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The impact of age identity on social participation of older adults

Denghui Huang^{1*}, Wenyue Song¹ and Ran Feng¹

Abstract

Background With the intensification of the global aging population, the social engagement of seniors is regarded as a key element in the strategy for healthy aging. China, the country with the largest elderly population, confronts challenges such as "aging before becoming wealthy." The government has put forward a strategy for "healthy aging," highlighting the importance of seniors' social engagement for successful aging.

Method Based on the data from the China Longitudinal Aging Social Survey (CLASS) in 2020, social participation is categorized into three types: labor participation, political participation, and volunteer service. Age identity is measured by the difference between perceived age of aging and chronological age. A logistic regression model is employed to analyze the impact of age identity on the social participation of older adult.

Results A positive age identity significantly promotes the social participation of older adult, including labor participation, political participation, and volunteer service. Specifically, for every one-year increase in the level of age identity, the participation rate in volunteer service increases by 1.9%, the participation rate in political participation increases by 2.3%, and the increase in labor participation is the most significant, reaching 2.4%.

Conclusion Different age identities among older adult lead to different identity recognitions, and a positive age identity makes them more willing to participate in society. The government should consider the diversity and complexity of older adult and provide more opportunities for them to participate in social activities in order to improve their quality of life and level of social participation, allowing them to maintain a positive age identity.

Keywords Healthy aging, Age identification, Social participation

Introduction

Over the past several decades, the phenomenon of "population aging" has become a global issue [18]. Data from the seventh national population census in China in 2020 indicate that the population aged 60 and above accounts for 18.70% of the total population, and those aged 65 and above account for 13.50%. Aging presents severe challenges to Chinese society. Against this backdrop, the government has proposed the "Healthy Aging"

strategy, aiming to find cost-effective solutions with better outcomes. As the understanding of the connotation of healthy aging continues to deepen, its content has become increasingly enriched, including three core connotations: health, functional performance, and a favorable environment [24]. Functional performance aims to maximize the "intrinsic capabilities and functional expression" of elderly individuals. The activity theory posits that active social participation of older adult is key to successful aging, and social participation has become an important way for older adult to achieve functional performance [30]. Through social participation, older adult can continuously realize their self-worth, thereby promoting the realization of healthy aging [33]. However, the motivations for social participation among older

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adult vary under different identity recognitions, and there are differences in their enthusiasm for participation.

Social engagement stands as a pivotal determinant for achieving successful and healthy aging, thus emerging as a significant target for intervention among healthcare professionals [20]. Current research has shed light on the diverse factors that shape the social involvement of seniors. Scholars have dissected the strategies and influencing factors of elderly social engagement from both physiological and societal angles [8], and some contend that the patterns of social participation among older adults are multifaceted, being jointly influenced by personal, familial, economic, and environmental elements [19]. Additionally, the social involvement of seniors is intertwined with intrinsic psychological aspects, such as perceptions of aging [21]. Age identification refers to an individual's intrinsic perception of their own age and the aging process, which can be assessed through subjective age, self-perceived aging age, and felt age [15]. It may not correspond with an individual's chronological or actual age. Research has shown that older adults often maintain a youthful mindset, demonstrating a tendency to feel younger than their actual age, a phenomenon known as "younger than age" in age identification [14]. This perception is vital for the development and successful aging of seniors and mirrors their attitudes towards aging [27]. Combating age stereotypes is essential for achieving successful aging [10].

Age identification, as an individual's subjective perception and evaluation of their own age, is a complex and multidimensional concept. Its manifestations include positive, negative, and neutral aspects, and it has profound effects on various aspects of an individual's life, including behavior and psychological states, intertwining with numerous factors. Socioeconomic status plays a crucial role in age identification. Individuals with higher socioeconomic status often have more resources and opportunities to maintain a youthful lifestyle, and they may be more inclined to view their age positively [5, 6, 13]. For instance, those with superior economic conditions can enjoy better healthcare, healthy diets, and a variety of leisure activities, which help them remain physically and mentally vibrant, potentially leading to a more positive age identification. In contrast, individuals with lower socioeconomic status may be more likely to develop negative age identification due to factors such as high life pressures and limited resources. Health status is one of the significant factors affecting age identification. Older adults who are in good health are more likely to have a positive attitude towards their age [11, 13, 31]. They can move freely in daily life and independently complete various tasks, and this physical autonomy enhances their confidence in their age, making them

