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Social trust, social capital, and subjective well-being of rural residents: micro-empirical evidence based on the Chinese General Social Survey (CGSS)

Haiping Xu[1], Chuqiao Zhang[1✉] & Yawen Huang[1]

Despite a recent line of research highlighting trust as an important determinant of residents' happiness in Western countries, empirical evidence regarding the strength of these linkages in the developing world needs to be more comprehensive and conclusive. This paper contributes to this literature by performing a deeper examination into the trust-based explanation of happiness and, particularly, exploring the mediating role of social capital in rural China, where rapid economic growth coexists with gradual and fundamental social changes. Using data from the nationally representative cross-sectional Chinese General Social Survey (CGSS) in 2012, 2013, and 2015, we indicate that trust positively affects the happiness of rural residents and social capital. Our findings support the role of social capital in mediating happiness prediction. Furthermore, additional tests suggest heterogeneous social capital for different ages and degrees of regional market competition. Specifically, the mediating effect of social capital on rural residents over 30 years old (inclusive) and living in high-market competition areas is significant. These findings provide a valuable direction for the government that producing an environment that enhances social networks and facilitates the exchange of social support holds promise for improving the life satisfaction of the rural Chinese population. Trust can significantly improve rural residents' happiness through increasing social capital. The government should effectively manage the rural social trust crisis and help rural residents build social capital in multiple ways, improving the life satisfaction of rural residents.

[1] Management School of Hainan University, Haikou, China. ✉email: 865487726@qq.com

Introduction

Pursuing happiness is one of the ultimate goals of human life (Leung et al., 2013). From an economic perspective, increasing a country's gross domestic product (GDP) adds to greater prosperity. Therefore, the GDP per capita was long regarded as the essential indicator for the life quality of a country (Oishi and Schimmack, 2010). However, Easterlin (1974, 1995, 2001) shows that economic growth fails to bring more happiness. In recent years, the significance of non-market components as a measure of life quality has become increasingly acknowledged. Traditional measures, such as GDP, have been criticized for being excessively one-sided and incapable of accounting for non-market aspects of life quality, such as happiness (Fitouss et al., 2011). As a result, experts in adjacent fields such as economics and political science contend that subjective and objective indices are essential for assessing the quality of life of individuals. The subjective dimension should include indicators that measure life satisfaction, happiness experiences, etc., which reflect the quality of life of individuals and the factors that affect it[1]. In a sense, the issue of happiness originated in sociology and has become a hot topic in numerous disciplines.

Subjective well-being (SWB) is described as the cognitive judgments and emotional state of an individual's life quality (Diener et al., 1999). SWB is also known as "life satisfaction" and "happiness". As a comprehensive index of psychological experience, it is gaining importance as a policy target in a growing number of nations (Bai et al., 2019). In China, some local governments consider the SWB of residents to be one of the performance measures for local officials (He et al., 2014). In general, the role of several factors in determining well-being has been thoroughly documented in the literature. We group the factors into two categories: macro viewpoints and resident micro-levels. Research has highlighted the impact of social equity, comprehensive national strength, cultural confidence, income disparities, government executive power, and national policies from a macro perspective (Gaygisiz, 2010; Lai et al., 2013; Barrios and Gandelman, 2015). Some study focuses on the microeconomic perspective, including social relations, individual personality, education level, living environment, democratic involvement, values, and people's future expectations (Jackson, 2013; Feldman, 2006). However, from the perspective of research objects, most were limited to urban areas, migrant workers in cities, or the elderly but rarely paid attention to rural dwellers. Consequently, a particular focus of the study is on the happiness of rural Chinese individuals.

In order to enhance the sense of happiness, it appears necessary to comprehend its primary determinants. Among these major determinants are people's emotional and cognitive assessments of their lives, such as social trust and social capital (Young Russell and Powers, 2004; Agampodi et al., 2015; Flores et al., 2018; Xiao et al., 2020). Social trust is individuals' subject cognition to firsthand experiences with people in society: family members, friends, relatives, neighbors, coworkers, and other daily contacts. It is an important factor in social communication, considered a crucial synthetic force of society, and its significance to humans and society cannot be overemphasized (Joseph and Shirley, 2015). The body of research relating trust to happiness is expanding. Although the findings vary in conceptualization and measurement, it is generally accepted that trust is a crucial factor in determining happiness.

China's economic growth has been imbalanced and insufficient as a developing country. The Chinese economy is distinguished by a remarkable rural-urban divide (Knight and Song, 1999). It manifests as an unequal distribution of resources in binary household registration and average incomes. The provision of education, medical resources, and comprehensive social security in rural areas is more deficient than in urban areas (Xiong et al., 2022). The mistrust induced by such innate differences can alter people's propensity to interact and collaborate, affecting their happiness (Zagorski et al., 2014). To address this issue, scholars have performed extensive studies. It has been noticed that social capital, known as the "capital for the poor", has a considerable impact on economic and social development in rural areas (Zhang and Wan, 2020). According to Putnam (1993), social capital can foster cooperation and increase social effectiveness, which can increase the happiness of individuals. Therefore, the mediating transmission pathway of social capital should be considered when identifying the impact of social trust on the happiness of rural residents. Incorporating social capital into the model improves our knowledge of rural residents' happiness and allows us to reduce the estimation bias of omitted variables further.

China also offers an attractive setting within which to study social capital. First, farmers are an extremely important part of China. According to a survey conducted in 2018[2], the population of Chinese rural residents was about 637.47 million in 2017, accounting for 47% of the national population. Additionally, there is more social capital in rural areas than in urban areas, denoting strong and close social ties and more frequent family-based social connections (Sørensen, 2016). One explanation may be the necessity for greater cooperation due to a lack of institutional support systems (Glatz and Bodi-Fernandez, 2020). Moreover, rural areas are characterized by smaller group sizes (Fei, 2015), which could result in a greater motivation to retain good and loyal relationships with peers. In contrast, urban areas are characterized by reduced frequency and closeness of social interactions (Glatz and Bodi-Fernandez, 2020). Finally, China is a "society of ties" and a "society of acquaintances" (Li and Chen, 2012). Especially in rural China, social capital plays a more prominent role in the social economy due to the lagging construction of formal institutions, such as reducing the impact of adverse risks (Rosenzweig, 1988) and poverty vulnerability (Cleaver, 2005). However, the function of social capital has yet to receive due attention in the literature on the happiness determination of Chinese (rural) residents (e.g., Knight et al., 2009). The rural–urban disparity warrants independent investigation because the difference in social capital will have different consequences on the subjective well-being of rural people, as distinct from that of urban residents who have been studied for a long time.

Based on this, the correlation was examined between trust and happiness of the general population in rural China, with particular attention paid to the intermediary role of social capital. In addition to benefiting the Chinese population, findings from China can also offer insights into non-Western, rural, and developing economies and suggest policy recommendations.

