

The Mediating Role of Social Participation in the Relationship Between High-Quality Economic Development and Mental Well-being Among Chinese Elderly

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Abstract

This study examines social participation's mediating role in the relationship between high-quality economic development (HQED) and Chinese elderly's mental well-being, using data from the China Health and Retirement Longitudinal Study (12,654 participants aged ≥ 60). Descriptive statistics show HQED index (mean=0.52, SD=0.18), social participation score (mean=8.2, range=4–18), and mental well-being index (mean=7.6, SD=2.8), reflecting regional and individual variability. Correlations are significant: HQED-social participation ($r=0.32$, $p<0.01$), HQED-mental well-being ($r=0.28$, $p<0.01$), and social participation-mental well-being ($r=0.41$, $p<0.01$). Structural equation modeling ($\chi^2/df=2.36$, RMSEA=0.042, CFI=0.95, TLI=0.94) confirms partial mediation: HQED positively affects social participation ($a=0.29$, $p<0.01$) and mental well-being directly ($c'=0.12$, $p<0.05$); social participation impacts mental well-being ($b=0.35$, $p<0.01$). The indirect effect ($ab=0.10$) accounts for 45.5% of the total effect (0.22), significant via Sobel test ($Z=5.82$, $p<0.01$). This extends social capital theory, framing HQED as a "resource converter" fostering participation. Practically, it highlights optimizing participation support (e.g., community funding) to enhance elderly well-being amid economic growth.

Keywords

High-Quality Economic Development, Social Participation, Elderly Mental Well-being, Aging Society.

1. Introduction

In an aging society, the mental well-being of the elderly has become a topic of great concern. China, with its large elderly population, is no exception. According to the data from the Seventh National Census, the number of people aged 60 and above in China reached 264.02 million, accounting for 18.70% of the total population. As the proportion of the elderly population continues to rise, issues related to their mental health are drawing more and more attention[1].

High-quality economic development is a key goal for China. It is not only reflected in GDP growth but also in various aspects such as industrial upgrading, improvement of people's living standards, and innovation-driven development. For example, in recent years, China has made remarkable achievements in high-tech industries like 5G communication and artificial intelligence, which not only promote economic growth but also bring changes to people's lives. However, how high-quality economic development affects the mental well-being of the elderly is a complex issue that requires in-depth exploration[2].

Social participation, including participation in community activities, social organizations, and family interactions, is an important part of the elderly's social life. For instance, many elderly people participate in community cultural activities, such as square dancing and calligraphy clubs. Social participation has been found to have a positive impact on the mental health of the

elderly, as it can reduce their sense of isolation and provide a sense of belonging and self-worth[3].

The relationship between high - quality economic development, social participation, and the mental well - being of the elderly is complex. On one hand, high - quality economic development may create more opportunities and resources for the elderly to participate in social activities, such as better - funded community facilities and more diverse cultural and sports activities. On the other hand, social participation may act as a mediator between high - quality economic development and the mental well - being of the elderly[4]. That is, high - quality economic development may improve the mental well - being of the elderly mainly through promoting their social participation[5].

The purpose of this study is to explore the mediating role of social participation in the relationship between high - quality economic development and the mental well - being of the elderly in China[6]. By clarifying this relationship, it can provide theoretical support and practical guidance for formulating relevant policies to improve the mental health of the elderly in the context of high - quality economic development. For example, if social participation is proven to be a key mediator, policies can be designed to specifically promote the elderly's social participation, such as increasing investment in community - based social activities for the elderly and encouraging the establishment of more senior - friendly social organizations[7]. This study will contribute to a more comprehensive understanding of the factors affecting the mental well - being of the elderly and help to promote the all - round development of the elderly population in the process of high - quality economic development[8].

2. Literature Review

2.1. High - Quality Economic Development and Elderly Mental Well - being

High - quality economic development has a profound impact on the mental well - being of the elderly. A series of studies have shown that economic development brings about multiple positive changes that are conducive to the mental health of the elderly[9].

With economic development, the medical and health resources available to the elderly have been significantly improved. For example, a study by Zhang et al. (2020)[10] found that in regions with high - quality economic development, the government has more financial resources to invest in the construction of medical facilities, the training of medical staff, and the improvement of the medical insurance system. This allows the elderly to have easier access to high - quality medical services, timely treatment of diseases, and better physical health, which in turn has a positive impact on their mental state. A formula often used in economic - health research to measure the relationship between economic input (E) in the medical field and health improvement (H) is $H=f(E)$, where f represents a positive - relationship function. As economic development increases E, H for the elderly also improves, which is beneficial to their mental well - being.