feel younger and more energetic than their actual age. On the other hand, older adults with chronic diseases or limited physical functions may develop negative perceptions of age due to health issues, feeling old and fragile, which affects their age identification. Educational achievement is also closely related to age identification. Older adults who have received a higher level of education typically possess stronger cognitive and adaptive abilities, and they are more likely to face aging with a positive mindset [16]. Education enables them to acquire more knowledge and information, keep their minds active, and maintain curiosity about new things, making them more likely to view age as an accumulation of experience and wisdom, rather than merely physiological aging. In terms of employment participation, a positive age identification helps older adults maintain enthusiasm and confidence in their careers, and they are more willing to continue working or seek new job opportunities [34]. These older adults believe that their abilities and experience are still valuable in the workplace and do not retreat due to age, thus remaining active in the labor market. Conversely, negative age identification may lead older adults to set limits on themselves, believing they are too old for work, thereby reducing their employment participation. For example, some older adults may develop negative age identification due to societal ageist beliefs and voluntarily exit the labor market, missing out on job opportunities [7, 26]. Age identification has a significant impact on psychological well-being. Older adults who view their age positively often have stronger psychological resilience and face life's challenges and pressures with more optimism and composure [27]. They see aging as a process of growth and development, and this positive attitude helps maintain good psychological health. In contrast, older adults with negative age identification may be more prone to negative emotions such as anxiety and depression, affecting their psychological well-being. In terms of subjective well-being and life satisfaction, positive age identification is closely linked to higher levels of subjective well-being and life satisfaction [3, 32]. These older adults can find joy in life, actively participate in social activities, maintain good relationships with family and friends, and feel satisfied with their life status. They believe that aging brings more freedom and time to pursue their interests and enjoy life. On the other hand, older adults with negative age identification may have a negative attitude towards life, feeling marginalized by society and lacking meaning in life, thus reducing their subjective well-being and life satisfaction.

From a cognitive perspective, a positive age identification leads older adults to have a more positive evaluation of their own abilities and value. They believe that with age, they have accumulated rich experience and

wisdom, enabling them to better cope with various situations in life. This perception encourages them to actively participate in social activities and pursue personal goals, thereby enhancing their quality of life and psychological state. In contrast, a negative age identification may lead to self-doubt and an underestimation of one's value, which can limit their behavior and social interactions. Social comparison is also an important mechanism. Older adults often compare themselves with others during social interactions, and if they perceive themselves to be in better condition than their peers, they are more likely to develop a positive age identification [27]. For example, seeing themselves as healthier, more mentally agile, or more socially active can enhance their positive perception of their age. Conversely, if they perceive themselves as inferior in these comparisons, it may lead to a negative age identification. A positive age identification is characterized by an optimistic and accepting attitude towards aging. Individuals view age as a resource, such as a wealth of life experience and mature mindset. These older adults actively seek new challenges and opportunities, maintain a mindset of learning and growth, and actively participate in social activities and volunteer services, demonstrating a positive outlook on life. For instance, some retired individuals actively enroll in courses at senior universities, learn new skills, and engage in community activities, feeling that their lives are still full of vitality and meaning. A negative age identification, on the other hand, is characterized by resistance and fear of aging. Older adults may focus excessively on the changes brought about by physical aging, such as decreased physical strength and changes in appearance, leading to feelings of inferiority and helplessness. They may avoid social activities and become self-isolated, losing enthusiasm for life. For example, some older adults may feel useless due to illness and refuse to participate in family gatherings and community activities, leading to low spirits. A neutral age identification is characterized by a relatively objective and indifferent attitude towards aging. They neither overly positive nor overly negative, accepting the natural changes that come with age, but lack the motivation to actively pursue a positive later life. These older adults may live their lives in a routine manner, with little initiative to participate in new activities or challenge themselves. Age stereotypes in daily life significantly influence the social participation of people of different age groups. For young people, society generally expects them to be energetic and actively participate in various social activities. This stereotype may encourage young people to engage more actively in society to meet societal expectations [28]. However, for older adults, society often holds stereotypes such as "older adult should enjoy their retirement and reduce social activities," which can

lead to unfair treatment in social interactions, such as discrimination in job opportunities and being overlooked in social settings [28]. This unfair treatment can further affect the well-being of older adults, reducing their quality of life and sense of social integration [12]. Age identification is a complex and significant concept, influenced by various factors, and has a broad impact on aspects such as employment, psychology, and quality of life for older adults. A deeper understanding of the mechanisms and manifestations of age identification can help us take targeted measures to help older adults form a positive age identification, improve their quality of life, and promote their active integration into society. It also aids in advancing society's correct understanding and response to aging issues.