The remainder of the paper is structured as follows: the section "Theoretical framework, literature review, and research hypothesis" overviews existing literature regarding the relationship between trust, social capital, and happiness. Section "Reseach methods" presents the data utilized for our research and empirical model. In the section "Results analysis", we report the results and analyses, while the section "Conclusions and policy recommendations" concludes and provides policy suggestions.

Theoretical framework, literature review, and research hypothesis

The influence of trust on rural residents' happiness. Social trust refers to the reliance on the kindness of human nature that individuals place on strangers or most people in society (Huang and Deng, 2012). Trust plays a crucial role in commercial transactions and daily life, and it guarantees social bonds. The high social trust serves as a social adhesive and reinforces social

cohesion (Dragolov et al., 2018). Another idea posits that greater social trust is associated with less social anxiety, automatically lowering stress levels (Abbott and Freeth, 2008). Moreover, Putnam (2001) argues that trust, as the foundation of ethics and morals, sustains the dynamics of economic growth and ensures government performance. Fukuyama (1996) adds that a society in which people trust each other will significantly reduce the transaction costs of economic operations and compensate for the deficiencies of the formal system, thus contributing to the prosperity of the society and economy. Social trust can enhance well-being by reflecting generalized reciprocity (Putnam, 2001).

The above-mentioned theoretical assumptions concerning the relationship between social trust and well-being have extensive empirical support. Evidence suggests that trust positively affects subjective well-being, as evaluated by measures such as trusting most other people and trusting governmental organizations. However, the strength differs depending on the conceptualization, measurement, and development of the country. For instance, at a cross-country level, Tokuda and Inoguchi (2017) observed that both special and general social trust boost life satisfaction in 29 Asian countries. However, with the aid of the survey data from a panel of 19 OECD countries, Kennelly et al. (2003) found no correlation between trust (measured by trust in others) and life satisfaction. The evidence from within-country studies among developed economies is more substantial. Helliwell and Huang (2011) reported that a 10% increase in social trust at work results in a 4.5% improvement in life satisfaction. A comparable adjustment would require half inflation or a 25% rise in per capita income. Kuroki (2011) showed favorable relationships between social trust and life satisfaction in Japan using personal data.

More research has yet to be conducted on social trust and happiness in rural China. Compared to "totally distrust", Bai et al. (2019) found that all other higher levels of trust in strangers show a significant positive link with SWB in rural China. Further evidence for social trust in rural areas was provided by Jiang (2018), who found (by using data from a sample of Chinese rural residents) that the relationship of mutual support and trust between villagers and village cadres brought higher subjective well-being. Zhang and Yang (2015) found that political trust directly affects the subjective evaluation of rural residents. Accordingly, this paper evaluated the first hypothesis:

Hypothesis 1. Social trust increases the happiness of Chinese rural residents.

The influence of social capital on happiness. Bourdieu, Richardson (1986) developed the concept of social capital, noting that social capital is a collection of actual or potential resources provided by close and enduring networks of relationships. Lin (2002) considered social capital as consisting of resources embedded within an individual's social network. Putnam (2001) proposed the definition of social capital by merging the micro and macro perspectives, believing that social capital refers to the social network that can improve economic efficiency through coordinated actions. Putnam (2001) distinguished two forms of civic engagement, which he referred to as civic participation (neighborhood organizations, choral groups, cooperatives, sports clubs) and political participation (voting, political discussion, etc.) are the foundation of social capital. Aside from its vague conceptualization evolved from sociology (Bjørnskov and Sønderskov, 2013), social capital has proven to be a powerful concept in economic research on the individual level. Putnam's definition of social capital is widely accepted and highly measurable, which is conducive to exploring the impact of social capital on the subjective well-being of rural residents.

According to resource-oriented theories in health psychology (Antonovsky, 1987), individuals require both internal and external (social) resources to cope with stressors and sustain happiness. Besides, the need to belong theory claims humans have an underlying desire for social contact (Glatz and Bodi-Fernandez, 2020). As a resource endowment, social capital is considered an important factor influencing well-being (Li and Chen, 2012). Bjørnskov (2003), one of the first scholars to introduce social capital into empirical studies of well-being, found that social capital is a key component in explaining the disparities in the well-being of residents of different countries. The study of the impact of social capital on happiness is relatively new but rapidly growing. Some scholars found that the impact of social capital on SWB differed by group. For instance, Elgar et al. (2011) indicated that social capital results in greater SWB for women and older adults. Using US survey data, Mair and Thivierge-Rikard (2010) found evidence that informal close ties (such as visiting friends, neighbors, or relatives) have a stronger positive effect on the subjective well-being of older rural individuals than urban ones. In addition, population-based research in Japan, the United States, and Europe have indicated that social capital has a strong correlation with subjective well-being (Helliwell et al., 2004; Helliwell and Huang, 2011; Tokuda and Inoguchi, 2017), as it has positive effects on people's physical and mental health (Helliwell et al., 2004; Yip et al., 2007). It also has been argued that social capital contributes to the formation of positive social interactions, hence facilitating coping with daily stressors (Xue and Gong, 2015) and lessening the detrimental impact of the wealth gap on residents' happiness (Yang et al., 2019). Despite the growing interest in determining the relationship between social capital and SWB in Western countries, there is a dearth of empirical research on this topic among Chinese rural residents. Do the empirical relationships equally well apply to rural China?

Some scholars have attempted to answer this question. Wang (2016) found that social capital had a positive and significant impact on the subjective well-being of rural residents in China, with a greater effect on farmers with poor economic conditions. Using data from the Shandong Province of China, Yip et al. (2007) found that social capital was strongly associated with subjective well-being at the individual and village levels. However, the sample is restricted to Shandong Province, limiting the conclusion's broad applicability. In addition, they should have emphasized the significance of social networks, the essential kind of social capital. Wu et al. (2009) utilized a methodology comparable to that of Yip et al. (2007) to examine the impact of social capital on the happiness of landless farmers in Hangzhou. They found that social capital contributes to improving landless farmers' well-being. Pei (2010) developed a structural equation model using 344 rural survey responses from western Zhejiang to examine the relationship between family social capital and happiness. The results showed that social capital could provide a "help effect" that mitigates the detrimental effects of anxiety on the well-being of rural residents. Using 9200 observations from CHIPs of 2002 and an ordered logistic regression model, Zhang et al. (2020) provided evidence that the level of happiness among farmers is positively correlated with higher income and greater participation in social and reciprocal activities. That is, social capital is a strong predictor of happiness. A similar investigation by Tenzin et al. (2015) supported the finding. It indicated that social capital substantially influences alleviating poverty, such as reducing farmers' income inequality, thereby improving their well-being. In addition, a few kinds of literature included social capital or a specific dimension of social capital as a control variable when studying the factors that affect happiness (Wang, 2016). Although research has extensively investigated the relationship between social capital and subjective well-being, many studies are general and offer mainly regional perspectives. Given these considerations, this paper evaluated the following hypotheses:

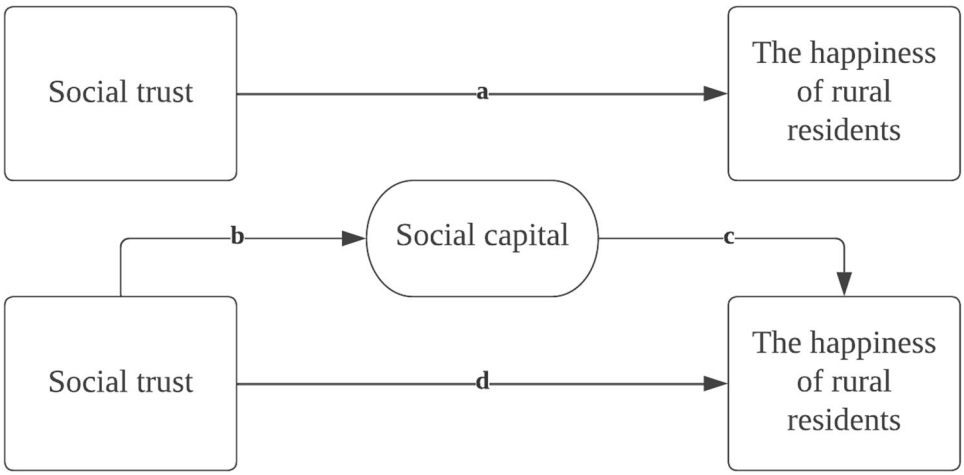

Fig. 1 Path diagram for the mediating effect of social capital. The research model shows the path analysis used to test the direct influence of trust on the happiness of rural residents (path a) and social capital (path b), as well as testing the indirect influence of trust on the happiness of rural residents via social capital (paths c and d).

Hypothesis 2. Social capital increases the happiness of Chinese rural residents.

The influence of trust on happiness through social capital as a mediator. Existing research on the relationship between trust and happiness pays less attention to the intermediary transmission role of social capital. The origin of social capital has been controversial, and various scholarly perspectives have been presented. Some social capital theorists emphasize the importance of social networks in forming social capital (Putnam, 2001). Bourdieu and Richardson (1986) pointed out that social capital is an institutionalized network constructed through a certain investment strategy. The main forms of social capital are information networks and multifunctional social organizations, as proposed by Coleman (1988). These networks, which Putnam (2001) emphasized as civic engagement networks have a significant impact on the effectiveness of output and welfare. To Newton (2001), formal or informal social networks must be based on reciprocity and trust norms. Therefore, social capital refers to the popularity of trust among members of a society or a specific group (Fukuyama, 1996).

Trust is an important factor in social communication, deemed a crucial synthetic force of society (Joseph and Shirley, 2015). The horizons and dimensions of trust research are constantly expanding, and it has become "a prerequisite for routine interactions" (Zucker, 1986) and "fundamental factors that stabilize social networks" (Luhmann, 2018). In addition, the research on cooperative farmer organizations showed that social trust is essential for social capital's emergence, survival, and development (Ostrom and Ahn, 2003). Therefore, social trust strengthens the social cohesion of the entire society, encourages the formation of dense social networks, and ultimately contributes to the prosperity of social capital. Social networks' intrinsic value may increase individuals' subjective well-being (Helliwell and Putnam, 2004).

Existing studies indicate that social capital primarily affects residents' happiness in two ways: First, the means of enhancing mental health. As an important form of social capital, social networks provide the foundation for emotional communication and social support (Xue and Gong, 2015), which could facilitate positive psychological states such as positive emotions and high self-esteem, thereby increasing well-being (Cohen, 2004). Second, the way to improve economic benefits. Social capital in terms of "membership and active participation in civil life", "contact between social members", and "mutual benefit criteria and cooperative behavior within groups" can help to gain corresponding advantages in off-farm employment opportunities (Zhang and Li, 2003), income (Pan, 2011) and reduction of the poverty incidence (Cleaver, 2005), as well as alleviate the credit constraints of rural residents and promote rural self-entrepreneurship (Peng, 2004). This could improve their economic status, thereby reducing the stress-related negative effects. By influencing social capital, social trust can indirectly affect the happiness of individuals. Therefore, it is essential to consider the significant conduction effect of social capital when identifying the influence of social trust on residents' happiness. The following hypotheses were examined:

Hypothesis 3. Trust has a significant positive impact on the happiness of rural residents through social capital.

There are two research gaps. First, most were limited to specific areas or migrant workers in cities and were centered on the elderly but rarely considered rural residents. Meanwhile, previous research only captured informal social capital, namely friends, relatives, and neighbors, and needed to account for the different effects of social capital from formal institutions (i.e., community). Second, previous research on SWB has utilized social capital as a control variable or analyzed the influence of social trust on SWB directly. It is important to add to the current body of research by investigating the mediating effects of social capital in rural China, as measured by social and political relationships. Summarizing, the study extends research on (1) employing national micro-survey data to capture the whole Chinese rural residents; (2) examining social capital as mediating variable; and (3) focusing on the role of social networks as the most important form of social capital. We also emphasize that we have a much larger sample than that most previous studies in China. Several provinces were selected to obtain research data because China's political and social institutions in different domains are in the process of development and the distribution of benefits is highly uneven in both north-south and east-west comparisons.

The research model (see Fig. 1) shows the path analysis used to test the direct influence of trust on the happiness of rural residents (path a) and social capital (path b), as well as testing the indirect influence of trust on the happiness of rural residents via social capital (paths c and d).

Research methods

Data sources. The data come from the "Chinese General Social Survey" (CGSS), one nationally representative social survey that employs stratified four-stage unequal probability sampling. The comprehensive survey contains a wide range of demographic and socioeconomic characteristics for individuals, households, communities, and social, life and employment situations of urban and rural residents in China and their attitudes towards hot social issues. The data from 2012, 2013, and 2015 are available, covering 32 provinces (municipalities, autonomous regions) across the country. Considering that this paper studies the well-being of rural residents, the urban sample is deleted, and according to the selected variables, the "do not know", "inapplicable" and "refused to answer" samples are deleted, and 10,014 samples are acknowledged as valid for the research.

Measures

Happiness. Subjective well-being (SWB) is measured using an adapted version of World Value Surveys (WVS) (Jorm and Ryan, 2014). The specific item is: "Taking all things together, would you say you are happy", which has been used in all six waves of WVS. Despite the brevity, the test–retest reliability has also proven high (Veenhoven, 1996). Given such wide usage and high reliability, the same happiness question in CGSS was used, and coded the answers from 1 (not at all happy) to 5 (very unhappy) for data analyses.