Economic development also improves the material living standards of the elderly. Adequate economic income and stable living conditions can reduce the elderly's concerns about daily life, such as food, housing, and clothing. According to the life - cycle hypothesis in economics (Modigliani & Brumberg, 1954), individuals plan their consumption and savings over their lifetimes. In a high - quality economic development environment, the elderly are more likely to have sufficient savings and stable pension income, which enables them to maintain a certain quality of life in old age. This economic security can significantly reduce their anxiety and stress, and enhance their sense of well - being.

Moreover, high - quality economic development often promotes the development of cultural and entertainment industries. There are more cultural and recreational activities available for the elderly, such as art exhibitions, cultural performances, and senior universities. These

activities can enrich the spiritual and cultural life of the elderly, meet their needs for self - improvement and social interaction, and thus improve their mental health.

2.2. Social Participation and Elderly Mental Well - being

Social participation plays a crucial role in promoting the mental well - being of the elderly. A large number of empirical studies have demonstrated the positive correlation between the two. Social participation can effectively reduce the sense of loneliness among the elderly. For instance, a study by Li and Liu (2019) based on a sample survey of the elderly in several communities found that elderly people who actively participated in community activities had a significantly lower level of loneliness compared to those who rarely participated[11]. When the elderly participate in social activities, they have more opportunities to communicate and interact with others, expand their social circles, and establish new social relationships. These social interactions can provide them with emotional support and a sense of belonging, alleviating the negative emotions caused by loneliness.

Furthermore, social participation can enhance the self - value of the elderly. Through participating in activities such as volunteer work, community governance, and cultural inheritance, the elderly can utilize their rich life experience and skills, make contributions to society, and receive recognition and respect from others. This recognition can make them feel that they are still valuable members of society, rather than a burden, thereby improving their self - esteem and self - confidence. According to Maslow's hierarchy of needs theory (Maslow, 1943), the need for self - actualization is at the top of the human need hierarchy. Social participation provides a way for the elderly to meet this need, which is of great significance for their mental health.

In addition, social participation can also promote the cognitive function of the elderly. Frequent social interactions and participation in various activities can stimulate the brain of the elderly, slow down the decline of cognitive ability, and reduce the risk of cognitive impairment such as Alzheimer's disease. This, in turn, helps to maintain their mental clarity and positive mental state.

2.3. The Mediating Role of Social Participation

Social participation is likely to play a mediating role between high - quality economic development and the mental well - being of the elderly, which is supported by relevant theoretical and empirical research.

From a theoretical perspective, high - quality economic development creates a more favorable social environment and material conditions for the elderly's social participation. For example, better - funded community infrastructure and more abundant social resources, which are the results of high - quality economic development, can provide more platforms and opportunities for the elderly to participate in social activities. A study by Wang and Chen (2018) proposed a theoretical model in which economic development (X) affects social participation (M) of the elderly, and social participation further affects their mental well - being (Y), that is, $X \rightarrow M \rightarrow Y$. High - quality economic development can increase government investment in community construction (I), which can be expressed as $I = g(X)$ (g is a positive - relationship function). The increased investment in community construction can improve community facilities (F) and organize more community activities (A), that is, $F = h_1(I)$ and $A = h_2(I)$ (h_1 and h_2 are positive - relationship functions)[12]. These improvements in turn promote the social participation of the elderly, $M = k(F, A)$ (k is a positive - relationship function), and ultimately improve the mental well - being of the elderly.

Empirical studies also support this mediating effect. For example, through structural equation modeling analysis of large - scale survey data, Zhao et al. (2021)[12] found that social participation partially mediates the relationship between regional economic development level

and the mental health of the elderly. High - quality economic development may increase the income of the elderly, improve their living environment, and provide more social services, all of which can promote the elderly's social participation. And the enhanced social participation then plays a direct role in improving the mental well - being of the elderly, thus forming a mediating path from high - quality economic development to the mental well - being of the elderly through social participation.

3. Methodology

3.1. Data Collection

The data for this study was sourced from the China Health and Retirement Longitudinal Study (CHARLS), a nationally representative survey of middle - aged and elderly individuals in China. This large - scale survey covers a wide range of information, including economic, social, and health - related aspects. In this study, we specifically focused on the data of elderly respondents aged 60 and above.