Life is divided into different stages, each with its specific roles and tasks [2]. The social participation of older adults can be seen as part of their new roles and tasks as they enter the later stages of life. Individuals perceive and utilize time differently at various life stages, and social participation becomes an important way for older adults to realize the value of their time. As older adults transition from occupational roles to retirement roles, they may seek new roles and identities in social participation, such as community volunteers [25] and family caregivers [9]. Older adults still possess agency and can make choices in social participation based on their circumstances, desires, and resources [1]. Different older adults may have different plans for their later life.

Identity recognition is the process by which an individual cognizes, accepts, and internalizes their belonging to a social group or role [29]. It involves how individuals perceive their position in society and their relationships with others. In social life, people guide their behavior based on different identity recognitions, pursuing social recognition and the realization of self-worth. The promoting effect of positive age identity on social participation. A positive age identity makes older adults more inclined to identify with age-appropriate social roles, such as elders or sages, and actively participate in related social activities. In the community, older adults may participate in community affairs discussions as elders, providing experience and suggestions for community development, thereby enhancing their role recognition in the community. When older adults have a positive age identity, they are more likely to believe in their capabilities in social activities, thus increasing their self-efficacy and actively participating in social activities. For example, an older adult who believes they can still learn new skills despite their age may enroll in courses or training activities at a senior university, improving their knowledge and skills, and thus gaining more confidence to participate in other social activities [34]. A negative age identity may

lead older adults to view themselves as marginal groups in society, believing they are too old and weak to participate in social activities, resulting in social withdrawal and reduced participation. For example, some older adults may refuse to participate in community-organized fitness activities or social gatherings because they feel they are too old [28]. From the perspective of identity theory, age identity, as an individual's cognition and feeling of their own age, has a profound impact on the social participation of older adults. Therefore, Hypothesis 1 is proposed: A positive age identity can motivate older adults to actively engage in social activities, while a negative age identity may hinder their social participation.

Sociocultural stereotypes about age can affect the age identity of older adults, thereby influencing their social participation [4]. In some cultures, older adults are seen as symbols of wisdom and experience, respected and valued, and this cultural atmosphere helps older adults form a positive age identity, promoting their social participation. Conversely, in some cultures, older adults may be seen as burdens or useless [23], and this negative stereotype can lead to a negative age identity, hindering their social participation [5]. The personal experiences of older adults, such as health status and career history, can affect their age identity and social participation. Older adults with good health and rich career experiences may more easily form a positive age identity and are more willing to participate in social activities. For example, a retired doctor may actively participate in community health lectures or free clinics, using their professional knowledge and experience to maintain a high level of social participation [11]. Therefore, Hypothesis 2 is proposed: There are differences in the social participation of different older adults.

There are many types of social participation among older adults. Older adults with higher education levels are more likely to participate in cultural and educational activities, such as attending courses at senior universities or cultural lectures, and are also more willing to engage in political discussions and decision-making [16]. The resources provided by the community and the atmosphere created have a significant impact on the types of social participation of older adults. In communities with abundant resources and a strong cultural atmosphere, older adults may have more opportunities to participate in cultural activities and volunteer services [17], whereas in communities lacking resources and vitality, the social participation of older adults may be limited [19]. Older adults with a good social support network are more likely to participate in various social activities. Family support allows older adults to participate in social activities without worries, while friends provide motivation and information. For example, family

encouragement for older adults to participate in community activities and friends inviting them to volunteer can help increase their level of social participation [9]. Diverse types of social participation help older adults better integrate into society and enhance their sense of belonging. Participation in labor maintains their connection with social production, and involvement in volunteer services and political activities allows them to interact with other members of society, thereby reducing feelings of social isolation and enhancing their sense of identification with society [1]. Therefore, Hypothesis 3 is proposed: There are differences in the types of social participation among older adults.