Trust. Bjørnskov (2006), using an international sample of more than 80 countries, found a positive relationship between generalized social trust ("In general, do you think that most people can be trusted, or can't you be too careful?") and life satisfaction. As a reference, "trust" is obtained by summing the assignment options of the two questions regarding "In general, do you think that most people can be trusted" and "Others will find ways to take advantage of you if you are not careful". The latter was recoded from 1 = strongly agree to 5 = strongly disagree.

Social capital. This paper employs the social capital definitions of Coleman (1988) and Putnam (2001). Coleman (1988) conceptualized social capital as having three forms: information networks, multifunctional social organizations, and intentionally created organizations. Putnam (2001) refers to civic engagement networks. It may be mobile, disorganized, and informal in the form of overlapping family, friendship, or community ties, such as social activities, or it may consist of a number of highly organized, institutionalized, and well-connected groups. Thus, "social capital" is represented by social and political relationships.

Chinese rural areas focus more on constructing family-based social networks (Knight and Yueh, 2008). With a growing number of studies on spatial variation in subjective well-being, the neighborhood, an essential space of daily life that significantly shapes individual living environments and life opportunities, has gained significance in analyzing subjective well-being (Gao and Zhao, 2022). "Reciprocity" is a common way for rural Chinese to maintain relationships with family and friends. Therefore, the dimension of social relations was measured by the sum of the frequency assignments for "friends gathering", "relatives gathering", "watching sports games" and "watching concerts" in descending order.

Given that social capital is measured by membership in community associations. Greater social capital is correlated with greater access to resources through networking in these activities. Thus the political relationship is obtained by summing the four question assignment options. In "political affiliation", "communist" is assigned a value of "1", and the others are "0". The other three questions, "whether refer to the trade union", "whether is there any religious belief", and "whether to vote in the collective election of the village", are assigned values. "Yes" is "1" and "No" is "0" (Putnam, 2001). Subsequently, the entropy evaluation method (EEM)[3] is adopted to calculate the social capital of interviewees based on their social and political connections.

Basic variables. Subjective well-being is also influenced by factors that are non-economic or potentially so, such as age, sex, marital status, health status, education, and religion (Helliwell et al., 2004). Drawing on the literature and the descriptive evidence of the survey, we apply the following control variables, including items related to socioeconomic and demographic characteristics. A summary of the variables is described in Table 1.

Empirical model and method. This paper refers to the stepwise causality of Baron and Kenny (1986) and Wen et al. (2004). The error rates of type I and type II in the mediation effect test of this method are relatively low, allowing for a more intuitive interpretation of both partial or complete intermediary roles (see Fig. 2). The model is constructed as follows:

$$\text{Happiness} = \partial_1 + \beta_1 \text{Trust} + \beta_2 \text{Controls} + \varepsilon_1 \quad (1)$$

$$\text{Social capital} = \partial_2 + \gamma_1 \text{Trust} + \gamma_2 \text{Controls} + \varepsilon_2 \quad (2)$$

$$\text{Happiness} = \partial_3 + \delta_1 \text{Trust} + \delta_2 \text{Social capital} + \delta_3 \text{Controls} + \varepsilon_3 \quad (3)$$

In a mediating effect model, if the independent variable X affects the dependent variable Y through the influencing variable M, then M is called a mediating variable. In this path, the effect of X on Y is called the total effect. The total effect is divided into direct and indirect effects, and the mediating effect belongs to the indirect effect (Wen et al., 2004). Specifically, the coefficient β_1 in Model (1) is the total effect of trust on happiness, the coefficient δ_1 in Model (3) is the direct effect of trust on subjective well-being, and $\gamma_1 * \beta_2$ is the mediating effect of social capital, and ε represents an error term.

The relationships among total effect, direct effect, and indirect effect are

$$\beta_1 = \delta_1 + \gamma_1 \delta_2$$

The intermediary degree M_T of social capital is

$$M_T = \gamma_1 \delta_2 / \beta 1$$

For the test of mediating effects, the coefficient β_1 in Model (1) is first tested to see if it is significant. If significant, the aggregate effect is present. Next, the coefficients γ_2 and δ_2 are tested using the stepwise method (Baron and Kenny, 1986; Wen et al., 2004). If both are significant, then a mediating effect exists. However, it is important to note that the power of the stepwise method is low. That is, the actual product of $\gamma_2 * \delta_2$ is significant, while the sequential test may not be significant (Fritz and Mackinnon, 2007; Mackinnon et al., 2002). Therefore, if at least one of the tests is insignificant using the stepwise method, the Bootstrap or Sobel test should be continued to test the coefficient product's significance directly. (Wen and Ye, 2014; Lau and Cheung, 2012). Finally, test whether δ_1 is significant in Model (3). If significant, a direct effect exists.

Since "happiness" is an ordinal discrete variable, the ordered-probit model was employed to estimate the model presented above. In the empirical studies of happiness, Ferrer-i-Carbonell and Frijters (2004) found that there is no discernible difference in the significance and estimation results of the coefficients between

Table 1 Variable definitions.

Category	Variables	Definition
Predicted variables	Happiness	5 point scale, very unhappy = 1, very happy = 5
Explanatory variables	Trust	The degree of trust in most people and perceptions of others taking advantage
	Social capital	Apply EEM to weigh social and political relations
Controlled variable: individual level	Age	Age of residents (year)
	Gender	1 if the resident is male, 0 otherwise
	Nation	1 if the Han, 0 otherwise
	Ln (income)	The natural logarithm of respondents' total income last year
	Marry	1 if married (Cohabitation, first marriage with a spouse, remarriage with a spouse), 0 otherwise (Unmarried, separated but not divorced, divorced, widowed)
	Job	1 if the resident is employed, 0 otherwise
	Social insurance	1 if the resident participates in social security, 0 otherwise
	Health	5 point scale, very unhealthy = 1, very healthy = 5
	Edu[a]	No education = 1, literacy class = 2, elementary school = 3, junior high school = 4, vocational high school = 5, general high school = 6, technical secondary school = 7, technical school = 8, college (adult higher education) = 9, college (Regular higher education) = 10, University undergraduate (adult higher education) = 11, University undergraduate (regular higher education) = 12, Postgraduate and above = 13
	Region	According to the National Bureau of Statistics, the region is divided into four categories: East, West, Middle, and North-west. In the empirical results, West is used as the reference group.
Controlled variable: family level	House	The number of real estate properties owned by the respondent's family
	Car	1 if the resident owns a car, 0 otherwise
	Investment	1 if the resident has investments, 0 otherwise

[a]The highest education level of migrant workers is given in the questionnaire and the years of education of the individual are not involved. Therefore, the education level of farmers is divided into 13 categories. In the empirical results, no education is used as the reference group.