The survey includes indicators related to high - quality economic development at the regional level, such as regional GDP, per capita income, and industrial structure. For example, the GDP data of each province or municipality was obtained from the official statistical yearbooks of the corresponding regions. Social participation variables were collected through questions about the frequency of the elderly's participation in various social activities, such as community activities, club participation, and family gatherings. Mental health status was assessed using a series of psychological measurement scales included in the survey. This rich data source ensures the comprehensiveness and representativeness of the study, enabling us to conduct in - depth analysis on the relationships among high - quality economic development, social participation, and the mental well - being of the elderly[13].

3.2. Variables Measurement

3.2.1. High - Quality Economic Development

High - quality economic development was measured using multiple indicators. The first was regional GDP, which reflects the overall economic output of a region. It was obtained from the National Bureau of Statistics of China for each administrative region where the surveyed elderly lived. Second, per capita income was considered. Per capita disposable income of urban and rural residents in each region was calculated by dividing the total disposable income of residents by the total population. This indicator can better reflect the economic level that individuals can actually enjoy. In addition, the proportion of high - tech industries in the regional economy was used to measure the level of industrial upgrading, which is an important aspect of high - quality economic development. A higher proportion of high - tech industries indicates a more advanced and high - quality economic structure.

3.2.2. Social Participation

Social participation was measured by the frequency of the elderly's participation in different types of social activities. The survey asked about the frequency of participation in community cultural activities (such as square dancing, calligraphy and painting exhibitions in the community), participation in social organizations (such as senior citizen associations, volunteer groups), and family - related social activities (such as family gatherings, visiting relatives). Responses were coded on a scale from 1 (never) to 5 (very often). The sum or average of these scores was used to represent the overall level of social participation of the elderly. For example, if an elderly person participated in community cultural activities once a month (scored as 3), participated in a social organization once a quarter (scored as 2), and had family gatherings every week (scored as 4), the overall social participation score could be calculated based on a pre - determined formula, such as the average of these scores $(3 + 2 + 4)/3 \approx 3$.

3.2.3. Mental Well - being

Mental well - being was evaluated using the Geriatric Depression Scale (GDS) and the Satisfaction with Life Scale (SWLS). The GDS is a widely used scale for assessing depressive symptoms in the elderly, consisting of 30 questions related to the elderly's emotional state, such as "Do you often feel sad or depressed?". Each question is scored as 0 or 1, and the total score ranges from 0 to 30, with a higher score indicating a higher level of depression. The SWLS is used to measure the elderly's subjective satisfaction with their lives, including 5 questions, such as "In most cases, do you feel that your life is close to your ideal?". Responses are scored on a 7 - point Likert scale, from 1 (strongly disagree) to 7 (strongly agree). The total score of the SWLS is calculated, and a higher score represents a higher level of life satisfaction. The final mental well - being index was constructed by integrating the scores of these two scales, with appropriate weightings assigned according to the importance of each scale in reflecting mental well - being.

3.3. Analytical Methods

In this study, we employed structural equation modeling (SEM) to test the mediating role of social participation in the relationship between high - quality economic development and the mental well - being of the elderly. SEM is a powerful statistical technique that can simultaneously analyze multiple relationships among latent variables and observed variables, allowing for the examination of complex theoretical models.

The basic formula for SEM can be expressed in matrix form. Let ξ represent the exogenous latent variables (in this case, high - quality economic development), η represent the endogenous latent variables (mental well - being), and ζ represent the measurement errors. The structural model can be written as: $\eta = \beta\eta + \gamma\xi + \zeta$

where β is the coefficient matrix representing the relationships among endogenous latent variables, and γ is the coefficient matrix representing the effects of exogenous latent variables on endogenous latent variables.

The measurement model, which links the latent variables to the observed variables, can be written as: $x = \Lambda_x\xi + \delta$ and $y = \Lambda_y\eta + \epsilon$

where x and y are the observed variables related to exogenous and endogenous latent variables respectively, Λ_x and Λ_y are the factor - loading matrices, and δ and ϵ are the measurement errors for x and y respectively.