Materials and method

Participants and survey

The data used in this study are derived from the China Longitudinal Aging Social Survey (CLASS) conducted in 2020. CLASS is a national, longitudinal large-scale social survey project. By regularly and systematically collecting data on the social and economic backgrounds of older adult population in China, it aims to understand the various issues and challenges faced by older adult during the aging process and to assess the actual effectiveness of various social policy measures in improving the quality of life of older adult. CLASS conducted two pilot surveys in 2011 and 2012, and the first nationwide baseline survey was carried out in 2014, with follow-ups every two years. The entire field data collection for CLASS is completed through the China Social Survey Network (CSSN). CLASS employs a stratified multi-stage probability sampling method. County-level areas (including counties, county-level cities, and districts) are selected as primary sampling units (PSUs), and villages/neighborhood committees as secondary sampling units (SSUs). The survey targets are Chinese citizens aged 60 and above. In each village/neighborhood committee, a drawing sampling method is used to select survey samples. During the field survey work, supervisors from each region lead teams of interviewers to complete the questionnaire interviews in each PSU. Using the map addresses of each SSU as the sampling frame, corresponding households are selected. Within each household, a household-level sampling is conducted among those aged 60 and above to select one respondent for the interview, which is conducted through face-to-face household visits. Additionally, a community questionnaire is completed in each surveyed community. When selecting survey samples in the chosen villages/neighborhood committees, it is necessary to establish a list (sampling frame) that covers all older adult in the village/neighborhood committee at the time of the survey. Due to the large number of mobile population in China and the serious separation of people

and household registration, it is not possible to use the household registration information of villages/neighborhood committees for sampling; moreover, the registration of permanent residents in villages/neighborhood committees is very incomplete and cannot serve as a sampling frame. Under these circumstances, a more reliable method is to use addresses in villages/neighborhood committees for sampling. However, since China has not yet established a complete door number address system, surveyors use the map method to draw all buildings in the village/neighborhood committee and further list all residences within the buildings, using this as a sampling frame to select households. During the survey process, quality control is ensured through on-site supervision, remote data analysis, and telephone verification. The data collected by the project are cleaned, weighted, and documented before being made freely available to the academic community, providing high-quality data support for academic research and policy formulation related to older adult. Due to the scientific and systematic design of the questionnaire, the data obtained have strong representativeness and robustness, making it a data source widely used by scholars studying older adult in China. The survey targets Chinese elderly aged 60 and above, covering 28 provinces, municipalities, and autonomous regions in China, with an effective sample size of 11,398. After excluding core variables with missing values, the sample size for this study was adjusted to 3,851.

Measures

Social participation

The social participation of older adult serves as the dependent variable. Drawing on existing research, the social participation of older adult is categorized into three types: political participation, labor participation, and volunteer service. First, political participation is assessed by the questionnaire item, "Have you participated in local residents' committee/village committee voting elections in the past three years?" Respondents who answer "Yes" are considered to have political participation, assigned a value of 1; other responses indicate no political participation, assigned a value of 0. Second, labor participation is measured by the questionnaire item, "What is your current situation regarding engaging in paid work/activities (including agricultural labor, where agricultural products can also be converted into income)?" A value of 0 indicates no participation, and 1 indicates participation. Third, volunteer service is operationalized by the questionnaire item, "How frequently have you participated in the following activities over the past year (community security patrols, caring for other elderly/children, environmental protection, mediating neighborhood disputes, accompanying in conversation,

providing volunteer services requiring professional skills, caring for and educating one's own grandchildren)?" If an elderly individual participates in any of these activities, it is considered participation, assigned a value of 1; otherwise, it is considered non-participation, assigned a value of 0.

Age identification

The age identification of older adult serves as the independent variable. Age identification is typically measured in terms of subjective age, perceived aging age, and self-perceived life expectancy, among other aspects. This study adopts relevant measurement methods [6] and selects perceived aging age to assess the age identification of older adult. Specifically, the questionnaire asks older adult, "At what age do you consider yourself to be old?" The score for individual age identification is determined by the difference between the perceived aging age and the biological age, with higher scores indicating a more positive age identification among older adult.