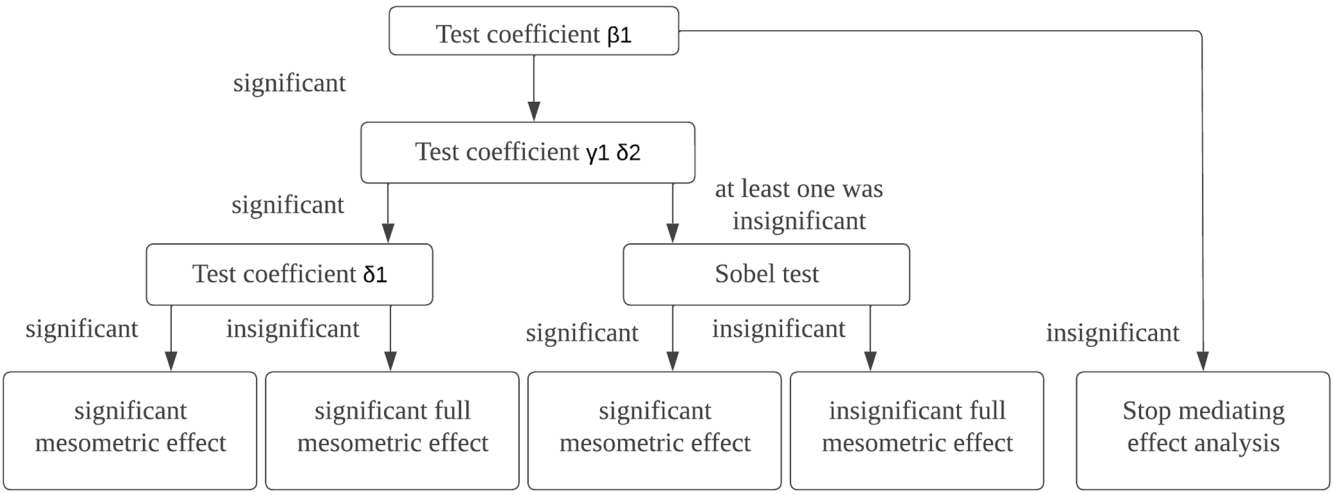

Fig. 2 Intermediary effect test program diagram. For the test of mediating effects, the coefficient β1 in Model (1) is first tested to see if it is significant. If significant, the aggregate effect is present. Next, the coefficients γ2 and δ2 are tested using the stepwise method (Baron and Kenny, 1986; Wen et al., 2004). If both are significant, then a mediating effect exists. However, it is important to note that the power of the stepwise method is low. That is, the actual product of γ2*δ2 is significant, while the sequential test may not be significant (Fritz and Mackinnon, 2007; Mackinnon et al., 2002). Therefore, if at least one of the tests is insignificant using the stepwise method, the Bootstrap or Sobel test should be continued to test the coefficient product's significance directly. (Wen and Ye 2014; Lau and Cheung, 2012). Finally, test whether δ1 is significant in Model (3). If significant, a direct effect exists.

the two methods, despite the fact that some researchers consider responses to happiness questions to be interpersonally cardinally comparable and typically employ OLS regressions. While social capital is a continuous variable, Model (2) adopts ordinary least squares for regression, and robust standard error estimators were used for all estimation results (the same below).

Results analysis

Descriptive statistics. In terms of the question of "whether life is happy", 14.73% of respondents felt "very happy", 60.62% reported "somewhat happy", and 15.83% of respondents claimed "no opinion". In comparison, only 7.38% and 1.448% reported "somewhat unhappy" and "very unhappy", respectively. The distribution of happiness shows that approximately 75% of the respondents reported a clear sense of happiness (see Fig. 3), indicating that rural residents' happiness is generally favorable. The mean was 3.798 in general (Table 2).

Descriptive statistics are displayed in Table 2. 10,014 individuals aged 17–90 were interviewed, and the average age was approximately 47. The majority of participants were male and belonged to Han ethnic group, with 87.2% married

respondents. The respondents were generally poorly educated, with an average score of 3.662. This part of the population is generally less educated due to historical reasons. Moreover, there is still a significant gap in their allowance after taking the natural logarithm of the total income of the respondents the previous year. The average health status was 3.657, and the median was 4, indicating that most rural residents were healthy. After recoding the availability of work, the results showed that rural residents with jobs accounted for 89.7% of the total sample. The average social security was 1.636, and most rural residents had purchased 1–2 social insurance. The average number of houses owned by rural families was 1.110. Table 2 also shows that only 10% of rural families owned family cars, and 98% had engaged in investment activities.

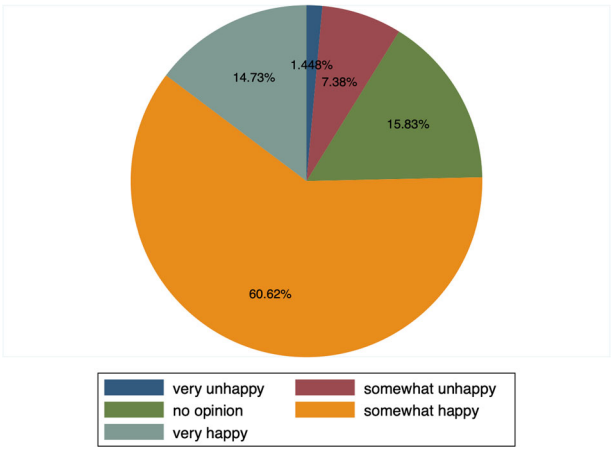

Fig. 3 Happiness distribution for rural residents. In terms of the question of "whether life is happy", 14.73% of respondents felt "very happy", 60.62% reported "somewhat happy", and 15.83% of respondents claimed "no opinion". In comparison, only 7.38% and 1.448% reported "somewhat unhappy" and "very unhappy", respectively. The distribution of happiness shows that approximately 75% of the respondents reported a clear sense of happiness, indicating that rural residents' happiness is generally favorable.

Empirical analysis. We begin with the basic variables that appear in almost all happiness functions worldwide (Table 3). Older residents tend to report higher happiness scores than their younger counterparts. Women report higher happiness than men. One interpretation is that men should bear more economic pressure because of a traditional view of "breadwinning men and homeworking women" in rural China. The dummy variable denoting a person from an ethnic minority is significantly positive. Ln(income) has a significant coefficient, meaning the "Easterlin paradox" does not appear in rural China. Due to the development of the market economy and the popularization of policies that benefit farmers under China's realization of a moderately prosperous society, farmers' disposable income has grown steadily. According to statistics from the Bureau of Statistics, excluding the impact of price factors, the growth rate of farmers' income (11.92%) was relatively slow compared with consumption expenditure (12.85%). Some peasant families may also face debt distress due to the sustained and rapid growth of basic consumption expenditures such as personal exchanges, education, and medical care, which means that rural residents' disposable income is still low. Therefore, the marginal contribution of farmers' income increase to their happiness is still significant. As expected, working enters with a significantly negative coefficient, possibly due to adverse factors such as tough working conditions, relatively long working hours, unsteady employment, and the lack of guarantees and welfare, resulting in poor-quality jobs. Consequently, working will harm the well-being of rural residents once these environmental factors exceed a specific critical value.