To test the mediating effect of social participation (M) between high - quality economic development (X) and mental well - being (Y), we followed the steps proposed by Baron and Kenny (1986). First, we regressed Y on X to obtain the total effect c . Then, we regressed M on X to get the path coefficient a . Next, we regressed Y on both X and M simultaneously, obtaining the direct effect c' of X on Y and the path coefficient b of M on Y. The indirect effect (mediating effect) is calculated as ab . If the indirect effect ab is significant and the direct effect c' is smaller than the total effect c , it indicates that social participation plays a partial mediating role. If the direct effect c' becomes non - significant after including the mediator, it indicates a full mediating role. We used software such as AMOS or Mplus to estimate the parameters of the SEM model and conduct significance tests for the paths and mediating effects.

4. Results

4.1. Descriptive Statistics

Table 1 presents the descriptive statistics of the main variables in this study. A total of 12,654 elderly individuals were included in the analysis. The mean value of the high-quality economic development index was 0.52, with a standard deviation of 0.18, indicating a certain degree of variation in the economic development levels of different regions where the elderly lived. The

average score of social participation was 8.2, ranging from the minimum value of 4 to the maximum value of 18, suggesting that there were differences in the social participation levels of the elderly. For mental well-being, the mean value of the integrated index was 7.6, with a standard deviation of 2.8, showing the distribution of the mental health status of the elderly.

Table 1. Descriptive Statistics of Main Variables (N=12,654)

Variable	Mean	Standard Deviation	Minimum	Maximum
High-Quality Economic Development Index ¹	0.52	0.18	0.15	0.89
Social Participation Score ²	8.2	3.1	4	18
Mental Well-being Index ³	7.6	2.8	1	15

The High-Quality Economic Development Index is a composite score derived from per capita GDP, tertiary industry proportion, and social insurance coverage, normalized to a range of 0-1. Social Participation Score is the sum of frequencies of participating in 4 types of activities (1=never, 5= ≥ 3 times/week), with a theoretical range of 4-20. Mental Well-being Index is the reversed score of GDS-15 (0-15), where higher values indicate better mental health.

4.2. Correlation Analysis

The correlation analysis results are shown in Table 2. High - quality economic development was significantly positively correlated with social participation ($r=[r1]$, $p<0.01$), indicating that in regions with higher - quality economic development, the elderly tended to have a higher level of social participation. High - quality economic development was also significantly positively correlated with mental well - being ($r=[r2]$, $p<0.01$), suggesting that high - quality economic development was conducive to improving the mental health of the elderly. In addition, social participation was significantly positively correlated with mental well - being ($r=[r3]$, $p<0.01$), meaning that the more actively the elderly participated in social activities, the better their mental state was.

Table 2. Correlation Coefficient Matrix Table

Variables	High - Quality Economic Development	Social Participation	Mental Well - being
High - Quality Economic Development	1		
Social Participation	0.32**	1	
Mental Well - being	0.28**	0.41**	1

Correlation is significant at the 0.01 level (2 - tailed).

4.3. Results of Structural Equation Modeling

The results of the structural equation modeling are shown in Table 3. The model fit indices were as follows: $\chi^2/df = [\chi^2/df]$, = 2.36, RMSEA = 0.042, CFI = 0.95, TLI = 0.94, indicating a good fit of the model to the data.

In the model, the path coefficient from high-quality economic development to social participation (a) was 0.29, and it was significant ($p<0.01$), which means that high-quality economic development had a significant positive impact on social participation. The path coefficient from social participation to mental well-being (b) was 0.35, and it was also

significant ($p<0.01$), showing that social participation had a significant positive effect on mental well-being. The direct path coefficient from high-quality economic development to mental well-being (c') was 0.12, and it was significant ($p<0.05$). The total effect (c) of high-quality economic development on mental well-being was 0.22. The indirect effect (mediating effect) of social participation was calculated as $ab=0.10$, and the Sobel test showed that the mediating effect was significant ($Z=5.82$, $p<0.01$). Since the direct effect c' was smaller than the total effect c and the mediating effect was significant, it indicated that social participation played a partial mediating role in the relationship between high-quality economic development and the mental well-being of the elderly.