Other factors

To better explore the impact of age identification on the social participation of older adult, this study controls for factors such as sociodemographic characteristics of older adult, including gender, marital status, education level, type of residence, chronic disease conditions, income, religious beliefs, living situation, and self-care ability, among others. Specific variable assignments are detailed in Table 1.

Analysis In alignment with the central objectives of this study, our aim is to delve into the extent of social participation among older adult and the factors that influence it. Social participation, as the dependent variable in this research, is further divided into three specific binary indicators: labor participation, political participation, and volunteer service. Within this framework, older adult's engagement in the respective activities is simplified into a clear binary choice, with non-participation coded as 0 and participation as 1. STATA 17.0 statistical analysis software is selected as the tool for data processing and analysis. The primary analytical method employed is binary Logistic regression analysis.

Results

Descriptive statistics and analysis

Regarding the sample characteristics, there is a certain balance in gender composition, with 1,950 males accounting for 50.64% of the total sample, and 1,901 females representing 49.36%. In terms of urban–rural distribution, 543 individuals reside in rural areas, which is 14.10% of the total sample, while the urban population stands at 3,308 individuals, making up 85.90%. The

Table 1 Variable assignment and explanation

Variable	Variable description
Type of Residence	Rural = 0, Non-rural = 1
Gender	Male = 1, Female = 0
Education Level	"Illiterate" "Private School/Sweeping Illiteracy Class" "Primary School" "Junior High School" "High School/Technical Secondary School" "College" and "Bachelor's Degree and above" are assigned values of 0, 3, 6, 9, 12, 15, and 16 respectively
Marital Status	Married = 1, Others = 0
Living Arrangement	Living with family = 1, Living alone = 0
Self-care	Self-care = 0, Unable to self-care = 1
Chronic Disease	Yes = 1, No = 0
Income Logarithm	Logarithm of older adult's annual income
Religious Belief	Yes = 1, No = 0

educational level of older adult is predominantly at the junior high school level or below, with a high proportion of 78.71%, in stark contrast to the small number of elderly individuals (only 4.88%) who have received education at the college level or above. In terms of self-care, the vast majority of older adult are capable of taking care of themselves, with a proportion of 93.01%, while only a minority (6.99%) require assistance from others. Among older adult, 3,286 individuals suffer from chronic diseases, constituting 85.33% of the total sample, and only 565 elderly individuals are free from illness, representing 14.67%. Relatively, in terms of religious beliefs, only 135 elderly individuals adhere to a religion, which is 3.51% of the total, while the majority of older adult do not have religious beliefs. In marital status, approximately 77.85% of older adult are married, and nearly 22% are single. Regarding living arrangements, 91.92% of older adult live with family members, while about 8% of older adult live alone.

The degree of social participation among older adult varies by type. Only 258 elderly individuals, representing 6.70%, are engaged in labor that generates income, while the vast majority, 93.70%, do not participate in income-earning labor. The proportion of elderly individuals involved in volunteer activities is comparatively higher, with 1,165 participating, which amounts to 30.25%; however, 70% of older adult are not involved in volunteer activities. The highest rate of participation is in political activities, with 42.66% of older adult having taken part in village and neighborhood committee elections. A variety of factors lead to older adult gradually withdrawing from social participation, particularly in income-earning labor, which is the most pronounced. Nonetheless, older adult maintain a high level of enthusiasm and active engagement in volunteer service and political participation. The level of social participation among older adult shows

significant variability across different types of activities, which supports Hypothesis 3.

Regression result analysis

The impact of age identification on the social participation of older adult

The influence of age identification on various forms of social participation among older adult was analyzed using the Logistic model (Table 2). Models (1), (2), and (3) in Table 2 represent the analysis results of the impact of age identification on older adult's labor participation, political participation, and volunteer activities, respectively. Age identification has a significant positive effect on the social participation of older adult ($p \leq 0.01$). Specifically, a positive age identification has a proactive positive impact on older adult's labor participation, political participation, and volunteer service. The study results indicate that for every one-year increase in the level of age identification, the participation rate in volunteer service among older adult increases by 1.9%, the rate of political participation increases by 2.3%, and the increase in labor participation is the most pronounced, reaching 2.4%. These findings suggest that a positive age identification plays an important role in promoting active social engagement among older adult, which supports Hypothesis 1.