The coefficient for educational attainment is positive but not significant. A possible explanation is that although higher educational attainment implies higher income and social status, people with higher educational attainment also have higher expectations which do not necessarily lead to higher subjective well-being. People with higher self-esteem seem less likely to suffer from depression (Dolan et al., 2008).

Likewise, both net financial assets and health have generally significant coefficients. With single status as the reference, marriage is blissful in rural China. For rural dwellers, having more social security means more robust life security, improving one's ability to withstand risks and happiness. These results for

Table 2 Descriptive text statistics of variables ($n = 10,014$).

Variables	Samples	Mean	S.d.	Minimum	Median	Maximum
Happiness	10,014	3.798	0.831	1	4	5
Trust	10,014	6.429	1.569	2	6	10
Social capital	10,014	0.255	0.107	0	0.246	0.839
Social relations	10,014	6.887	1.987	4	6	20
Political relations	10,014	1.554	0.689	0	2	4
Age	10,014	47.16	13.59	17	47	90
Gender	10,014	0.572	0.495	0	1	1
Nation	10,014	0.888	0.315	0	1	1
Edu	10,014	3.662	1.902	1	4	13
ln(income)	10,014	9.129	1.185	2.996	9.210	13.82
Health	10,014	3.657	1.087	1	4	5
Marry	10,014	0.872	0.334	0	1	1
House	10,014	1.110	0.561	0	1	30
Job	10,014	0.897	0.304	0	1	1
Car	10,014	0.100	0.300	0	0	1
Investment	10,014	0.980	0.141	0	1	1
Security	10,014	1.636	0.688	0	2	4
East	2207	0.780	0.415	0	1	1
Middle	2864	0.714	0.452	0	1	1
North-east	1282	0.872	0.334	0	1	1

age, gender, income, and health are found in almost all happiness studies, giving our study credence.

Interestingly, rural residents in the western region are happier. This might reflect the extent of government funding of public services and infrastructure for rural populations, in which the poorest households and those in the poorest provinces reap the most benefits. In addition, happiness is also different. For example, going from hunger to fullness is not the same as going from full to well-fed, so people in the west may be more sensitive to perceptions of happiness. Also, due to "the development of the western region in China", the western region has developed significantly, and the price level maintained a few years ago. Therefore, life satisfaction is relatively high, which has become the home field of talent returning.

The results support the path diagram in Fig. 1. Trust ($\beta = 0.186$, $\rho < 0.01$) is positively associated with happiness. Second, trust has a significant positive effect on ($\beta = 0.022$, $\rho < 0.05$) social capital. Third, trust ($\beta = 0.185 < 0.186$, $\rho < 0.01$) and social capital ($\beta = 0.055$, $\rho < 0.01$) have a significant positive impact on the well-being of rural residents in the Model (3), suggesting that trust affects happiness partly through social capital, but also has significant independent effects. Meanwhile, the Sobel test in Model (2) and the bootstrap method (Table 4) confirmed the intermediary role of social capital. Therefore, an increase in social capital contributes to farmers' subjective well-being, which may be explained by the fact that contact with friends enhances social identity and leverages 'relationships' to promote off-farm employment and income growth (Li and Chen, 2012).

Table 3 Oprobit and OLS regression analyses on happiness by trust and social capital.

Variables	Model 1	Model 2	Model 3
	Happiness	Social capital	Happiness
Trust	0.186***	0.022**	0.185***
	(0.012)	(0.010)	(0.012)
Social capital			0.055***
			(0.013)
Age	0.091***	−0.009	0.091***
	(0.015)	(0.012)	(0.015)
Gender	−0.080***	0.149***	−0.088***
	(0.025)	(0.020)	(0.025)
Nation	−0.098**	0.114***	−0.105***
	(0.039)	(0.033)	(0.039)
Edu	0.016	0.197***	0.006
	(0.013)	(0.012)	(0.014)
Income	0.069***	0.048***	0.066***
	(0.015)	(0.012)	(0.015)
Health	0.252***	0.087***	0.247***
	(0.014)	(0.011)	(0.014)
Marry	0.241***	0.005	0.241***
	(0.036)	(0.029)	(0.036)
House	0.146***	0.081***	0.141***
	(0.043)	(0.025)	(0.042)
Job	−0.113***	0.102***	−0.119***
	(0.038)	(0.031)	(0.038)
Car	0.297***	0.159***	0.288***
	(0.039)	(0.037)	(0.039)
Investment	0.118	−0.272***	0.133*
	(0.077)	(0.083)	(0.077)
Security	0.085***	0.116***	0.078***
	(0.017)	(0.015)	(0.017)
East	−0.066**	−0.030	−0.065**
	(0.033)	(0.028)	(0.033)
Middle	0.106***	0.149***	0.098***
	(0.028)	(0.023)	(0.028)
North-east	−0.203***	−0.118***	−0.197***
	(0.039)	(0.032)	(0.039)
Constant	−0.292**		
	(0.116)		
Sobel test	0.0011**		
Observations	10,014	10,014	10,014

*$P < 0.1$; **$P < 0.05$; ***$P < 0.01$.

Further analysis. The above analysis has confirmed a significant positive relationship between trust, social capital, and farmers' happiness. A grouping test is necessary to test whether there is heterogeneity in this relationship under different ages and market competition. Columns (1)–(3) of Table 5 show a significant association between trust and rural residents' happiness toward all ages. However, the impact of social capital on rural residents' well-being is different. Social capital greatly affects the well-being of rural residents between the ages of 30 and 59. Neither the OLS nor the Sobel test found that social capital had a mediating effect on people under 30. This may be because most rural residents younger than 30 are in the youth stage, so their social relations are being built and suffer from a lack of political relations. Social capital is not functional for them.

Besides, considering the objective situation in rural areas, young people usually go to school or work outside except for the busy agricultural season. They are prone to spend the holidays on the spot due to transportation costs. Even returns to his hometown during the busy farming season, they would help the family handle the crops and return to the city immediately, and rarely has the opportunity to visit with relatives, friends, and neighbors. In contrast, for rural residents older than 30, their social connections peak at this stage, and they become more enthusiastic about participation in public affairs. People need to run relationships and monetize them. The impact of social capital on happiness has gradually become more prominent.

According to the market-oriented index of Chinese provinces compiled by Fan et al. (2017), rural residents living in areas above the average value are defined as the high-market competition group. Those below the average value are defined as the low-market competition group. According to Columns (4) and (5) of Table 5, trust and social capital are positively correlated with rural residents' happiness in both groups. The intermediary effect of social capital in high-market competition areas is significant. This

Table 4 Summary statistics of the bootstrap method.