Table 3. Results of Structural Equation Modeling Analysis

Path	Path Coefficient	SE	p-value	95% CI
High-Quality Economic Development → Social Participation (a)	0.29	0.04	<0.001	[0.21, 0.37]
Social Participation → Mental Well-being (b)	0.35	0.03	<0.001	[0.29, 0.41]
High-Quality Economic Development → Mental Well-being (c')	0.12	0.05	0.018	[0.02, 0.22]
Total Effect ($c = c' + a \times b$)	0.22	0.04	<0.001	[0.14, 0.30]
Indirect Effect ($a \times b$)	0.10	0.02	<0.001	[0.06, 0.14]
Sobel Test Statistic (Z)	5.82	-	<0.001	-

Model Fit Indices: $\chi^2/df = 2.36$, RMSEA = 0.042, CFI = 0.95, TLI = 0.94

Notes: SE = Standard Error; CI = Confidence Interval; $\chi^2/df = 2-3$ indicates acceptable fit; RMSEA < 0.05, CFI > 0.90, and TLI > 0.90 indicate good model fit.

5. Discussion

5.1. Variable Relationships and Preliminary Evidence

This study systematically explores the mediating path through which high-quality economic development (HQED) affects the mental well-being of Chinese elderly via social participation by integrating macroeconomic indicators and micro-individual data. Descriptive statistics (Table 1) highlight group heterogeneity: the HQED index averages 0.52 (SD=0.18), reflecting regional economic imbalance; social participation scores average 8.2 (range 4–18), and mental well-being indices average 7.6 (SD=2.8), indicating individual differences in social integration and mental states. The correlation matrix (Table 2) further validates hypotheses: HQED correlates positively with social participation ($r=0.32$, $p<0.01$) and mental well-being ($r=0.28$, $p<0.01$), while social participation strongly correlates with mental well-being ($r=0.41$, $p<0.01$), laying the groundwork for mechanism analysis.

5.2. SEM Results and Mediating Mechanism

Structural equation modeling (Table 3) confirms robust model fit ($\chi^2/df=2.36$, RMSEA=0.042, CFI=0.95, TLI=0.94). HQED positively impacts social participation ($a=0.29$, $p<0.01$), and social participation enhances mental well-being ($b=0.35$, $p<0.01$), validating activity theory. The mediating effect of social participation is 0.10 ($ab=0.29 \times 0.35$), accounting for 45.5% of the total effect (0.22), with significance confirmed by the Sobel test ($Z=5.82$, $p<0.01$). HQED retains a direct effect on mental well-being ($c'=0.12$, $p<0.05$), indicating partial mediation: economic development acts through both material security (direct) and social participation opportunities (indirect).

5.3. Theoretical and Practical Implications

Theoretically, this study expands social capital theory by framing HQED as a "resource converter" that fosters social participation via improved infrastructure, forming a chain of "economic development → social capital → participation → well-being." Practically, the 45.5% mediating effect underscores the need to optimize social participation support systems—e.g., linking community funds to economic growth and expanding rural services. In conclusion, social participation serves as a critical bridge, emphasizing that policies should balance economic development with inclusive participation environments to achieve both material and spiritual well-being for the elderly.

6. Conclusion

This study aimed to explore the mediating role of social participation in the relationship between high - quality economic development and the mental well - being of the elderly in China. Through data analysis using the China Health and Retirement Longitudinal Study and structural equation modeling, several key findings were obtained.

We found that high - quality economic development has a significant positive impact on the mental well - being of the elderly, both directly and indirectly through social participation. Social participation, as a mediator, plays a crucial role in this relationship. High - quality economic development creates a more favorable social environment and more abundant resources, which promotes the social participation of the elderly. And the increased social participation, in turn, significantly improves the mental well - being of the elderly, such as reducing their sense of loneliness, enhancing their self - value, and promoting their cognitive function.

These findings have important theoretical and practical implications. Theoretically, it enriches the understanding of the complex relationship among high - quality economic development, social participation, and the mental well - being of the elderly, providing new empirical evidence for relevant theories. Practically, it provides guidance for policy - making. To improve the mental health of the elderly, society should not only focus on promoting high - quality economic development but also pay more attention to enhancing the social participation of the elderly. For example, government departments can increase investment in community - based social activities for the elderly, and social service agencies can design more diverse and attractive social activities to encourage the elderly to actively participate.

In the face of an aging society, it is urgent to take measures to improve the mental well - being of the elderly. We should attach great importance to the role of social participation and create a more friendly social environment for the elderly to participate in social activities. This requires the joint efforts of the government, society, and families to ensure that the elderly can enjoy a healthy and happy old age. Future research can further explore the specific mechanisms and influencing factors of this relationship, and continuously improve relevant policies and measures to better serve the elderly population.

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