

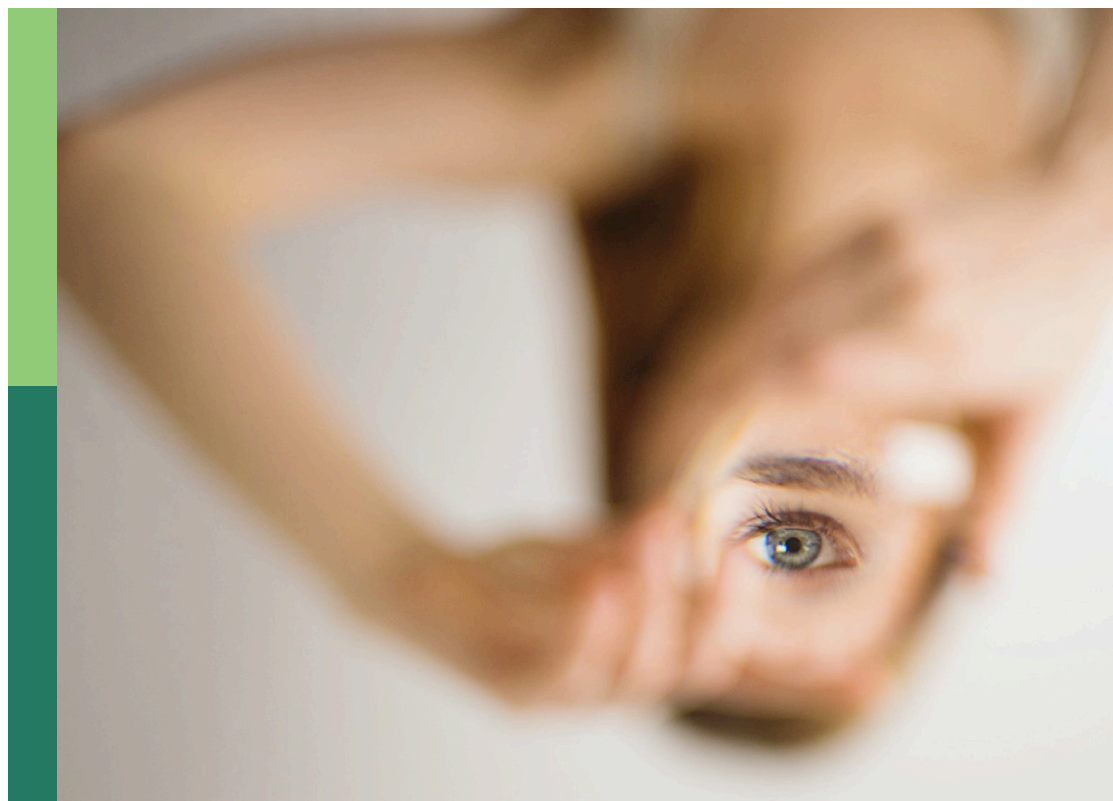
# Ageing and migration status: Intersectional forms of discrimination and exclusion

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# Ageing and migration status: Intersectional forms of discrimination and exclusion

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# Editorial: Ageing and migration status: Intersectional forms of discrimination and exclusion

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active ageing, ageing in place, migration, empowerment, inclusion, older migrants, barriers for older migrants, intersectionality

## Editorial on the Research Topic

Ageing and migration status: Intersectional forms of discrimination and exclusion

Populations of many countries around the world are faced with ageing populations. The proportion of people aged over 60 years in 2050 is projected to be nearly twice as high as it was in 2012 (namely 22% vs. 12%; [World Health Organization, 2022](#)). In economically developed countries, these proportions are even higher. According to a projection, the share of people aged 60 or older is estimated to rise from 26.0% in 2021 to 34.3% in 2050 ([United Nations, Department of Economic and Social Affairs, 2022](#)). As populations age, societies are confronted with challenges in terms of social insurance systems, health, and societal cohesion. These demographic trends and the entailed challenges are leading to a growing interest amongst policymakers, businesses, and other stakeholders on ways to enable older people to “actively age” through: interventions to promote healthy ageing; participation in social, economic, and civic affairs; and ensuring physical, social and income security. Older people’s access to resources necessary for ageing well is impacted by socio-economic status. This in turn, draws attention to the policy and resource needs of communities of older people. Communities which are particularly vulnerable to isolation and a shortage of resources are older immigrants. These communities include economic migrants, asylum seekers, and undocumented workers. For many, their life courses are characterized by precarious and disrupted careers, inaccessibility to public resources, and social isolation, in addition to age and race intersecting to create unique forms of discrimination.

This Research Topic explores the barriers which elderly people face to ageing well and potential public and social policies for ensuring safe, participative, and healthy ageing. It thus contributes to the dialogue on the ways in which policy makers, businesses, third sector organizations and elderly people themselves can enhance active ageing. The articles constituting this Research Topic focus in particular on barriers to the wellbeing and social inclusion of elderly people, and on potential measures for supporting healthy and active ageing.

Addressing elderly people’s wellbeing in relation to health, [Chen et al.](#) examines the relationship between self-efficacy, sports participation, and health promotion behavior for the middle-aged and elderly. The author found that the perceived self-efficacy of middle-aged and elderly people positively affected health promotion behavior. This relationship

between self-efficacy and health promotion behavior was partially mediated by participation in sports. [Chen et al.](#) suggests to promoting sports participation of elderly people to improve public health.

Also addressing aspects related to health, [Zhao et al.](#) study the associations between social support, psychological capital and self-neglect. Their research coincides with the previous article insofar as psychological capital was partially operationalised as self-efficacy. The authors found that social support and psychological capital can mitigate against self-neglect, with psychological capital functioning as a mediator between social support and self-neglect. They suggest that social support and higher psychological capital could decrease the risk of self-neglect in older adults.

Focusing on the interrelationship between social factors and psychological wellbeing, [Wang et al.](#) explore how social exclusion, the sense of belonging, and suicidal ideation are associated with one another. They found that social exclusion increased the suicidal ideation of elderly. Both the sense of belonging and depression acted as mediators in the relationship between social exclusion and suicidal ideation. Additionally, the authors found that interpersonal trust acts as a buffer against the effects of social exclusion on the sense of belonging, depression, and suicidal ideation.

[Cheng and Zhang](#) examine the effects of finance on wellbeing, namely the effect of a pension insurance, more than 10 years after its introduction. They found that the effect of participation in the pension insurance on subjective wellbeing depended on framework conditions. The participants who profited most from the pension insurance were those with a poor health status, but otherwise good overall conditions. The authors therefore recommend implementing social security policies according to local conditions.

Aspects which are also related to the socioeconomic situation of elderly are examined by [Flynn and Wong](#). The authors explore how a community organization can foster the social and economic participation of elderly. In particular, they studied how a community organization can overcome employment barriers of older immigrants. Older immigrants often face multiple barriers to work due to age and migration. The authors found that a community organization identified these barriers toward employability and reduce these barriers by offering elderly immigrants skill training and qualifications.

A more general obstacle toward the social and economic inclusion of elderly is formed by stereotypes about elderly. [Shimizu](#) indicates that the elderly are often associated with negative traits, such as incompetence and stubbornness. The author points out that people differ in how long off they perceive the period until they become elderly, even when they are of the same age. The author suggests that this subjective distance could affect stereotypes against elderly and therefore proposes to focus on this subjective distance to find more effective intervention methods.

[Alises et al.](#) analyse how first- and second-generation immigrants differ in terms of the assimilation of their behavior. They found that first-generation immigrants in Portugal evince a higher degree of delinquency than the Portuguese majority population, but that there is no difference between second-generation immigrants and the majority population. These results

can suggest that social circumstances matter more in terms of delinquent behavior than individual factors.

Further aspects that centrally affect the inclusion of immigrants relate to the characteristics of the majority population. [Genkova and Schreiber](#) examine the attitudes and competences of employees toward diversity. They found that employees in the STEM sector have poor competences in dealing with diversity in their daily work. This seems to be associated with a lack of experience and a lack of support from the respective organizations/leaders. The authors suggest that diversity competences should be strengthened, to be able to utilize the potential of heterogeneous working groups.

[Johansson et al.](#) examine a specific aspect of diversity competence, namely cultural sensitivity, emphasizing the role of cultural sensitivity in assisting in active ageing. They found that municipal officials in Sweden preferred not to use cultural sensitivity as a concept in their work, instead tailoring interventions based on individual preferences. The authors suggest that emphasis drifts away from personal preferences toward knowledge about cultures.

A theme connecting several of these contributions is the challenge which immigrant communities have in drawing on resources to age in a healthy way. The papers in this Research Topic point to measures which government, employers, community groups, second generation family members and immigrants can take to both foster healthy ageing and promote integration and social cohesion. Interventions identified in these papers include: intergenerational support; intercultural solidarity; assimilation; community activism; community involvement; cultural sensitivity; diversity competences; self-efficacy and government outreach to migrant communities. Through a patchwork of help from these different stakeholders, older immigrants can access the resources both within and outside of their communities so that they can have lives which they value.

We hope this Research Topic has cast a light on the lived experiences of a community of older people who are often overlooked in terms of public and social policy discussions on ageing. Further research is needed to better understand both how different immigrant groups age and how stakeholders can better support them. We would point to two areas where knowledge can be further advanced: first, several of the papers we showcased discuss the experiences of “aged in place” immigrants—namely those who have faced lifetimes of disruption, precarity, and exclusion. These are the experiences of many, but not necessarily all immigrant groups. Some more recent cohorts of immigrants (for example BNO Hong Kong immigrants to the United Kingdom) are receiving government and third-party help in the forms of training and accreditation, language help, housing and cultural assimilation. Others migrate as professionals with skills which employers need and strive to maintain. It is worth exploring how those interventions overcome barriers which have been identified in these papers. Second, the papers also show how older immigrants can both individually and collectively co-produce healthy ageing lives which they value and how, with resources from stakeholders, they can have voices in their wider communities. We therefore think that there is a case for further research on the tools which older immigrants need in order to have agency and voice over

their lives and to address the barriers which many have faced to involvement in their host communities.

## Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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# An Overlooked Perspective in Psychological Interventions to Reduce Anti-elderly Discriminatory Attitudes

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**Keywords:** elderly people, discriminatory attitudes, stereotype embodiment theory, interventions, subjective time, intergenerational conflicts

## INTRODUCTION

The world's population is aging at a remarkable rate. The percentage of the world's population aged 65 and over was 5.1% in 1950, was 8.3% in 2015, and will increase to 17.8% by 2060 (United Nations, 2017). In this aging society, intergenerational conflicts between the elderly and the rest of the population are frequently observed in many workplaces and nursing care (Binstock, 2010). Anti-elderly discriminatory attitudes held by non-elderly people have been examined as one of the major causes of such intergenerational conflicts (North and Fiske, 2013). Specifically, the elderly is often perceived as incompetent and stubborn (McKenzie and Brown, 2014). Non-elderly people may also hold the discriminatory view that the elderly should pass down any resources, avoid excessive consumption of any shared social resources, and not behave as if they were younger (North and Fiske, 2013). These anti-elderly discriminatory attitudes lead to a decrease in the quality of life of the elderly (Levy et al., 2000), a disregard for the will of the elderly (Vitman et al., 2014), and an inhibition of the formation of a harmonious intergenerational society (Ishii and Tadooka, 2015). Based on the above, the affirmation of attitudes toward the elderly is an important issue in psychological research.

This opinion paper will begin with a broad overview of the interventions that have been implemented to reduce anti-elderly discriminatory attitudes. Then, an important perspective specific to a social group of the elderly, which have not been sufficiently paid attention to, is pointed out; all people will eventually belong to a social group of the elderly. As a theory that incorporates this perspective, Levy's (2009) stereotype embodiment theory (SET) will be introduced, and a typical factor (i.e., subjective time to become elderly) that should be focused on in future interventions to reduce anti-elderly discriminatory attitudes, will be discussed. In this paper, the fact that we all become elderly is focused on, and this mainly refers to healthy aging, not pathological aging.

## PREVIOUS INTERVENTIONS TO COMBAT THE ANTI-ELDERLY DISCRIMINATORY ATTITUDES

To reduce anti-elderly discriminatory attitudes, a wide range of strategies have been conducted. Previous research has conducted educational interventions which aim to demystify certain commonly misunderstood aspects of the aging and elderly (Chonody, 2015; Lytle and Levy, 2019). For example, Wurtele and Maruyama (2013) found that, after participants were presented with accurate information about the elderly, their anti-elderly discriminatory attitudes significantly

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decreased. The advantage of such educational interventions is that they are relatively easy to implement and can be delivered to a wide range of participants simultaneously. On the contrary, interventions to encourage perspective taking by participants' experience in the impaired physical movements of the elderly (Berthold et al., 2013) and experience in the elderly's appearance using virtual reality (Oh et al., 2016), are also shown to be effective. These types of interventions will continue to increase as scientific technology have developed in recent years. In addition, various studies aimed to reduce anti-elderly discriminatory attitudes through direct contact experience with the elderly (Allan and Johnson, 2008). For instance, Meshel and McGlynn (2004) conducted a 6-week intergenerational exchange program; elementary and junior high school students' attitudes toward the elderly became more positive after the intervention. This result is consistent with the classical findings on mere exposure effects (Zajonc, 1968; Kwan et al., 2015). Extended contact experiences, in which participants imagine getting positive and favorable contact experience with the elderly, are also effective in reducing discriminatory attitudes (Drury et al., 2016; Pekçetin et al., 2021). A strategy of extended contact has the advantage of being relatively easy to implement even in environments where it is difficult to get contact experience with the elderly.

Intervention strategies described above contribute to reducing anti-elderly discriminatory attitudes, but they miss an important perspective specific to a social group of the elderly; all people will eventually belong to a social group of the elderly. This characteristic does not apply to other contexts of prejudice, such as gender or race. Based on the above, it is important to incorporate the perspective that everyone will eventually become an elderly into the context of prejudice against the elderly, but there has been insufficient research to date (Levy, 2009; Takeuchi, 2016; Shimizu et al., 2021). Therefore, in this opinion paper, Levy's (2009) SET is focused on as a theory that incorporates this perspective.

## STEREOTYPE EMBODIMENT THEORY

SET is a theory that discusses the effects of elderly stereotypes on the perceivers themselves. SET consists of four major processes: internalization, unconscious operation, salience gain from self-relevance, and utilization of multiple pathways (Levy, 2009). Internalization is the process by which people are faced with and internalize elderly stereotypes throughout their lives, and the process begins in childhood (Levy and Banaji, 2002). Unconscious operation is the process by which internalized stereotypes, as described above, automatically and unconsciously influence people's judgments and actions (Bargh et al., 1996). Salience gain from self-relevance is the process by which internalized stereotypes of the elderly are understood as highly self-relevant incidents and this is a process that we all go through as we get older (Levy, 2009). Utilization of multiple pathways is the process by which self-associated stereotypes of the elderly influence themselves psychologically, behaviorally, and physiologically (Levy et al., 2006; Wurm and Benyamini, 2014; Chasteen et al., 2015). For example, it has been shown that

elderly people who have strongly internalized negative elderly stereotypes are more likely to feel stressed and lonely (McHugh, 2003).

SET is unique in that it discusses the effects of elderly stereotypes on perceivers themselves, focusing on the temporal dimension. Everyone will eventually become elderly, and those who have a negative view of the elderly when they are young are more likely to be affected by the undesirable effects described above (Levy, 2009). It is an inherent characteristic of the elderly that perceivers of stereotypes and prejudices will one day become members of the stigmatized group. Based on the above, it is necessary to incorporate this temporal dimension into the discussion in the context of reducing anti-elderly discriminatory attitudes. However, a major problem is that there has not been enough discussion that incorporates this perspective.

## DISCUSSION

As strongly argued in the SET, the elderly is unique in which everyone eventually belongs to. In order to incorporate this perspective into the context of reducing anti-elderly discriminatory attitudes, it would be useful to focus on the subjective time to become elderly. It has been reported that there are large individual differences in people's sense of time (Jokic et al., 2018; Stam et al., 2020). In other words, even if the time is the same length, each person feels it in a different way. Specifically, some people believe that becoming elderly is not a long way off, despite their actual age being young, while others believe that becoming elderly is still a long way off, despite their actual age being relatively old.

Those who believe that becoming elderly is still a long way off will be more likely to perceive the elderly as separate from the self and unlikely to imagine themselves when they become elderly. Such cognition of separating the elderly from the self as temporally distant is noteworthy because it is likely to contribute to anti-elderly discriminatory attitudes and, in turn, to the reinforcement of intergenerational conflicts. From the perspective of social identity theory (Tajfel, 1981; Onorato and Turner, 2004), it can be said that when we perceive others as different and distant from ourselves, we perceive them as an outgroup and direct discriminatory attitudes toward them. Based on the above, interventions that make participants feel that the subjective time to become elderly is shorter, may be effective. However, in the context of reducing anti-elderly discriminatory attitudes, the impact of the subjective time to become elderly has not been sufficiently examined. Future research should explore interventions such as experimentally manipulating the subjective time to become elderly.

In this opinion paper, a broad overview of the interventions to reduce anti-elderly discriminatory attitudes is shown. An important perspective; all people will eventually belong to a social group of the elderly, has been overlooked in the literature. To incorporate such perspective, Levy's (2009) SET was introduced, and it would be effective to focus on the subjective time to become elderly. Future studies should investigate and focus on the temporal dimension to find more effective intervention

methods. Therefore, the concept of subjective time to become elderly deserves a great deal of attention. This opinion paper will contribute to the direction of psychological intervention research and its future development.

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# Older Migrants and Overcoming Employment Barriers: Does Community Activism Provide the Answer?

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As populations age and pension ages rise, there is a growing interest in the ability of workers to extend working life. In response to a call for a more robust dialogue on the heterogeneity of the older workforce, this article explores the interplay between different employment barriers faced by one group facing significant employment barriers: older migrants. Older Chinese migrants in the United Kingdom face multiple barriers to work resulting from age, ethnicity and the intersectionality of such barriers which creates a unique set of barriers to continued work. Community activism can play an important role in supporting older constituents, particularly in matching the skills which they have to offer with the needs within and beyond the migrant community. In this study, we use Participatory Action Research to explore with older Chinese migrants the barriers they face in the job market and how community activism can empower them in maintaining employment. As government seeks to raise real retirement ages, more research is needed on its implications for vulnerable groups of older people including migrants.

**Keywords:** older worker, migration, ageism, intersectionality, community activism

## INTRODUCTION

In response to a growing debate on work, age and retirement, Taylor et al. (2016) called for a critical research agenda on aging workplaces which they argued is needed so that social policy can better respond to demographic change. They noted that much of the literature has treated the older workforce as a homogenous labor group ‘obscuring the qualitatively different needs, motivations and desires of older workers’ (p. 681). For social policy to respond to the welfare and employment needs of older workers, a more heterogenous and socially embedded approach to research is needed, with a particular focus on those at risk of poverty and social exclusion. They noted that qualitative research can help to better understand how the relationship between work and age is shaped by factors like work experiences and life circumstances (p. 685). In this article, we respond to their call by focusing on the experience of older migrants whose labor market place is shaped by age, ethnicity and life-course.

From a social policy perspective, there are valid reasons for focusing attention on older migrants. First, the growing level of both internal and cross-national migration requires a policy framework for addressing risks of poverty and exclusion faced by a range of migrant populations (Torres, 2019). Migrants are at risk of economic disadvantage and social immobility (Gorodzeisky and Semyonov, 2011) and have less access to both state and occupational pension entitlements than

non-migrants (Han, 2013) and those who need to work longer face significant barriers when it comes to the interplay of ageism and migration status (Dwyer et al., 2018). Further, migrants in the West have different experiences of work and retirement than the native population. For example, they are at risk of health-related early retirement (Escribá-Esteve et al., 2012) and often plan retirement around spending time in both their native and host countries (Ciobanu and Hunter, 2017). At the same time, they are more likely to be in work beyond State Pension Age, primarily owing to a lack of pension or other savings toward retirement. In the UK, for example, migrants 65–70 years old are more likely than UK-born to be in work (30 vs. 22%) and less likely to consider themselves retired (51 vs. 68%).<sup>1</sup> Almost one in five 65–70-year-old migrants are either seeking work or wanting to work but economically inactive due to a health problem or caring responsibility. Migrants, including older ones, also play an essential role in the infrastructure of social care and support for aging populations (Repetti et al., 2021). Government led programmes to promote active aging- including the promotion of sustainable work in later life- may be inhibited by older migrants' precarious work context, lack of access to employer support and inaccessibility of social benefits (Ciobanu et al., 2017).