	Observed		Bootstrap			
	Coef.	Bias	Std. err.	[95% Conf. Interval]		
r(ind_eff)	0.00113532	−0.0000195	0.00057565	0.0000587	0.0023684	(P)
				0.0001678	0.0025603	(BC)
r(dir_eff)	0.15116851	−0.0000188	0.01007601	0.1311723	0.1703598	(P)
				0.1315878	0.1707463	(BC)

(P) percentile confidence interval. (BC) bias-corrected confidence interval

Table 5 Group test on happiness by trust and social capital.

	(1) Under 30	(2) 30–59 (Including 30)	(3) Above 60 (including 60)	(4) Low market competition	(7) High market competition
Trust	0.093***	0.117***	0.145***	0.118***	0.119***
	(0.021)	(0.009)	(0.018)	(0.010)	(0.012)
Social capital	0.136	0.510***	0.617**	0.512***	0.541***
	(0.299)	(0.144)	(0.272)	(0.159)	(0.174)
Age	−0.041***	0.008***	0.010*	0.007***	0.006***
	(0.011)	(0.002)	(0.005)	(0.001)	(0.002)
Gender	0.112*	−0.125***	−0.153***	−0.124***	−0.038
	(0.066)	(0.031)	(0.057)	(0.034)	(0.037)
Nation	−0.254**	−0.116**	0.007	−0.124***	−0.016
	(0.105)	(0.046)	(0.091)	(0.044)	(0.073)
Edu	0.001	−0.005	0.031	0.004	0.004
	(0.013)	(0.009)	(0.021)	(0.010)	(0.010)
Income	0.089**	0.089***	0.039	0.096***	0.006
	(0.035)	(0.016)	(0.026)	(0.017)	(0.018)
Health	0.145***	0.229***	0.235***	0.210***	0.250***
	(0.041)	(0.015)	(0.027)	(0.017)	(0.019)
Marry	0.482***	0.544***	0.130*	0.240***	0.238***
	(0.079)	(0.059)	(0.068)	(0.051)	(0.052)
House	0.067	0.221***	0.120**	0.094**	0.229***
	(0.052)	(0.031)	(0.060)	(0.042)	(0.039)
Job	−0.236**	−0.046	−0.042	−0.072	−0.184***
	(0.093)	(0.051)	(0.070)	(0.053)	(0.055)
Car	0.240***	0.264***	0.313**	0.273***	0.302***
	(0.092)	(0.047)	(0.122)	(0.054)	(0.058)
Investment	0.209	0.128	−0.102	0.040	0.150
	(0.163)	(0.093)	(0.159)	(0.138)	(0.095)
Security	0.047	0.091***	0.112**	0.063***	0.082***
	(0.038)	(0.021)	(0.044)	(0.024)	(0.024)
East	−0.093	−0.080**	0.050	−0.102*	−0.219***
	(0.088)	(0.040)	(0.074)	(0.062)	(0.055)
Middle	−0.078	0.138***	0.126**	0.118***	−0.028
	(0.088)	(0.035)	(0.057)	(0.036)	(0.053)
North-east	−0.352***	−0.214***	−0.087	−0.144***	−0.367***
	(0.101)	(0.047)	(0.099)	(0.045)	(0.074)
Sobel test	0.00057	0.00054*	0.00059	0.00053	0.00071*
Observations	1330	6781	2066	5402	4612
Mesmeric effect	No	Partial	No	No	Partial

*$P < 0.1$; **$P < 0.05$; ***$P < 0.01$.

result is consistent with the result of the Sobel test. In China, the gradual reform oriented towards marketization is the cause of regional differences in economic development. Differences in the degree of market-oriented competition not only lead to differences in the contribution of factors of production to resource allocation but also affect individual behavioral characteristics. Rural residents' happiness is derived from total income and is more strongly influenced by social capital in areas with higher marketization. Another possible explanation is that social capital has more ways to grow and perform effectively in rural areas with better development. In comparison, social capital is constructed mainly by kinship with slow growth and less effect in areas with slower development.

Robustness tests. In this section, we report tests of the robustness of our results by replacing the measurement indicators of trust and rural residents' well-being with the questions "your degree of trust in strangers in social contact" and "the degree of fairness in society from your perspective" respectively. The degrees of trust and fairness are assigned 1–5, from low to high.

Due to different measurements of "trust in strangers" over the three years (a 4-level scale was used in 2012, while a 5-level scale was used in 2013 and 2015), a robustness analysis was performed using the CGSS data in 2013 and 2015. The results (Table 6) show that "trust in strangers" and social capital have a significant positive effect on the perception of fairness at the 1% level. Social capital also has a partial mediating effect ($\beta = 0.418$) on rural residents' perception of fairness, consistent with the previous data regression results (Table 3). The above test further verified the hypothesis of this study.

Discussion

This study focused on social trust, social capital, and SWB in rural China. We explored the significant impact of social trust and social capital on SWB. The results demonstrate that social trust and social capital had significant positive impacts on the happiness of rural residents, supporting theoretical hypotheses. Another contribution of this study compared with previous studies concerns the mediating effect of social capital. To thoroughly test the theoretical hypotheses, we examined the effect of trust in

Table 6 Robustness test of social equity by trust and social capital.

Variables	(1)	(2)	(3)
	Social equity	Social capital	Social equity
Trust in strangers	0.082***	0.009***	0.078***
	(0.014)	(0.001)	(0.014)
Social capital			0.418***
			(0.142)
Age	0.015***	0.000	0.014***
	(0.001)	(0.000)	(0.001)
Gender	0.028	0.011***	0.023
	(0.030)	(0.003)	(0.030)
Nation	−0.122***	0.006	−0.125***
	(0.047)	(0.005)	(0.047)
Edu	−0.000	0.011***	−0.005
	(0.008)	(0.001)	(0.008)
Income	−0.006	0.004***	−0.008
	(0.015)	(0.001)	(0.015)
Health	0.073***	0.007***	0.070***
	(0.015)	(0.001)	(0.015)
Marry	−0.014	−0.002	−0.013
	(0.041)	(0.004)	(0.041)
House	0.042**	0.010**	0.038**
	(0.019)	(0.004)	(0.019)
Job	−0.160***	0.018***	−0.168***
	(0.043)	(0.004)	(0.044)
Car	0.055	0.011**	0.050
	(0.047)	(0.005)	(0.047)
Investment	0.040	−0.032***	0.054
	(0.100)	(0.010)	(0.100)
Guarantee	0.096***	0.012***	0.091***
	(0.021)	(0.002)	(0.021)
East	0.243***	−0.004	0.245***
	(0.040)	(0.004)	(0.039)
Middle	0.243***	0.015***	0.236***
	(0.036)	(0.003)	(0.036)
North-east	0.021	−0.013***	0.027
	(0.047)	(0.004)	(0.047)
Constant term		0.104***	
		(0.023)	
Sobel test	0.00338***		
Observations	6120	6120	6120

Due to the replacement of indicators, invalid data from different indicators resulted in different sample sizes of regression.
*$P < 0.1$ **$P < 0.05$; ***$P < 0.01$.

strangers and social capital on the perception of fairness, and the results further verified the hypotheses.

