV.

The p -value of the DWH test is smaller than 0.05, showing that the model has the problem of endogeneity and IV method is applicable. The F -value in the first stage regression is 727.55, which is way higher than the critical value 10, indicating the high correlation between the IV and the endogenous independent variable. The Cragg-Donald Wald F statistic is 727.548, which also suggests that there is no problem of weak instruments (Stock and Yogo, 2005).

4. Empirical results and discussion

4.1 Impact of social capital on health: full sample

In columns 1 to 3 of Table II, estimations from the pooled regression, the fixed effect panel regression and the IV regression are reported. The Hausman test indicates the fixed effect model is preferred.

Results show that the coefficient of social capital is relatively small and only significant at 10 percent level, but the coefficient increases from -0.142 to -1.213 and is significant at 1 percent level once the endogeneity was controlled. Therefore, if the problem of endogeneity was not carefully dealt with, the impact of social capital on health conditions will be highly underestimated. The self-selection behavior of rural older adults possibly could explain this result. Rural residents with poorer health conditions are more likely to improve their mental health condition via social activities, which leads to underestimation.

From control variables, we can see that the health status of the male is generally better than that of the female. Educational attainment is not significant in improving older adults' mental health, which might be due to the overall low level of educational attainment in rural areas. Married older adults have better mental health status than those are not married. Income level also positively influence mental health status. Medical insurance plays a significant role in improving mental health. Family size positively contributes to better mental health status. A higher medical expense in the last year is associated with worse mental health status. Regarding lifestyle, sound sleep is positively correlated with better mental health status, while smoking is detrimental to mental health.

Table II.
Baseline
regression results

Variables	(1) Pooled	(2) Fixed effect	(3) IV
Social capital	-0.403*** (0.047)	-0.142* (0.081)	-1.213*** (0.206)
Gender	-0.958*** (0.128)	-2.943 (2.107)	-1.037*** (0.131)
Age	-0.006 (0.006)	-0.156*** (0.038)	-0.017*** (0.006)
Education	0.011 (0.060)	-0.017 (0.098)	0.039 (0.061)
Marriage	-0.823*** (0.130)	-0.226 (0.445)	-0.820*** (0.131)
Retire	-0.399 (0.320)	-0.471 (0.494)	-0.227 (0.327)
Insurance	-0.536*** (0.186)	-0.276 (0.291)	-0.472** (0.189)
Inwage	-0.216*** (0.025)	-0.056 (0.043)	-0.197*** (0.026)
Size	-0.225*** (0.022)	-0.332*** (0.036)	-0.233*** (0.023)
Hospital	0.100* (0.056)	-0.030 (0.085)	0.111** (0.057)
Protect	0.362 (0.394)	0.515 (0.602)	0.428 (0.400)
Smoke	0.268** (0.127)	-0.060 (0.370)	0.323** (0.129)
Drink	-0.236** (0.110)	0.218 (0.223)	-0.138 (0.114)
Sleep	-1.913*** (0.096)	-0.782*** (0.162)	-1.879*** (0.098)
Constant	22.191*** (0.456)	31.650*** (2.706)	22.788*** (0.483)
Observations	12,569	12,569	12,569

Notes: Figures in parentheses are standard errors. ***,**,*Significant at 10, 5 and 1 percent levels, respectively

4.2 Heterogeneous effects of social capital on mental health

4.2.1 Income level differences. There has been a debate on whether social capital is a kind of capital for the poor. This study further investigates whether the impacts of social capital on health are significantly different across different income levels by dividing the sample equally into three groups, namely, the low-income group, the middle-income group and the high-income group. From Table III it can be seen that the coefficient of social capital decreases as the increase of income level and is significant in all three cases. This reflects that social capital benefits the low-income group much more than the high-income group regarding mental health. This observation supports the argument that social capital is a kind of capital for the poor. The possible reasons are as follows. First, the lower income group has a higher rate of return on social capital. The high-income group generally has more social capital than the low-income group, and therefore the marginal return on social capital tends to be lower. Second, for the high-income group, the impact of income on mental health possesses a dominant position, while for lower income group, the lack of income and factors such as poor social security system and insufficient medical resources also constrained the influence of income on mental health. Therefore, the social capital stands out in improving mental health for the poor. Third, the time cost of the low-income group is lower than the high-income group. The low-income group has more time to spend on casual and exercise activities but less physical capital in comparison to the high-income group. Therefore, social capital plays a much more critical role in improving the mental health for the low-income group who are more likely to rely on social capital.