Community activism has played an important role in terms of social and economic provision for migrants as well as addressing gaps in public policies and welfare (Letiecq and Schmalzbauer, 2012). Community groups can empower members through collective action, representation and shared welfare (Mainwaring et al., 2020). The aim of this article therefore is to look at the role of community organizing in overcoming barriers faced by older migrants in attaining sustainable work. Working with a community group of mostly economic migrants from Hong Kong and China in the UK city of Manchester, known as the Wai Yin Society (henceforth Wai Yin), we have used Participatory Action Research (PAR) along with expert interviews within the organization to explore with older migrants themselves their work and retirement. We seek to answer three questions:

- How do older Chinese immigrants' lifetime experiences in and out of work create a unique set of barriers to sustainable work?
- What support do older Chinese migrants need to prepare for and maintain sustainable retirements and to what extent does continued work play a role?
- Does community activism offer a way to provide such support?

## LITERATURE REVIEW

The focus of our study are people who migrated early in life and have “aged in place” (Warnes et al., 2004, p. 311), a group which is described as,

“A lifetime of disadvantage and deprivation, including poor health care and housing conditions, few opportunities to learn the local language, and very often the insults of cultural and racial discrimination” (ibid: p. 312).

“Aged in place” migrants therefore can be characterized as not only facing present-day economic and social disadvantage, but also the legacy of lifetime disadvantage which, within the context of work, limits access to sustainable employment, training to support skills development and a “social safety net” in terms of state and employer benefits in order to maintain economic status during periods of illness and hardship. Further, the construct focuses on place-making (i.e., shared experience of disadvantage or deprivation) rather than ethnicity, race or culture (which may be shared by some but not all aged in place migrants (Johansson et al., 2013)). Consequently, the term is particularly relevant to studies like this one which explore how labor market exclusion impacts on later life employment.

## Older Migrant Workers and Disadvantage

Older migrants' career trajectories are often marked by precariousness, social disadvantage, economic illness and hardship (Chin, 2019). Further, older migrants face discrimination not only in terms of age, but also potentially based on ethnicity, disability and gender (Stypińska and Gordo, 2018). Here, it is important to draw lessons from the literature on intersectionality to recognize that the barriers which older migrants face may be unique and separate from those of both older non-migrant workers and younger migrants. It is also an important and useful tool for understanding how economic and social experiences create distinct experiences of Aged in Place migrants which are separate from other migrant groups.

McBride et al. (2014) noted that the intersectionality methodological approach can be an important tool for understanding how multiple discrimination unfold in terms of marginalization beyond their cumulative and respective effects. This is particularly the case with regards to older migrants. Different generations of economic migrants have experiences with discrimination and marginalization which are unique from one another. Further, different forms of exclusion based on migration status, gender and disability, for example, can have compounding effects impacting both everyday experiences and the impact of policy solutions formulated to address issues of disadvantage (Molloy et al., 2003).

Older migrants' career trajectories may also diverge from those of non-migrant workers because of their concentration in self-employment (Clark et al., 2017). There have been two reasons suggested for the high level of self-employment. First, self-employment is a remedy to employment barriers resulting from language problems or difficulties with regards to skills transferability (Abada et al., 2014). Second, self-employment is a product of “neighborhood enclaves” in which community members are connected through shared culture and language as well as access to finance (Klaesson and Öner, 2020). Migrants may choose to live within neighborhood enclaves in order to maintain ethnic identity as well as avoid factors leading to social exclusion (Chilingaryan, 2011). However, it has also been suggested that residing in ethnically concentrated urban areas may have a negative impact on migrants' employment prospects, as it reduces labor seeking mobility (Clark and Drinkwater, 2002) and that lower employment prospects and earning potential are the compensating differential for explaining the cultural value

<sup>1</sup> UK Labour Force Survey Q3 2021.

migrants seek from living in ethnically concentrated areas (Talen, 2018).

## Community Activism

Next, we turn to community activism as a way to overcome barriers which older migrants face to employment and three ways in which community groups are important:

First, community activism can play a practical role of communications within the population, for example by helping migrants to claim social benefits. A report for the HM Revenue and Customs (Radu et al., 2010) recommended that the agency engage with community organizations to address the low levels of social welfare claims amongst migrants. The report noted that such engagement could help not only in terms of disseminating information, but also in addressing social norms which prevent migrants from claiming entitlements. More recently, community groups have played a crucial role in disseminating COVID transmission mitigation measures (Fan, 2021) and ensuring workplace risk assessments have been carried out in sectors with high levels of migrant employment (Moore et al., 2021).

Second, community activism can be a vehicle for political representation. Such political representation is realized through both engaging with external institutions (e.g., government and NGO's) and mobilizing political action within the community. This advocacy is important in overcoming political inequalities which migrants face as well as gaining self-representation against the native population (Ku, 2010). Torres (2019) observed a blind spot in terms of political representation as a vehicle for social justice for migrants as they age, noting that political and economic social justice are complementary.

Finally, community activism plays an important role in promoting social cohesion between community members in order to address shared issues and mobilize political and community action (Matthews and Astbury, 2017). It has been noted that community activism is particularly important in addressing problems of social exclusion which are resulting from multiple forms discrimination through the organization and mobilization of the community across social and demographic boundaries (Pero, 2014).

It is for these three interlocking reasons that we are focusing this paper on the role of community activism in addressing the barriers which older migrants face in maintaining employability. Community organization can both help migrants negotiate changes in public policy and social welfare aimed at encouraging delayed retirement as well as acting as a voice for a constituency whose labor market position makes extended working lives particularly difficult and contentious.

## METHODS

The project was carried out using PAR to conduct research with rather than on participants (Bradbury Huang, 2010). In particular, there are four main benefits which this approach brings to a research project of this kind. First, the approach facilitates thick description of participants' tacit knowledge and understandings (Reason and Bradbury, 2001). The methodology focuses the researcher(s) on a rigorous enquiry into participants'

practical and experiential knowledge through a process. Accordingly, we are able to achieve the objectives of thick description as set by Geertz (1973) of prolonged engagement, triangulation, member checking and holistic processes. Second, the methodology requires a juxtaposition of the researcher's and participants' frames of reference in a process that results in changed perspectives of both stakeholders (Cho and Trent, 2006). Third, the epistemological approach has aspirations for not only producing technical and explanatory value to participants, but emancipatory outcomes as well (e.g., new pathways to sustainable work for older migrants). This is consistent with an ontological approach which recognizes the human actor as a knowledgeable agent, aiming for catalytic validity (Reason and Rowan, 1981) in which the validity of the research is assessed according to its capacity to change understanding of all participants and is therefore a change agent. Finally, PAR acknowledges the ethical dimension of research, and the ownership individuals have over their own thoughts and knowledge (Eikeland, 2006). In keeping with this approach, we refer to our participants as co-researchers. As Heron and Reason described,

"Everyone is involved in the design and management of the inquiry; everyone gets the experience and action that is being explored; everyone is involved in making sense and drawing conclusions; thus everyone involved can take initiative and exert influence on the process" (Heron and Reason, 2006, p. 144).

In this case, in 2015, we worked with eight members of the Wai Yin community who responded to our invitation for 50+ people to participate in a project to explore issues of employability of older Chinese migrants like themselves. We revisited the findings with Wai Yin executives in 2021 and discuss advancements on the community group's work on the subject in the results section. The primary aim of the project was practical- we were aiming to learn from Wai Yin members themselves what the community organization could do to support older members. However, we were also exploring wider issues of the meaning which they attach to work and career as well as both their expectations (for those in work) and experiences in retirement and how they may differ from those of British people. Finally, we aimed to explore with the group how they view government policy with regards to pensions and retirement and how it impacts on older migrants.

Group discussions occurred five times over a 3-month period. Each meeting occurred for a 2-h period. The discussions were taped and material such as flip charts were retained. Informed consent from participants was attained. In addition, field notes were written up and circulated to the group at least 1 week ahead of each meeting. At the beginning of each meeting, the field notes were discussed and amended based on the group consensus. All of the data- both audio and written material- was input and analyzed using NVIVO software. We conducted thematic analysis with the research questions framing the top-level coding and sub-themes emerging through on-going reflexive dialogue (Braun and Clarke, 2006) between the two co-authors (an academic and practitioner). Group participants and interviewees

**TABLE 1** | Co-researchers in our work and retirement group.

Name	Age	Gender	Status	Contributions
Abe	55	Male	Self-employed	Businessman owning a Chinese nursing home
Betsy	58	Female	Employed	In work caring for elderly
Carl	63	Male	Employed	Second generation Chinese family member. Works for NHS
Doug	73	Male	Retired	Retired from catering. Married to Eloise
Eloise	70	Female	Retired	Retired from catering. Married to Doug
Frances	62	Female	Volunteer	Retired from catering. Volunteer
Georgia	63	Female	Volunteer	Retired from administration work. Volunteer
Henry	72	Male	Volunteer	Retired from catering. Volunteers as a gardener

were given the opportunity to read and comment on this article prior to submission.

In order to gain a better understanding of how community activism could support older migrants like our co-researchers, four Wai Yin executives, organizers and managers were interviewed to gain understanding about the background of the organization; the challenges facing the community, particularly older and retired members. These interviews were meant to gain an understanding of how the community group both interfaced with actors such as government, businesses and other community groups; and organized and mobilized constituents in order to address challenges facing the Chinese community. **Tables 1, 2** provides the list of group participants and interviewees using pseudonyms.

The final output of the research was a report to Wai Yin, jointly presented to the executive board. This journal article is a second output which has been jointly written by one academic and one Wai Yin co-researcher.

## RESULTS

In this section, we will discuss the course of the group research on the employability of older migrants. What follows is a narrative shaped by three sources: the co-researchers themselves, executive interviews (jointly carried out by the group as a whole), and literature assembled by us on older workers and age management. The triangulation of sources is consistent with the role of the PAR facilitator in surfacing discrepancies between conventional wisdom (e.g., as articulated by stakeholder groups like employers, unions and professional associations) and the understandings of their own contexts (Wadsworth, 2006). As we will discuss below, the co-researchers identified three spheres in which their experiences in work diverge from those of non-migrant older workers: (1) the impact of life-course on present labor market placement; (2) multiple barriers to sustainable work; and 3) the support needed to find and maintain sustainable work.