As the "capital for the poor," social capital significantly impacts Chinese rural residents more than urban residents. The social networks of rural residents are relatively stable and closed. Economically underprivileged people, such as those with low income or education, are often geographically restricted in social interactions (Ellen and Turner, 1997). They are limited to a single information channel, such as relatives, friends, and village officials, which relies on the community as the primary source of information, resources, services, and opportunities (Zhang et al., 2020). Consequently, social capital based on geographical and blood ties promotes information sharing and resource allocation and is the foundation for informal organizations. Moreover, farmers experiencing "identity transformation" may suffer from life setbacks and become pessimistic due to China's social and economic transformation. Social capital can facilitate life enhancement and the alleviation of stress.

Trust enables the maintenance of peaceful and long-lasting social relationships, facilitating the development of cooperative behavior and, ultimately, the growth of social capital. Like conventional capital for borrowers, social capital serves as collateral for those lacking access to conventional credit markets. Without material possessions as collateral, the participants effectively used their social connections as collateral. Therefore, Chinese villagers who rely on social relations prefer interpersonal relationships to guarantee transactions or cooperation. Individuals or groups with more reserves of social networks in the face of poverty and fragile environments tend to have an advantage in resolving disputes and seizing new opportunities, thereby improving self-esteem, enhancing the capacity to resist risks, and subsequently affecting people's happiness.

The control variables' effects on well-being also answer the questions posed in the section "Introduction". First, the data set displays regularities that are common to many happiness studies around the world. For instance, being female, being married, and being in good health raise happiness. Second, the conventional economic variables raise happiness, in accordance with basic economic theory, but the contributions of investments are modest. Contrary to our prediction, education has no clear-cut direct beneficial effect in advancing happiness, probably because it raises aspirations relative to opportunities. In addition, this may be related to the larger social context and issues of modernity in China, such as the transition from a supply-led to a demand-led labor market, the pressure from changing working conditions, wage stagnation, and diminished opportunities.

Meanwhile, the rapid rise in house prices between 2015 and 2017 may have had a specific impact on graduates who were well-educated but unable to enter the housing market during that period, thus reducing overall well-being. Third, the important provincial differences in happiness may reflect the level of government funding for rural public services and infrastructure. In contrast, the western region is undergoing gradual development. The desire for economic development gradually expands to the spiritual level, making it more sensitive to happiness.

This study also provides valuable insights into the promotion of subjective well-being. The political relationships explored in this study are not unique to China (Zhang et al., 2020). They are prevalent in other developing countries, such as Tanzania, Madagascar, Cambodia, Kenya, and Bangladesh (Grootaert and Van Bastelaer, 2002), as well as India, which is comparable to China in terms of rural population density, economic volume, and developmental changes. They can access more resources via such social capital to improve health, education, literacy, sanitation, financial capital, and personal or community relationships, thereby enhancing the quality of life.

Despite rural dwellers' relative income poverty and low socioeconomic status in China's economic development, rural China does not appear to be a "Petri dish" for life dissatisfaction. The fundamental reasons why the majority of rural residents are content are that they have limited access to information and reference groups, and their incomes have risen in recent years. They are anticipated to increase and place a premium on personal and community relationships. In recent years, China has focused resources and workforce on specialty industries like rural specialty tourism, achieving localization and providing ideas for the economic growth of developing nations. However, it is worth noting that Chinese villages develop and improve their standard of living in this manner because China's large, stable, and efficient national market and logistics can reconcile their limited production and ensure the diversity of consumer demands. The countryside can utilize its inherent advantages to become prosperous and escape poverty. Due to China's distinctive characteristics, the Chinese experience applies only to developing countries with a certain political stability and infrastructure level.

Since the 1970s, the focus of economics research has evolved from the perspective of wealth to the perspective of happiness. The present study in developing countries proves that those important variables for happiness predicted by the economic theory have become relatively unimportant. Psychology and sociology are necessary for interpretation and comprehension.

Conclusions and policy recommendations

China's primary necessity is no longer an extensive material supply but spiritual needs. Spiritual well-being has rapidly become a topic of public concern and interest. The existing literature has studied the relationship between trust and subjective well-being, as well as the relationship between social capital and subjective well-being, which has achieved specific conclusions. However, more research needs to be conducted on the relationship between social trust, social capital, and subjective well-being. This paper fills these gaps. In addition, the results of the further analysis revealed that the mediating effects of social capital are significant for people 30 years old and older but not for people younger than 30. Regarding different degrees of market competition, the mediating effect in areas with high market competition is significant, but not in regions with low market competition.

Since social capital offers a potential intervention to enhance the positive effect of trust on individuals' subjective well-being, we believe that fostering social capital in rural areas will increase their role in promoting subjective well-being. Therefore, our findings suggest that policies aimed at improving environments that strengthen existing social networks and facilitate people's social interactions are likely to improve the well-being of the Chinese rural population:

First, the disadvantaged groups in the community, such as those with low income and low levels of education, are more dependent on the resources provided by the community than other groups. Therefore, village officials should frequently visit the elderly, women, and children to encourage participation in social activities and provide them with the necessary material and emotional support.

Second, organizing meaningful village council activities is a golden opportunity for exchanging ideas and a necessary condition for nurturing social capital. With proper interaction, it will be sufficient for villagers to obtain active social support. For example, good farmers who have moved to the city to find work can inform the village committee about jobs or job openings. Large-scale production farmers or breeders can introduce their experience in cultivation and animal husbandry. Village cadres can also explain the national welfare policies, such as the new rural pension insurance, to the village committee, making these policies subject to the scrutiny of the villagers. Individually encouraging community members to participate in neighborhood exchanges and community activities such as group dining and Rural Basketball Association (RBA).

Data availability

Raw data collected and analyzed in the current study are available in the Chinese General Social Survey: http://cgss.ruc.edu.cn/.

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Notes

1 The indicator was proposed by the Commission for the Measurement of Economic Performance and Social Progress, launched by then French President Nicolas Sarkozy in 2009. The Commission is comprised of 25 eminent social scientists from five nations (including economists, political scientists, psychologists, etc.) and five Nobel Prize winners in economics.

2 Statistical Communiqué of the People's Republic of China on the 2018 National Economic and Social Development.

3 The entropy evaluation method (EEM) can determine the weight of indicators according to the information provided by each indicator and the degree of connection, which effectively prevents the weight of each indicator from being affected by human factors.

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Additional information

Correspondence and requests for materials should be addressed to Chuqiao Zhang.