Variables	(1) Low income	(2) Middle income	(3) High income
SC	-1.653*** (0.378)	-1.456*** (0.388)	-0.755** (0.301)
Other control variables	Yes	Yes	Yes
Observations	4,366	4,019	4,184

Table III.
Regression results
by income levels

Note: ***,**,*Significant at 5 and 1 percent levels, respectively

4.2.2 Gender differences. Existing literature demonstrates that mental health has significant gender differences (Weissman *et al.*, 1993; Qin *et al.*, 2018). Thus, we divide the sample by gender to examine whether the impact of social capital is different across gender. Columns 1 and 2 in Table IV show that the impact of social capital on females is stronger than that of males regarding mental health. Potential reasons are, first, different marginal effects across gender. As the average social capital index of females is much lower than that of males, the marginal effect for females' health is greater as the increase of social capital. Second, females in China's rural area undertake more housework and therefore have less opportunity to participate in social activities. Then, the beneficial effects of social capital on mental health for females are much more prominent at each level in comparison to the counterpart. Third, females generally underestimate their mental health status as they may consider more factors than males when answering questions due to different perceptions on indicators for health status.

4.2.3 Regional differences. There is considerable regional heterogeneity across regions in China, this study, therefore, explores whether the impact of social capital is different across regions. From Table IV, the impact of social capital for residents in central and eastern areas is quite significant, at 1 percent level, while for the eastern area it is not significant. This finding indicates that social capital plays a relatively limited role in more developed areas but a significant role in the less developed area.

4.2.4 Age differences. We further divide our sample into two age groups by setting the dividing line as 65 and 60 years old, respectively. We aim to identify whether the impact of social capital is higher for aged people. Results in Table V show that, even though the coefficients of separate regressions are not directly comparable, the impact of social capital on the aged group is generally higher. The potential reason is that the aged group has fewer opportunities to participate in social activities, then the marginal effect of social capital tends to be higher than the younger group.

4.3 Robustness tests

To ensure the reliability of our estimations, we conduct the following robustness tests.

4.3.1 Alternative indicators for mental health. We dichotomize the CES-D score into a dummy variable by setting the critical value as 20 (Andresen *et al.*, 1994). If the CES-D score equals to 20 or above, it will be considered as depression and take value 1, otherwise 0.

Table IV.
Regression results by
gender and by region

Variables	By gender		East (3)	By regions	
	Male (1)	Female (2)		Central (4)	West (5)
SC	-0.931*** (0.284)	-1.454*** (0.296)	0.363 (0.373)	-1.808*** (0.358)	-1.747*** (0.393)
Other control variables	Yes	Yes	Yes	Yes	Yes
Observations	6,180	6,389	3,930	3,931	4,708

Note: ***Significant at 1 percent level

Table V.
Regression results by
age groups

Variables	(1)	(2)	(3)	(4)
	Below 65	Above 65	Below 60	Above 60
SC	-1.088*** (0.215)	-1.664*** (0.527)	-1.022*** (0.239)	-1.492*** (0.357)
Other control variables	Yes	Yes	Yes	Yes
Observations	8,262	4,307	5,961	6,608

Note: ***Significant at 1 percent level

IV-probit model is employed since ordinary IV regression is not applicable to this binary variable. We also adopt another health indicator, namely, self-assessed health to check the robustness. Self-assessed health, as a comprehensive indicator, is an overall assessment of health status by the interviewees themselves and reflects both physical and mental health status. Regression results are in Table VI.

4.3.2 Group by the poverty line. According to China's poverty line set in 2011 (average annual income per person at 2,300 RMB), we divide the total sample into families below the poverty line and families above the poverty line to investigate the impact of social capital across groups with different income levels. It is found that social capital is more beneficial to health for families below the poverty line (Table VI).