### Work, Retirement and Being Blown Off Course With Late-Career Plans

We started our workshops by discussing the expectations and experiences of older Wai Yin members regarding work. The ideal

**TABLE 2** | Wai Yin executives, managers and organizers.

Name	Role
John	Health and social care manager
Margaret	Chief executive
Jane	Finance manager
Judith	Organizer

planned life trajectory of a Wai Yin member was described as running a family business until the last child finished university:

“Work hard and save to send your children to university. Once the last child has finished uni, sell the restaurant and use the money to live off in retirement” (Carl).

Respondents had discussed how major social and economic disruptions like recessions or more recently the COVID pandemic can blow older migrants’ retirement plans off course. For self-employed migrants, macro-economic conditions can impact their ability to sell their business and generate enough wealth to retire. Additionally, male participants described feeling displaced within the community since they lacked the financial resources with which to invest in younger people’s businesses. It was described how men would often use the wealth generated by their businesses to invest in those of younger community members, while women would devote time to volunteering both with Wai Yin and other groups. A financial shortfall therefore broke the cycle of reciprocity within the “neighborhood enclave.” Abe noted that older men want to stay in work so as not to “lose face” within the community.

Wai Yin has developed programmes to support constituents into work and to address employability problems faced by Chinese migrants such as the transferability of skills which had been attained abroad.

“The problem was that they [Wai Yin community members] could do the work but not the qualifications and so employers didn’t want to know. We tried to bridge that gap” (Margaret).

Career development programmes which Wai Yin had developed for younger migrants were unsuitable for older people who

lacked both current formal skills and employment histories working for employers. Further, needing to delay retirement was seen by many older Wai Yin members as “losing face,” as late retirement was described as a signal that the older person had inadequately prepared for retirement. As Frances noted,

“If you are older than 65, it is more difficult to find a job elsewhere. It is easier to run your own business because you are not going to tell yourself off by being too old but if you go to work for somebody else they would probably think that you are too old” (Frances).

For our co-researchers as well as other Wai Yin members, major economic and social disruptions can lead to older migrants’ retirement plans, to paraphrase (Vickerstaff et al., 2004, p. 26), “blown off their retirement course.” Property prices fell, and as a result, couples were unable to generate enough wealth to retire comfortably. Their options were described as limited. One of the participants noted that some business owners continue to run their restaurants with the hope of selling up once the economy eventually improves. However, another made the point that many older restaurant owners are worn out before they reach the age of sixty and continuing in the work they do is too physically demanding. Co-researchers said that older people avoid asking their children to help run the business, as for many their aims are to help their children build lives and careers outside of the catering industry, education was described as the only mean of claiming up the social ladder and build their lives away from take away shops or working in restaurants. At one point in the group discussion, for example, one of us asked Henry whether, when he experienced an injury which had limited his mobility, he had asked his children to help with kitchen work which he had been unable to carry out. It was explained:

“Our dream is to get our children to university and out of the restaurant business because we know how hard it is and we want our children to have better lives than ours [...] We don’t want to ask them back” (Henry).

Selling the business and working for an employer was also seen as difficult. It was noted that, for those who had started their businesses young, the lack of an employment history, past employers from whom references could be obtained, formal qualifications and career based training made finding a job in one’s fifties very problematic. Further, the lack of English language proficiency created barriers to even low paid work.

“I do think the people over 50 if they are Chinese if they have language barriers it is really difficult for them no matter what job. It is difficult for them because the language skill is not very good and they have to engage in the community. They are not confident to go out to work with people speaking the language they don’t really know” (Jane).

Older Wai Yin community members whose retirement plans were affected by the 2008 financial crisis were therefore left with the prospect of retiring with a smaller nest egg than they had anticipated. Further, they lacked routes back into work.

## Intersectionality of Multiple Barriers to Work

Next, we discuss the multiple forms of discrimination identified by our co-researchers. We start with the two forms of stereotypes (age and ethnicity) which were identified by Rhee et al. (2013). It was noted that employers tend to favor young people, who are perceived as cheaper and more flexible sources of labor and non-migrant workers who have stronger English proficiency. Older migrants were therefore described by our co-researchers as the last choice for employers.

“It’s not so bad for the younger generation. A company will take on a 19-year-old trainee who they can pay £6.19 an hour. Why would they want a 50-year-old, especially one who has trouble reading and writing English?” (Betsy).

However, it was not simply double barriers which they faced, but rather the intersection of being both older and having been born overseas. For example, while both younger and older migrants commonly face language proficiency difficulties, the former have more opportunities to improve their English skills through training and language exchange programs. Further, the current generation of Chinese young people moving to the UK are better educated than those who immigrated decades before. For those older people who had not had the opportunities to improve their English skills early in life, language difficulties and social isolation became mutually perpetuating. As one older person described when discussing work in a restaurant,

“If you can’t communicate well, you stay in the kitchen away from the customers. That’s why the husband can’t speak as well as the wife. The husband will stay in the back preparing the food, while the wife will greet customers and talk with everyone. So, when we get to our age, it’s easier for me to go into town and talk to others than him [her husband]” (Eloise).

Another co-researcher added that employers tend to be less supportive of older job applicants with poor English proficiency than younger ones because it is assumed that a person who has lived in the UK for a long time will have had the opportunity to master the language. She discussed the experience of a friend who had applied for a job as an office cleaner. During the interview, the friend was asked to read a toilet cleaner bottle label.

“She couldn’t pronounce most of the words. Nobody can. Why is it necessary for the job?” (Betsy).

Two other dimensions of intersectionality played out in our discussions. The first concerned how the onset of health problems and associated disabilities played out for older migrants. Work in the catering industry is often physically demanding, particularly for men who are mainly responsible for the manual work. However, because many migrants are either working in self-employment or precarious work, they cannot rely on employers to provide support should a health condition occur. Georgia, for example, discussed the experience of a contemporary who

was pushed out of catering work by stress and applied for an administrative job through a recruitment agency.

“So, I went with her interview for real, what is her plan for looking for a job. She was expecting they will give her some training or an application. Then they look at the screen and says, you have any disability or long-term illness and she says, yes I have a mental health problem. It was terrible. It shocked me and I felt hurt as she felt. So I thought, no, this is not the way” (Georgia).

Second, the group discussed how issues of employability and retirement played out differently for men and women in the Wai Yin community. Both co-researchers and Wai Yin organizers cited an increase in the community of the divorce rate in the last decade, especially amongst those in their late fifties. Many older women are facing difficulties obtaining divorce settlements which would provide adequate retirement income, particularly where the family wealth was tied into a business. While pension poverty is a well-documented problem in the UK (Ebbinghaus, 2021), a Wai Yin organizer reported it as a particularly significant issue which case managers are managing because many of their older female clients lack the requisite national insurance contributions to claim the state pension and, because they have mainly worked in self-employment or precarious work, they also lack occupational pensions.

Older migrants identified four main barriers to continued employment faced by people like them within the Chinese community. Two had been identified by Rhee et al. (2013): language and discrimination; and two were new: their lack of employment history owing to years spent in either self-employment or precarious work; as well as the lack of planning for extended working life due to disruption of their life trajectories as a result of the financial crisis. Given the context, we spoke with Wai Yin managers and organizers about the services which the organization is providing older constituents who need support in finding work.

## Community Activism

Wai Yin offers help in CV writing, career advice, locating training in local colleges and apprenticeships. However, the clients of these services are almost exclusively young people. Older people rarely attend drop in sessions to ask for help because their perception of work is often physically demanding manual work which they are too worn out to do.

“They tell me they don’t want to work anymore [...] ‘I’ve been washing dishes since I came to this country. Why do you ask me to wash dishes again’ (Judith).

The organization’s first intervention in these situations is to help the client claim social welfare benefits to which they are entitled. However, it was noted first that clients often want or feel they need to retire well before the State Pension Age; and second may have interrupted histories of paying into National Insurance which then affects their entitlements. Further, several Wai Yin managers noted that clients who retire early are at risk of social isolation.

“When you are 50, you can go to another job when you retire because you have the language skill. But Chinese men and women can’t. So, they become lonely men and women” (Judith).

The community organization had tried unsuccessfully to encourage local employers to employ older Chinese people. Wai Yin organizers did, however, recognize a need for older volunteers in the community. In particular, the organization needs people to provide interpreting services as well as outreach care for vulnerable community members. Two examples were highlighted. First, Chinese people with mental health issues are reluctant to ask for support from health care professionals because of the cultural stigma attached. The organization established a drop-in center deploying volunteers, many of them older and/or recently retired to work with health care professionals in advising and supporting clients. The benefit of deploying volunteers, according to the organizers, was that it challenged the negative perceptions of people with mental health issues which were pervasive in the community. The second project which was mentioned involved the delivery of care for Chinese people with cancer. The project, set up in partnership with MacMillan Cancer Foundation, and aimed to help families navigate through the UK health and social service systems in order to access support in caring for their relatives. Clients had language difficulties and older volunteers acted as interpreters.

According to Wai Yin organizers, their aims when recruiting older volunteers is 2-fold. First, they assess the volunteer’s skills and talents and how they can be deployed to the benefit of the community. Organizers identified volunteers who were contributing to the Wai Yin community by for example training others in Tai Chi or leading gardening groups. Some of the volunteers with whom we spoke discussed how their volunteering led them to discover “hidden talents” which they enjoyed sharing with others.

Second, they aim to find ways in which volunteers can benefit from their time volunteering. This is primarily focused on addressing issues of social isolation, particularly just after retirement. Organizers discussed a number of projects such as luncheon clubs and away days which were developed to reduce loneliness in the community. According to organizers, Chinese society attaches significant cultural importance toward caring for the elderly which is usually met within the extended families. People in their fifties and sixties normally expect to spend some time caring for elderly relatives, as well as grandchildren. If the extended family is not local, people whose children have left home feel at a loss, and come to Wai Yin to take on a caring role which would normally be provided by the family,

“The idea that you volunteer your time...is different among Chinese...We don’t have a problem with people coming to help the elderly because there is a strong identification that you respect your elders” (John).