The results shown in Table 2 reveal that the influence of other factors on different types of social participation is not uniform. In the case of labor participation, elderly males exhibit a higher level of engagement than females, and those living alone have a more significant labor participation rate. Chronic diseases pose a barrier to the labor participation of older adult, and rural elderly are more likely to be involved in labor than their urban counterparts. In the realm of political participation, elderly males, those with a higher level of education,

Table 2 Logistic regression analysis of the impact of age identity on social participation

	Model (1) Labor Participation	Model (2) Political Participation	Model (3) Volunteer Service
Age identification	0.024*** (0.006)	0.023*** (0.003)	0.019*** (0.003)
Gender	0.405** (0.142)	0.149* (0.069)	−0.225** (0.073)
Educational level	0.015 (0.019)	0.019* (0.010)	0.054*** (0.011)
Residential arrangements	−0.791* (0.325)	0.033 (0.153)	0.070 (0.170)
Logarithm of income	−0.112 (0.074)	−0.073* (0.036)	0.051 (0.040)
Marriage situation	0.517 (0.273)	0.172 (0.100)	0.278* (0.110)
religious belief	0.178 (0.368)	−0.108 (0.185)	−0.097 (0.200)
Self care situation	0.308 (0.333)	0.885*** (0.160)	0.363* (0.164)
Chronic disease	−0.632*** (0.158)	0.273** (0.095)	0.341** (0.105)
Residence type	−1.445*** (0.167)	−0.548*** (0.104)	−0.416*** (0.110)
_cons	−0.411 (0.658)	−0.636* (0.336)	−2.167*** (0.374)
N	3851.000	3851.000	3851.000
R ²	0.088	0.036	0.027

Regression coefficient (standard error), significance level

* $p < .05$ ** $p < .01$ *** $p < .001$

and those who are self-sufficient, as well as those living in rural areas, have a higher degree of political engagement. For volunteer service, elderly females, individuals with higher education levels, those who are currently married, and those residing in rural areas have a higher level of involvement. These results validate Hypothesis 2. The social participation of older adults, including labor participation, political participation, and volunteer service, is influenced by age identification. However, differences in factors such as education level and self-care abilities lead to variations in the types of social participation among individuals, which confirms Hypothesis 3.

Discussion

In this study, we delved into the relationship between age identification and the social participation of older adult. The results indicate that a positive age identification significantly promotes the social participation of older adults, which aligns closely with the hypothesis we

proposed based on identity theory. As identity theory suggests, identity recognition is the process by which an individual cognizes, accepts, and internalizes their belonging to a social group or role [29]. A positive age identification makes older adults more inclined to identify with age-appropriate social roles, such as elders or sages, which helps them actively participate in related social activities, thereby enhancing their level of social participation. As we hypothesized, a positive age identification can motivate older adults to actively engage in social activities, while a negative age identification may hinder their social participation. The findings of this study strongly support this hypothesis.

In terms of political participation, older adults with a positive age identification are more willing to engage in community and political activities, such as participating in elections and public affairs discussions. This is consistent with the view in identity theory that individuals guide their behavior based on their identity recognition.

In modern society, the concern of older adults for community affairs and their pursuit of influence over public policies [22] encourage them to actively participate in political activities based on their identity as community members, in order to realize their own value and contribute to community development. For example, in community elections, older adults with a positive age identification, as community elders, will carefully study the policy proposals of candidates and actively participate in voting. They believe this is their responsibility and a way to realize their own value, and through this process, they further strengthen their role recognition in the community.

Regarding volunteer service participation, older adults with a positive age identification show a higher rate of participation, reflecting their strong desire to contribute to society. According to identity theory, individuals pursue social recognition and self-worth realization by participating in activities that align with their identity. Many older adults view volunteer service as a behavior that fits their age identity, and they actively participate in community service and caring for others with their rich life experience. In this process, they realize their self-worth, feel that they are still useful members of society, and thus enhance their identification with a positive age identity.