4.3.3 Change the sample range. To eliminate the bias caused by the measurement error or outliers, we remove the relatively older and relatively younger rural residents in the sample, namely, the 1 percent from both ends of the age variable to test the robustness (Table VI).

Through various ways to check the robustness, our main conclusions are not affected. Therefore, it can be concluded that social capital could improve the mental health of rural older adults.

4.4 Mechanism of social capital on mental health

We also want to investigate the pathways through which the social capital could affect mental health. The social capital may improve personal mental health through better access to information on a healthy living, more exercises or more frequent use of medical resources led by peer pressure and alike factors. Due to the availability of data, this study mainly focuses on the use of medical services and exercise activities to discuss the potential pathways.

Potential pathways are measured by three dummy variables according to three questions in the questionnaire, namely, whether you took a physical examination in the last two years, whether you checked blood pressure in the last year and whether you do exercise frequently. We regress the three dummy variables on the level of social capital and other control variables and found that a higher level of social capital is associated with a higher frequency in using medical services and doing exercises. Therefore, the social capital benefits personal mental health by raising the awareness of healthy behavior and lowering the searching cost of health-related information (Table VII).

Variables	Health		Poverty line		Age
	Dummy (1)	Self-assessed (2)	Above (3)	Below (4)	Winsorized (5)
SC	0.104*** (0.012)	0.057*** (0.010)	-0.885*** (0.296)	-1.518*** (0.276)	-1.219*** (0.207)
Other control variables	Yes	Yes	Yes	Yes	Yes
Observations	12,569	12,569	4,418	8,151	12,316

Note: ***Significant at 1 percent level

Table VI.
Robustness check

Variables	(1)	(2)	(3)
	Physical examination	Blood pressure	Exercise
SC	0.032*** (0.004)	0.010*** (0.003)	0.006** (0.003)
Other control variables	Yes	Yes	Yes
Observations	12,569	12,569	12,551

Note: **,***Significant at 5 and 1 percent levels, respectively

Table VII.
Mechanism analysis

5. Conclusions and implications

As the progressing of urbanization and industrial upgrading in China, the structure of factor endowments has changed dramatically, particularly in rural areas in terms of labor resources. Under this new structure, a facilitating government is required to appropriately address the mental health issues of rural older adults as the negative externalities cannot be internalized by the market alone. Therefore, this study appeals that the targeted poverty reduction under the new structure should not only focus on material poverty but also spiritual impoverishment.

Based on the CHARLS data in the year of 2011, 2013 and 2015, this study investigates the impact of social capital on the mental health of rural older adults and also its heterogeneous effects by sub-samples. Results show that, after the control of endogeneity by the IV method, social capital plays a positive role in improving rural residents' mental health. In addition, we also demonstrate that the promoting effects of social capital on health are significantly different across gender, income level, age, and regions. Particularly, females enjoy more benefits from social capital than males in terms of mental health, social capital effectively improves the mental health of the low-income group, aged people, and the impact is mainly observed in central and western areas.

Policy implications of this study are manifold. First, authorities should be aware of the positive role of social capital and fully utilize this information institution in public health to accelerate the process of building a healthy aged-care system in the health China strategy. Second, to facilitate the formation of social capital, local governments should provide necessary infrastructures for residents' social activities, such as building more relevant spaces and facilities as well as raising the awareness of the whole community to accumulate social capital. Third, a facilitating government should implement pertinent policies for cultivating social capital across different population and areas. For example, more attention should be paid to aged female residents with lower income in central and western regions. In addition, local governments should give play to the Community Council, the Women's Federation and related support groups in forming social capital. Relevant communities and associations should be established to provide a pleasant environment for older adults to make contributions under the new structure.

Note

1. Ten specific questions: I was bothered by things that do not usually bother me; I had trouble keeping my mind on what I was doing; I felt depressed; I felt everything I did was an effort; I felt hopeful about the future; I felt fearful; my sleep was restless; I was happy; I felt lonely; and I could not get "going."

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