Wai Yin has developed two programmes to support older migrants (both Chinese and members of other BAME groups) who are displaced from work mid-career. First, the community group was commissioned by the Manchester City Council

to help deliver domiciliary care services to elderly Chinese people. Like many councils, Manchester's is facing significant constraints in the delivery of social care services, and delivery of services to elderly people with limited English skills has been particularly problematic.

Organizers in Wai Yin had sought to recruit the group's members who had recently retired to deliver care services to elderly constituents. The problem that the group faced was not that they lacked potential volunteers- in fact there was a surplus of people wanting to participate. Rather, volunteers did not have the necessary qualifications to provide eldercare. In the UK, social care workers need to achieve formal qualification through the National Vocational Qualification (NVQ) programme which involves training and assessment of on-the-job skills as matched to the occupational standards of the candidate's profession. The NVQ program was developed in large part to give workers who had derived their skills through workplace experience pathways to formal and transferable qualifications.

"What we do is that you know the NVQ training now this is the Level II and then you have the assessor. So the assessor is assessing them. So we wanted to train up, as long as we've got this link, so we can set up the NVQ trainer, this is the assessor, to Chinese assessor to assess them" (Jane).

According to Wai Yin organizers, there is a great amount of interest amongst older people in the community to gain NVQ's. The problem stems from the program's emphasis on language skills. In order to complete the assessment, candidates need to not only show assessors how they carry out their work, and thereby demonstrate competency, but also verbally narrate the work which they are completing. Non-native speakers struggle when communicating in English, especially when describing complex tasks.

"The English requirement is a big and unnecessary block on Chinese people who want an NVQ [...] They can do the job. They just can't talk through what they're doing" (John).

To address this barrier, organizers in Wai Yin have adapted the NVQ program to tailor it toward the needs of its constituents. First, it developed training programs which takes modules from the national curriculum and modified them in part to be delivered in Chinese, but also to focus modules more on demonstrating competency rather than communicating processes. They worked with a local college as well as charity groups representing people with learning disabilities.

"We work with those charities that deal with learning disabilities because the people they deal with have, invariably, communication difficulties. They can't write so staff have learnt ways of communicating in visual terms" (John).

Second, Wai Yin organizers have trained Cantonese speaking examiners to assess candidates. They also developed strategies which non-native speaking candidates to prepare for assessments by first writing out their work processes in Cantonese and then

translating their written work into English so that they can communicate with more confidence.

According to organizers, the NVQ program has the potential to achieve three objectives for the local community. First, it can help mobilize talent within the community to deliver sought after eldercare services which are not now being provided by the public sector.

"They [trained care workers] would work for Wai Yin as well as others as well. So if they got the qualification, if they have confidence enough in speaking English a lot of support worker will require NVQ qualification anyway" (Jane).

This is an important goal for the community group, as the number of elderly migrants is rapidly growing as the first generation to arrive in the UK ages. Second, organizers are developing methods for delivering vocational based training to people who have historically been excluded from the formal educational system. The group's aspiration is not only to deliver NVQ training in social care, but also to support migrants in gaining formal qualifications based on training they may have received from abroad. Third, organizers noted that candidates who have gone through the program have developed strategies for communicating in English which have then helped them in job interviews.

Second, in partnership with the Manchester based radio station AllFM, Wai Yin has developed a programme to provide radio broadcasting skills for volunteer participants in a programme called Dragons Voice (an award winning programme recognized by the Queen's Award for Voluntary Service, National Community Radio Awards, and High Sheriff Special Recognition Award). Dragons Voice provides a medium of expression for Manchester's Chinese community to talk about their experiences living in the UK. Dragons Voice Radio explores issues such as isolation and loneliness, identified problems in migrant communities (Ambition for Ageing, 2020). Broadcasting in Cantonese and English, it encourages those with limited English skills to contribute. The development of Dragons Voice was supported by the Greater Manchester Mental Health NHS Foundation Trust, initially to encourage those in the Manchester Chinese community to access mental health services and promote positive mental health. The shows and its presenters and have grown and evolved since its inception to explore a range of issues affecting their community, promote Chinese Culture and promote events within their community. Working with AllFM, Dragons Voice provides training to volunteers who participate in the radio shows. Training covers all aspects of radio production including writing, editing, literacy, team working and software skills. These are transferrable skills that can be utilized to address employability issues in older migrants. Also providing a medium for community activism, Dragons Voice gives older Chinese migrants a platform to discuss challenges of mental health, joblessness and isolation living in the UK (Ambition for Ageing, 2020).

Both the social care and Dragons Voice initiatives show how Wai Yin is addressing joblessness in its older community in three ways. First, the organization is tailoring employability support

to the particular set of problems older migrants face in seeking reemployment: namely language barriers, interrupted career trajectories and lack of formal and transferable skills. Second, both programmes are also addressing broader community challenges like care service shortages and public outreach over COVID. Finally, they are vehicles for political and community voice for older migrants.

## DISCUSSION

The aims of this paper were 2-fold: First to add to the still nascent body of literature on the employment barriers faced by older migrants; and second to show how community activism can play an important role in helping older migrants find sustainable work as retirement ages rise. We selected older migrants from China and Wai Yin due to its historical establishment in organizing and providing services to the local Chinese community.

Our first research question asked what employment barriers older Chinese migrants who would be described as Aged in Place face. Earlier, we suggested that the conceptual framework of intersectionality can be instructive in understanding the labor market placement of older migrants which differentiate them from older workers generally. Our co-researchers identified three ways in which migration status and age intersect. First, precarious careers and self-employment make them less attractive job candidates with employers seeking workers with formal qualifications and trackable career histories. Second, the lack of language skills can block access to sustainable work even in jobs with which English skills are not a priority. Third, older migrants have less access to institutions like employers, public services, and trade unions which are meant to deliver support (e.g., lifelong learning, phased retirement, health initiatives) to older workers in extending working life. Accordingly, social policies in the UK and many other parts of the world concerning extending working life are failing to reach older migrants.

Our second two questions asked what support older Chinese migrants face *and* whether community organizations could contribute to delivering such support. In this case study, community activism has played three important roles for migrant groups: communication, representation and cohesion. Our first observation is that the approach which Wai Yin as a community group was different for younger than older job seekers. For the younger generation, the group offers training and drop-in centers for CV writing and interview preparation. It has also engaged with local businesses to encourage them to employ and/or provide apprenticeships for younger Chinese people who are seeking work, arguing the “business case” for doing so. In other words, the community group put communication and representation at the forefront, but rather less emphasis on cohesion. This could perhaps be explained by the observation from the group participants that older Chinese migrants often want their children to move away from the local community, at least regarding work because work in the catering industry is both physically demanding and precarious (Song, 2015).

The organization’s approach to older job seekers, by contrast, started with communication and cohesion. Communication took

the form of helping older constituents claim their pension entitlement, while helping them plan for retirement. Cohesion was intergenerational, but between people in their fifties and sixties who had lost some of the intrinsic benefits from work (having a purpose and social interaction) and were seeking financial security in old age with elderly Chinese migrants who needed care from providers who understood their language and culture. Through the gateway of volunteering, the organization introduced training, qualifications and employability skills which would then be a pathway into secure employment. In that way, the organization has replicated what might be considered a “neighborhood enclave” by creating work opportunities for older job seekers by identifying needs within the community.

## Limitations

We note two limitations to our study. First, the study was framed as a qualitative study and we have outlined our objectives in the methods section. However, a quantitative based study such as secondary analysis of national or international datasets like the English Longitudinal Study on Aging would provide insight into the experiences of older migrants in work and retirement and transitions between the two. As we outlined in the methodology section, PAR enables marginalized groups to work with researchers to explore and find solutions to problems they face. However, as Dedding et al. (2021) noted, even when a study is carried out over a period of time, findings are nevertheless time-bounded which in turn limits the granularity with which co-researchers can explore an issue. Further, generalizability is not possible by the small numbers of migrants and segmentation of this part of the population. Second, we have made clear that our study focuses on specific group of older migrants- aged in place Chinese migrants in the UK- and we want to emphasize that experiences and expectations of older migrants is diverse. We comment on the need for further studies in the conclusion.

## CONCLUSION

In terms of public policy, older migrants are part of the fabric of diversity of the older workforce (for a discussion on the heterogeneity of the older workforce, see Flynn, 2010 for a more in depth discussion) which must then be reflected in governmental “carrots and sticks” which encourage extended working lives. Older people who are in precarious work, are low skilled, have interrupted careers and/or have been subject to multiple forms of discrimination are more at risk of poverty in old age, and many “aging in place” migrants would certainly fit this description. Community activism, which has played an important role in integrating newly arrived migrants can also play an important role as they age to make their life more productive and valued their contribution during their working life.

Next, we would like to point to the value of participative action research as a methodology for research on age and work, particularly in relation to the employability of vulnerable older workers. The value of action research as a methodology with which older workers themselves can reflect upon, and therefore influence, their own careers has been mentioned elsewhere (e.g., Billett and Woerkom, 2008), but few studies have emerged in

relation to work (for an exception see (Hilsen and Ennals, 2005). Much of the research on age and work tend to problematize either or both the extension of working life and/or maintenance of existing retirement ages. We began our research with the agenda of exploring the employment barriers faced by older migrants, but it was only through exploring with Wai Yin members that we were able to appreciate the meaning which they attach to meaningful work and as a consequence Wai Yin as a stakeholder is able to map out the deployment of skills with its constituency to address challenges within the Chinese community. For our co-researchers, participation in the project provided the opportunity to explore the meaning they attach to work and retirement, but also how they shape the experience of the two both on an individual and, via Wai Yin, collective basis. As Judith said,

“At the beginning, I was very confused with the idea of work after retirement because I thought they were opposites. Now I can see that the [voluntary] work I have been doing is work and I have never really retired” (Judith).

PAR can therefore make an important contribution in identifying ways of reconciling the extension of working life with active aging through what Vincent et al. (2001) has called for as research *with* rather than research *on* older people.

Finally, we note the lack of research on the experiences of older migrants, especially those who are aging in place, in terms of multiple and intersecting barriers they face not only in terms of employment but also health services and state benefits as well as avoiding social exclusion. Our research has shown that community activism can serve older Chinese migrants both in terms of providing employability support and representation within and outside the community. However, Chinese diaspora

are relatively well-organized and suited to activism (Wang et al., 2021), however other ethnic communities are more disperse and with less of a collective voice on public policy matters. Further research on older migrants, especially marginalized groups, for example undocumented groups, is needed to better understand how support can be delivered and tailored to their needs.

## DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repository and accession number(s) can be found at: <https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=851630>.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Newcastle University Business School. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

Both authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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# Analysing the Relationship Between Immigrant Status and the Severity of Offending Behaviour in Terms of Individual and Contextual Factors

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**Background:** Social inclusion is a context for both risk and protective factors of migrant youth delinquency. This study aims to shed light on the issue by comparing delinquency amongst native, first-generation, and second-generation immigrant youths in Portugal, a country located in the south of Europe, an area where research in this field is still scarce.

**Methods:** The research is based on the International Self-Reported Delinquency (ISR3-3) dataset, which includes information on over 4,000 adolescents, who self-reported on their socio-demographic status, leisure activities, school and neighbourhood environment, family bonds, and self-control.

**Results:** Nested Logistic Regression analyses showed that a young first-generation immigrant is twice as likely to commit a crime, with or without violence, as a young native born in Portugal. However, no differences were found regarding the prevalence of delinquency amongst second-generation immigrants and natives, which is likely due to the integration and cultural assimilation of the immigrant over time. Regarding the analysed risk factors, it was found that both structural and individual factors, identified by the theories of control, stress, as well as situational action theory, have a direct effect on the commission of juvenile crimes (both non-violent and violent). Moreover, this effect is significant in adolescents living in Portugal in general, both immigrants and natives. The most influential variable for both types of delinquent behaviour, with and without violence, is peer delinquency, followed by low morality and self-control.

**Conclusion:** These findings have relevant policy implications and are useful for evidence-based interventions aimed at promoting migrant adolescent well-being and targeting host countries' performance.

**Keywords:** youth offending, migrant origin, self-reported data, integration policies, Portugal

## INTRODUCTION

Social inclusion is an issue of international scope with national implications whose political management is fundamental amongst the challenges presented by the UNESCO Sustainable Development Goals (Carens, 2004). This has been recognised by the United Nations amongst its priorities for the 2030 global agenda. Specifically, Goals 10 and 16 directly address social inclusion in the ambition to reduce inequality within and amongst countries. Failure to ensure inclusive societies is identified as a causal factor of violence and insecurity that curtails sustainable development (UNESCO, 2022). The counterpoint to the sustainability perspective is to be found in some political movements that have emerged in developed countries in recent decades, which emphasise the relationship between immigration and offending behaviour as one of their main arguments. Contributing to this debate by providing scientific evidence to analyse whether such a relationship between offending behaviour and immigration really exists and, if it does, to identify the main factors that lead to it, is precisely the main objective of this research.

This is not a new issue, as differences in involvement in offending behaviour between migrants and the native population have been a major topic of discussion in criminology since European countries began to receive large numbers of foreigners, a trend that was driven by job seeking in the 1950 and 1960s. This phenomenon has been accompanied by a tightening of migration policies in Europe (Tonry, 1998; Killias et al., 2004). Nevertheless, self-reported delinquency amongst adolescents in Europe does not clearly show a higher rate of immigrants involved in antisocial behaviour and delinquency than natives (Junger-Tas, 2001). On the one hand, the existence of a significant correlation between immigrant origin and crime has long been recognised in the scientific literature (Killias, 1989; Junger-Tas, 1997, 2001; Marshall, 1997; Kardell and Martens, 2013; Salmi et al., 2015; Bovenkerk and Fokkema, 2016). Other studies, however, have found no significant differences in the propensity for offending behaviour of native youths and that of immigrant youths (Junger-Tas, 1997; Torgersen, 2001). Moreover, the dynamics of this relationship (between immigrant status and offending behaviour) remains unclear (Salmi et al., 2015; Serrano-Maillou, 2018).

These contradictory results suggest that further research is needed to fully understand if there are differences between the prevalence of delinquency in immigrant youths and that in native youths, and the mechanisms that might contribute to such differences. Similarly, it would be worthwhile to examine whether those factors that are recognised as predictors of offending behaviour in central and northern Europe are applicable in southern Europe. Regarding these predictors, whilst many studies have only focused on contextual or individual factors, the combination of both types should be considered in the prediction of offending behaviour (Duran-Bonavila et al., 2017). To that end, the present research attempts to understand the influence of both contextual—or structural—factors (such as family structure, neighbourhood and school disorganisation, and peer delinquency) and individual factors (such as morality and self-control) on delinquent youths offending in Portugal, differentiating between their origin (native or immigrant). In turn, an analysis of

immigrant status has been carried out distinguishing between first- and second-generation youths. In addition, a separate analysis has been conducted of violent and non-violent offending behaviour in both native and immigrant youths in order to ascertain if different patterns pertain to different types of crime.

Finally, youth age and gender have also been included as predictor variables of offending behaviour as the influence of both variables on the propensity to juvenile delinquency has been empirically demonstrated in criminological research (Grasmick et al., 1993; Sampson and Laub, 1997; Moffitt and Caspi, 2001; Torgersen, 2001; Ribeaud and Eisner, 2010; Bovenkerk and Fokkema, 2016).

## PORTUGAL AS AN IMMIGRANT COUNTRY

Portugal has changed radically over the past decades, from a country from which many people emigrated in order to find work in other European countries, to a country of choice for immigration (Casqueira, 2006). Although the total number of immigrants remains relatively small, the new influx of people implied the end of a culturally homogeneous society. Immigration to Portugal was, until the mid-1990s, an inheritance from the colonial period. Most immigrants came from Cape Verde, Angola, or Brazil. Since the late 1990s, a boom in construction has ushered in a new flow of immigrants from Eastern Europe (mostly Ukrainians), Brazil, and the former Portuguese colonies in Africa (Casqueira, 2006). Their communities currently constitute the largest immigrant groups in Portugal. Official data from the Portuguese Foreign Office (Portdata, 2019) show that the foreign population living in Portugal grew steadily from the end of the 20th century until 2009, when it began to fall. Then in 2015 it began to rise again until it reached its historical peak in 2018 with 477,472 foreign residents (4.7% of the total population). The immigrant population of Portugal originates from Brazil (25.5%), Cape Verde (12.1%), Ukraine (11.0%), Romania (8.7%), Angola (4.9%), Guinea-Bissau (4.2%), and the United Kingdom (4%). It is worth noting that the immigrant population is not evenly distributed throughout the country, with concentrations of ethnic minorities mostly found in urban areas (Casqueira, 2006).

## EXPLAINING THE JUVENILE DELINQUENCY–IMMIGRANT NEXUS IN EUROPE

The relationship between immigration and juvenile delinquency is one of the most recurrent topics in criminology. Theoretical tradition in this discipline has emphasised sociological and structural factors, such as family disorganisation, lack of rules, and social marginalisation, as precursors to criminality. According to the social disorganisation theory (Shaw and McKay, 1942), neighbourhoods with poor living standards, poverty and population instability suffer from high crime rates.

Unemployment and economic deprivation force immigrants to settle in disadvantaged residential areas, where residential turnover weakens social bonds and social control. The additional disadvantage of poorer schooling in these areas has also been researched as a risk factor for delinquency (Eklund and Fritzell, 2014; Pauwels and Svensson, 2015), as has the high concentration of immigrant youths in urban neighbourhoods (Kardell and Martens, 2013). According to the theory of control (Hirschi, 1969), immigrants' lack of connection with their host society, as well as the break with their culture of origin, favours the development of criminal behaviour. Moreover, a lack of parental supervision and weak family bonds increase the likelihood of delinquent behaviour (Gottfredson and Gottfredson, 2013).

One of the factors that have repeatedly been found to contribute to the development of offending behaviour amongst adolescents is peer influence, because peers serve as role models for behaviour (Moffit, 2006; Titzmann et al., 2008). Peer-oriented leisure activities are related to a higher risk of delinquency, because lack of structure and little supervision by adults in the contexts where such activities take place provide opportunities for delinquent behaviour (Mahoney et al., 2004). Several authors have identified lifestyle risk and peer delinquency as predictors of offending behaviour (Wikström and Butterworth, 2006; Wikström and Svensson, 2008; Marshall and Enzmann, 2012; Schils and Pauwels, 2016; Pauwels, 2018).

In addition, individual factors configure a person's crime propensity, according to the situational action theory (Wikström and Butterworth, 2006), which is one of the most tested contemporary theories. Morality plays an important role in crime propensity. Individuals may consider an act to be good according to their own cultural and moral rules, even though the legal system may forbid it and have declared it illegal. Thus, morality has been considered a relevant individual risk factor for juvenile delinquency (Svensson et al., 2010; Wikström et al., 2012).

Low self-control is another relevant individual risk factor that explains active offending (Svensson et al., 2010; Bruinsma et al., 2015; Jansen et al., 2016). According to theory of control of Gottfredson and Hirschi (1990), self-control is a multi-faceted trait that focuses on the ability to defer the immediate gratification of desires when such gratification results in long-term negative consequences.

The accumulation of all the above mentioned risk factors (neighbourhood and school disorganisation, lack of parental control, peer delinquency, and low levels of morality and self-control) increases the likelihood of developing offending behaviour, as is stated by life-course theory of crime of Sampson and Laub (1997). These risk factors should be considered "turning points" in the development of offending trajectories (Pratt, 2016).

## PRIOR RESEARCH ON JUVENILE DELINQUENCY USING SELF-REPORTED DATA

Studies conducted to analyse the differences in the prevalence of offending behaviour between native and immigrant youths

have generated contradictory results. For instance, some studies based on self-reported delinquency in Europe found that immigrant youths had either similar or lower crime prevalence rates compared to the native population (Junger-Tas, 1997; Torgersen, 2001). Other studies conducted in northern European countries, on the other hand, revealed higher rates of violent delinquency in second-generation immigrants in Germany (Enzmann et al., 2010), Switzerland (Killias et al., 2010; Ribeaud and Eisner, 2010) and Sweden (Svensson and Shannon, 2020). In Norway, a study found some differences in patterns of self-reported delinquency amongst adolescents with respect to immigrant status, gender and country of origin (Torgersen, 2001). Titzmann et al. (2008) confirmed that in Germany, the strength of association for variables such as parental knowledge, peer delinquency, and family violence differed between first-generation immigrant and native German adolescents, although the predictors of delinquency did not differ between second-generation immigrant and native adolescents. Therefore, as there is no clear evidence for the overall differences in crime rate between immigrant and native youths, further research is needed. Furthermore, only a few studies of this issue using self-reported delinquency have been conducted in southern European or Mediterranean countries (Sobral et al., 2010; Gatti et al., 2013). In Portugal, juvenile delinquency has been analysed in depth from a psychological and intervention perspective—with institutionalised male juveniles (Pinto et al., 2015) and young people overall (Cardoso et al., 2015)—but not from the perspective of immigrant youth involvement in offending.