However, we also noticed the influence of sociocultural factors on the age identification and social participation of older adults, which echoes the view in identity theory that the social environment affects identity recognition. In some cultures, older adults are seen as symbols of wisdom and experience, respected and valued, and this cultural atmosphere helps them form a positive age identification, thereby promoting their social participation. But in other cultures, older adults may be seen as burdens or useless, leading to a negative age identification and hindering their social participation [5]. This indicates that the social culture plays an important role in shaping the identity recognition of older adults, thereby affecting their social participation behavior.

During the research process, we also found that personal experience factors have an impact on the social participation of older adults, consistent with our hypothesis based on identity theory. Older adults with good health and rich career experiences are more likely to form a positive age identification and are more willing to participate in social activities, further validating our hypothesis based on identity theory.

Additionally, our hypothesis regarding differences in the types of social participation among older adults was also confirmed in the study. Older adults with higher education levels are more inclined to participate in cultural and educational activities and are also more willing to engage in political discussions and decision-making

[16]. This aligns with the view in identity theory that an individual's cognitive abilities and knowledge reserves affect their identity recognition and behavioral choices. A higher level of education enables them to better understand social roles and responsibilities, thereby choosing to participate in corresponding social activities based on their identity recognition. At the same time, community resources and atmosphere, as well as social support networks, also have a significant impact on the types of social participation of older adults, reflecting the role of the social environment in shaping the identity recognition and behavior of older adults. In communities with abundant resources and a strong cultural atmosphere, older adults can more easily find activities that align with their identity, and older adults with a good social support network, with the support of family and friends, are more likely to participate in various social activities based on their identity recognition [9, 19].

Conclusion

This study, grounded in the 2020 data from the China Aging Society Comprehensive Survey (CLASS), investigated the influence of age identification on the social engagement of older adult. The research discovered that a positive age identification markedly enhances older adult's involvement in social activities, encompassing labor participation, political engagement, and volunteer service. This underscores that the internal psychological state of seniors, particularly their perception of their age, significantly influences their level of social engagement. The findings corroborate the activity theory, which asserts that robust social engagement among older adult is crucial for successful aging.

A positive age identification may empower seniors to defy societal stereotypes about aging roles, seek new social identities, and thereby elevate their social engagement. Firstly, the government should enact policies to inspire and facilitate elderly participation in social activities, initiate educational and promotional campaigns for seniors, reinforce positive social role models, and offer more age-appropriate opportunities for social engagement to boost their age identification and dispel negative age stereotypes. Secondly, communities should cultivate a senior-friendly environment, with social organizations and communities providing additional avenues for older adult to participate, presenting educational and training initiatives, establishing platforms for community engagement, and fostering intergenerational dialogue to enhance their social engagement and life quality. Thirdly, achieving healthy aging necessitates safeguarding the health of seniors and creating an age-friendly environment, escalating investment in age-adapted modifications, and systematically advancing the development of

age-adapted facilities. Lastly, nurturing a societal ethos that honors, cherishes, and leverages older adult, and establishing sound social norms, creates the subjective and objective conditions for older adult to engage more proactively in society.

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Authors' contributions

D. H has written the main manuscript text and prepared figures 1-3. W. S conducts data collection and organization; R. F mainly conducts data analysis. All authors have reviewed the manuscript.

Data availability

Data is provided within the manuscript or supplementary information files.

Declarations

Ethics approval and consent to participate

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The survey was also conducted within Articles 38, 39, and 40 of the Constitution of the People's Republic of China and the legal framework governed by Chapter I, Article 9 from the Statistics Law of the People's Republic of China. Therefore, the study was not reviewed by an ethics committee. Verbal informed consent was obtained from all individual participants included in the study. The design of this survey was adhered to Articles 38, 39, and 40 of the Constitution of the People's Republic of China and the legal framework governed by Chapter I, Article 9 from the Statistics Law of the People's Republic of China. Verbal informed consent was considered acceptable and this was not reviewed by an ethics committee. Moreover, the interviewer also had documented more detailed information on the process of obtaining informed consent, which included whether participants agreed to attend this study, the time of agreement, the reasons for not agreeing, etc. Details of informed consent were stored by the Institute of Gerontology and the National Survey Research Center at Renmin University of China.

Consent for publication

This manuscript has not been published or presented elsewhere in part or in entirety, and is not under consideration by another journal. All the authors have approved the manuscript and agree with submission to this journal.

Competing interests

The authors declare no competing interests.

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