In the present study, we attempt to analyse in detail the differences in delinquency involvement between native and immigrant youths residing in urban areas of Portugal. To achieve this general objective, and to summarise all the information analysed so far, this research pursues the following objectives (i) to analyse whether there are differences in the probability of developing delinquent behaviour between native and immigrant youths, distinguishing, in the latter group, between first and second generation; (ii) to study whether the individual and contextual risk factors identified by various theories as predictors of the development of delinquent behaviour in young people from northern and central European countries are also applicable in southern countries such as Portugal; and (iii) to determine whether there are differences between the influence exerted by these risk factors according to the seriousness of the crime, distinguishing between violent and non-violent offences.

## METHODOLOGY

### Sampling and Data Collection

For generalisation purposes, a stratified sampling was conducted in two waves: by city and by school grade. First, schools in three Portuguese cities—Lisbon (25%), Porto (27%), and Braga (48%)—were randomly selected, and then 7–12th grade classes were likewise randomly selected. Survey administration took place during a class session supervised by at least one research assistant. Oral consent from students was obtained after written and oral information on the study's objectives was

provided. Anonymity and confidentiality were ensured. Research assistants answered participants' questions to ensure that study's objectives, consent, and questionnaire were well understood.

Having received previous approval from the Portuguese Data Protection Agency, the Ministry of Education, and from the Ethical Committee of University of Minho, the questionnaire was administered, whenever possible online. Paper administration was used when no computers were available to administer the survey or when problems with web connections arose. Data collection was carried out from October 2015 to June 2016.

Participants included 4,124 students in grades 7–12, aged 12–18 years. These were recruited from 80 schools in three small-to-large-size cities in Portugal: Braga, Porto, and Lisbon. Of these, some questionnaires were excluded due to incomplete or invalid information. In total, 4,009 questionnaires were initially valid for the analysis (the descriptive statistics are presented in **Table 1**).

**Table 1** shows that both males and females were represented in the sample (with a slightly greater proportion of females—53.5%). Age is ranged from 12 to 18 years. The majority was born in Portugal (95.2%), including both natives (79%) and second-generation immigrants (16.2%), that is, adolescents who were born in Portugal but at least one of their parents is a foreigner. The remaining youths were 191 first-generation immigrants (adolescents who were born in a country other than Portugal—1st G), Brazil being the most popular country of origin.

As we can observe in **Table 1**, in most cases (63%) within the small group of first-generation immigrants (191) the country of origin was not specified. This fact prevents the analysis of the influence of culture of origin on the probability of committing criminal behaviour, having to consider the immigrant group as a whole.

Regarding offending behaviour, more than half of the students claimed not to have developed any such type of behaviour (65.5%).

## Instrument

The data are individual-level data based on the International Self-Reported Delinquency Questionnaire (ISRD-3) that was validated and administered by the authors of this study. The ISRD-3 is a standardised self-report questionnaire on juvenile delinquency and victimisation. The questionnaire includes items of a sociodemographic nature, as well as on family, school, victimisation, leisure and peers, neighbourhood, attitudes, and values (pro-social, self-control, and neighbourhood), offending, substance use, the strength of norm transmission, procedural justice, and gang membership.

Structural factors are measured in the ISRD-3 through questions on family structure, neighbourhood environment, school environment, and the students' leisure time or unsupervised activities, specifically on their frequency of going out, the kinds of activities they engage in, and their time spent hanging out with friends, in line with Steketee (2012). Morality and the strength of norm transmission from family, school, and peers is measured in the ISRD-3 using two types of vignettes: one measures the "subjective norms" of the respondents by asking how they view the norms of relevant others—parents, teachers, and peers—in terms of unethical (but legal) behaviour motivated by personal gain (enrichment); the other measures the same with regard to illegal behaviour (theft). Combining these two measurements creates a scale for the strength of norm transmission. A shorter version of the Grasmick et al. (1993) scale has been added, this shorter version including the following constitutive elements of low self-control: impulsivity, quick-temperedness, self-centeredness, a preference for simple tasks, and physical risk-seeking activity.

## Measures of Risk Factors

The overall variable to predict was the probability of developing an offending behaviour, distinguishing whether this was of a violent or non-violent nature. Then, the variables used as predictors (considered "the risk factors") were divided into two groups: *structural* (family structure, parental social control, peer delinquency, neighbourhood disorganisation, and school disorganisation) and *individual* factors (morality and self-control). Immigrant status was included in the analysis to distinguish between first-generation, second-generation, and native.

The survey items used to operationalise selected risk factors were coded on a five-point Likert scale in ascending order (the higher the score for the factor, the worse the situation of the participant). The operationalisation of each item in each variable was performed using factor analysis, specifically, principal component analysis. The results proved the adequacy of the factor analysis (Barlett's test of sphericity significance was 0.000 and the Kaiser-Meyer-Olkin sample adequacy measure was greater than 0.75). For each construct (or "risk factor"), two components were always obtained that explained at least 60% of the variance. The scores of each participant for each factor

**TABLE 1 |** Sample composition ( $N=4,009$ ).

Characteristics	<i>N</i>	Proportion (%)
<i>Gender</i>		
Male	1,865	46.5
Female	2,144	53.5
<i>Age</i>		
12–15 years old	2,172	54.2
16–18 years old	1,837	45.8
<i>Birthplace</i>		
Portugal	3,818	95.2
Brazil	50	1.2
Ukraine	14	0.3
Spain	6	0.1
Others	121	3.2
<i>Immigrant status</i>		
Native	3,169	79
1st G	191	4.8
2nd G	649	16.2
<i>Offending behaviour</i>		
No	2,626	65.5
Yes	1,383	34.5

were obtained using the regression method. Thus, the linear combination of these components' scores, weighted by their contribution to the variance, became the final value of each construct or "risk factor." The interpretation of the meaning of each extracted component, as well as its contribution to the total variance, is shown in **Table 2**.

In turn, **Figure 1**, in the **Appendix**, includes information on the description, scale and, if applicable, recoding of the ISRD-3 questionnaire variables considered in the analysis.

## Immigrant status

Immigrant status was explained through two binary variables—first- and second-generation—using native youth as the reference category.

## Structural Factors

Structural influence was measured using the following factors: family structure, neighbourhood disorganisation, school disorganisation, and peer delinquency (**Appendix**).

*Family structure* was dichotomised into the nuclear family (that is, both biological parents are present) and other family models. The *family's financial circumstances* were based on the respondents' evaluation of their family's situation compared with that of other families; it was dichotomised into "average or better" than average financial circumstances and "below average" financial circumstances. We also asked if the respondent's mother and father were employed.

The level of *neighbourhood disorganisation* was measured by the question, "How much do you agree or disagree with the following statements about your neighbourhood?" The

question comprised nine items ( $\alpha=0.78$ ) related to the criminal environment of the neighbourhood (such as the sale of drugs, fights, and graffiti) and the integration and social interaction of the neighbours (such as if they know, trust and get along well with each other—see **Table 2**).

The level of *school disorganisation* was measured by a set of eight items ( $\alpha=0.72$ ) related to the respondent's level of agreement with statements about their attachment to school (for example, if they like to go to school, if they find school interesting) and the criminal environment at their school (the sale of drugs, fights, and so on).

The *peer delinquency* factor was formulated in the survey by the question, "Young people sometimes engage in illegal activities. Do your friends usually engage in any of the following activities?," followed by five items ( $\alpha=0.66$ ) reflecting the following events: the consumption of soft or hard drugs, shoplifting, burglary, mugging, and assault.

## Parental Control

Parental control was measured using a five-item scale ( $\alpha=0.73$ ), with questions such as whether the parents know where and with whom their children spend their leisure time and if they check that their children fulfil their obligations (**Appendix**).

## Individual Factors

From an individual perspective, *moral* values and *self-control* were included for analysis.

*Morality* was measured by a question (comprising seven items,  $\alpha=0.72$ ) that sought to analyse students' perceptions regarding the severity of several different criminal activities. The perceived severity of the analysed behaviours was measured through the evaluation of actions such as "Lie, disobey or talk back to adults such as parents and teachers," "Steal something small such as a chocolate bar from a shop," and "Hit someone with the intention to hurt that person" and "Break into a building to steal something."

As is mentioned above, Grasmick et al. (1993) listed the constitutive elements of low *self-control*, a shortened version of the scale being used in the ISRD-3 (Q6.5). In total, nine items were included ( $\alpha=0.83$ ).

## Offending Behaviour

The dependent variable includes information on the participant's offending behaviour and is based on 13 offence items: graffiti writing/painting, destruction of property, shoplifting, stealing at school, stealing a bicycle, stealing a motor vehicle, stealing something off or from a car, burglary, bullying, taking part in a fight, beating somebody up, carrying a weapon, and selling drugs. The participants were specifically asked if they had committed any of the aforementioned offending behaviours in the previous year and were then clustered into three groups: those who had not committed any offence (2,626, 65.5% of the sample); those who had committed non-violent offences, such as vandalism, shoplifting and burglary (684, 17.1% of the sample); and those who had committed violent offences in the last year, such as robbery, extortion, group fighting,

**TABLE 2 |** Reliability analysis and the components of each risk factor.

Factor (Cronbach's alpha and number of items)	Component 1 (Meaning a % of variance contribution)	Component 2 (Meaning a % of variance contribution)
Parental control $\alpha=0.73$ Items: 5	Parents are interested in knowing what their children do when they go out (48.753%)	Parents check that the children fulfil their obligations (20.431%)
Neighbourhood disorganisation $\alpha=0.78$ Items: 9	Disorganised environment in the neighbourhood (34%)	Social control by neighbours (29%)
School disorganisation $\alpha=0.72$ Items: 8	Attachment to school (35%)	Disorganised environment at school (26%)
Peer delinquency $\alpha=0.66$ Items: 5	Peers' violent offending behaviour (46%)	Peers' non-violent offending behaviour (21%)
Morality $\alpha=0.72$ Items: 7	Opinion about serious criminal behaviour (39%)	Opinion about less serious criminal behaviour (55%)
Self-control $\alpha=0.83$ Items: 9	Risk taking (43%)	Impulsivity (15%)

**TABLE 3 |** CI for the differences between the proportion of participants in offending behaviour according to immigrant status and offence severity.

Offending behaviour	Answer	Natives	1st G	2nd G	Total
Non-violent	No	79.7%	71.2%	79.6%	2,626
	Yes	20.3%	28.8%	20.4%	684
	Total	2,614 (100%)	146 (100%)	550 (100%)	3,310
Violent	No	79%	69.8%	81.6%	2,626
	Yes	21%	30.2%	18.4%	699
	Total	2,639 (100%)	149 (100%)	537 (100%)	3,325
CI ( $p_1-p_2$ )*		Natives—1st G	Natives—2nd G	1st G—2nd G	
("Yes" answer)					
Non-violent		CI (−0.16; −0.01)	CI (−0.038; 0.036)	CI (0.003; 0.165)	
Violent		CI (−0.17; −0.02)	CI (−0.010; 0.060)	CI (0.037; 0.190)	

\*Highlighted significant differences ( $p < 0.05$ ).

assault, and animal cruelty (699, 17.4% of the sample). Therefore, it can be stated that with respect to respondents who claimed to have engaged in criminal behaviour, they were equally distributed between violent and non-violent offences.

## Age and Gender

Since it is known that *age* and *gender* influence the development of offending behaviours (Sampson and Laub, 1997; Torgersen, 2001; Ribeaud and Eisner, 2010; Bovenkerk and Fokkema, 2016), they were included in the analysis as regressors. Some authors claim that average gender differences in antisociality (i.e., higher offending rates for males than for females) often begin in mid-adolescence and persist into early adulthood (Moffitt et al., 2001). Gender was coded with the value 0 for female and 1 for male. As for *age*, since there is a wide age range in the sample (12–18 years old), in which offending behaviour typically varies substantially, the sample was divided into two groups using the median age (15 years old), which coincides with the mid-adolescent stage when there is a rapid increase in the crime rate (Blonigen, 2010). Age was coded with the value 0 being taken for younger than or equal to 15, and 1 for the rest.

## Analysis

In order to examine the association of selected risk factors in offending behaviour, two nested logistic regression models (LRs) were run (one for each type of offending behaviour—non-violent and violent). In both LR models, the reference category would be represented by those participants who did not develop any offending behaviour.

Given the difficulty of interpreting the influence of quantitative predictor variables such as all those included in **Table 2** (Neighbourhood and school disorganisation, parental control, etc.) on the response variable of a Logistic Regression (LR), they were categorised into three levels according to the terciles of their distributions, each with a different level of risk associated:

high, medium, and low, the latter being the reference category (see **Figure 1** of the **Appendix**).

To measure how the initial effect of migrant status (first and second generation) on the development of offending behaviour is attenuated when risk factor variables are incorporated, the Stata command *khb*, developed by Karlson, Holm and Breen, was used (Breen et al., 2013). This method allows an unbiased decomposition of the total effect in a non-linear context since, as is known, the decomposition of the total effect into direct and indirect mediated parts, using nested non-linear models, is problematic due to the problem of scale identification (Mood, 2010). In the logistic regression models, the importance of the change in the immigrant status coefficient between successive models was evaluated using the abovementioned method (*khb*).

Previous to the LR analysis, a preliminary study was carried out to ratify the influence of the control variables on the likelihood of developing an offending behaviour (non-violent or violent). Specifically, several hypotheses were tested in which the null hypothesis assumed the equality of participant proportions that had developed an offending behaviour in each immigrant status, age range, and gender. The confidence intervals estimated for the difference between these proportions are shown in **Table 3**.

## RESULTS

According to the results of the Confidence Intervals (CI) estimated for the difference between proportions (see **Table 3**), the proportion of participants who said they had engaged in some form of offending behaviour (violent or non-violent) was significantly higher for 1st G than for the other two groups (natives and 2nd G)<sup>1</sup> but no significant difference was found between that proportion for natives and for 2nd G.

Regarding age, as expected, a greater proportion of participants who had engaged in some form of offending behaviour (violent or non-violent) was found in the oldest group, that is, those older than 15 (confidence intervals—CIs—are shown in **Table 4**). Consequently, it was deemed necessary to include age in the analysis.

In relation to the respondents' gender, the CI showed a higher rate of offending behaviour in males (**Table 5**), particularly in violent offences.

Our results justify the consideration of *immigrant status*, as well as *age* and *gender*, as predictors of offending behaviour.

**Tables 6, 7** display the results from the nested logistic regression models by using offending behaviour (non-violent and violent, respectively) as the response. In Models 1–4, factors that could explain the difference between the rates of offending behaviour for immigrants—distinguishing between 1st and 2nd

<sup>1</sup>This is shown by the negative sign of the CI limits when the difference is calculated between natives and 1st G immigrants (natives' proportion – 1st G' proportion) and the positive sign when the difference is computed between 1st G – 2nd G.

**TABLE 4 |** CI for the differences between the proportion of participants in offending behaviour according to age (younger-older) and offence severity.

Offending behaviour	Answer	Age ≤ 15 (p <sub>1</sub> )	Age > 15 (p <sub>2</sub> )	Total	Confidence interval (p <sub>1</sub> –p <sub>2</sub> )* (“Yes” answer)
Non-violent	No	86%	71%	2,626	CI (–0.182; –0.125)
	Yes	14%	29%	684	
	Total	1,863	1,447	3,310	
Violent	No	84%	72%	2,626	CI (–0.145; –0.088)
	Yes	16%	28%	699	
	Total	1,910	1,415	3,325	

\*Highlighted significant differences ( $p < 0.05$ ).

**TABLE 5 |** CI for the differences between the proportion of participants in offending behaviour by gender (male–female) and offence severity.

Offending behaviour	Answer	Male (p <sub>1</sub> )	Female (p <sub>2</sub> )	Total	Confidence interval (p <sub>1</sub> –p <sub>2</sub> )* (“Yes” answer)
Non-violent	No	76%	82%	2,626	CI (0.033; 0.089)
	Yes	24%	18%	684	
	Total	1,406	1,904	3,310	
Violent	No	70%	87%	2,626	CI (0.140; 0.196)
	Yes	30%	13%	699	
	Total	1,525	1,800	3,325	

\*Highlighted significant differences ( $p < 0.05$ ).

generation—and natives were included progressively. The results of the models are reported as odds ratios (ORs).

Regarding non-violent offending behaviour (Table 6, Model 1), where only gender and age are included, 1st generation immigrant youths are 1.7 times more likely to commit a non-violent offence. However, 2nd generation immigrant youths showed no greater risk of engaging in non-violent offending behaviour than natives (the OR was non-significant). As expected, those over 15 years of age and males were more likely to develop delinquent behaviour. The only family structure factor that showed a significant (but weak) influence on the likelihood of developing a non-violent offending behaviour was *father not working* (Model 2 vs. Model 3). However, the effect of this factor became non-significant when individual factors (morality and self-control) were included (Model 4). It appears that socioeconomic factors cannot explain a greater participation in non-violent offending behaviours. However, *low parental control* does have a significant influence on the development of non-violent offending behaviours, although this influence is reduced as other variables are incorporated into the model (1.98 in Model 2 vs. 1.61 in Model 4). *Peer delinquency* (at an average and a high level) is the factor with the greatest influence on the development of non-violent offending behaviours

(the OR was over 11 in the case of high-level peer delinquency in Model 4). Neighbourhood disorganisation was influential but not school disorganisation. Nevertheless, low morality and self-control contributed significantly to the explanation of non-violent offending behaviours.

In the final model (Model 4), which includes all the explanatory factors, 1st generation immigrant youths are twice as likely to commit a non-violent offence (the OR was 2.01). The inclusion of the analysed explanatory risk factors, especially *peer delinquency*, improved the model's goodness of fit (the pseudo  $R^2$  increased from 0.05 to 0.25). Therefore, these factors are directly associated with the risk of committing a non-violent offence.

However, the OR for the 1st generation immigrant variable did not decrease when additional risk factors were added to the model (and even increased a little). The influence of being a 1st generation immigrant on the development of non-violent offending behaviour was not significantly altered when incorporating the risk factors variables (the indirect effect 1st G when applying Khb was non-significant in all models tested). This means that these factors did not have a mitigating effect on the direct association between being a first-generation migrant and the development of non-violent offending behaviour. In other words, the indirect effect of the factors mentioned was not significant in any of the models, so they do not play a role in explaining the higher risk found for 1st generation immigrants compared with the other groups (natives and 2nd generation immigrants).

When violent offences are studied (Table 7), the probability of committing a violent offence is also greater for 1st generation immigrants (the OR is 1.87 in Model 1 vs. 2.13 in Model 4) than for natives. As in the case of non-violent offences, 2nd generation immigrants did not present differences with respect to natives. Other similarities were found with the previous model (non-violent offending): for instance, being *male* had a positive relationship with the development of violent offending, stronger in this case than in the case of non-violent offending, *peer delinquency* was once again the most influential factor in the development of criminal behaviour with violence (although somewhat less so than in the case of non-violent offences—the OR was 8 vs. 11); *neighbourhood disorganisation* exerted a significant influence, as did *low morality* and *self-control*, although in this case there was somewhat more self-control than with non-violent offences; and *father not working* had a significant and direct influence (the OR was 2.6).

Regarding the differences to the previous model, the direct association between the likelihood of committing a violent offence and being a first-generation immigrant, male and with an unemployed father was higher. Moreover, the predictor *school disorganisation* did have a significant relationship with the response variable. In order to examine this, a *t*-test of differences in average scores in *school disorganisation* was carried out comparing the groups that had not committed an offence with those that had (differentiating between with and without violence). The results showed that although the factor score was significantly (sig. 0.000) worst (a higher school disorganisation) in the case related to the group that had

**TABLE 6** | Logistic regression models predicting non-violent offending behaviour.

Predictor	Model 1	Model 2	Model 3	Model 4
<i>Immigrant status</i>				
Native	1	1	1	1
1st Generation	1.68*	1.78*	1.80*	2.01**
2nd Generation	1.01	1.03	1.00	0.99
<i>Age</i>				
<=15	1	1	1	1
>15	2.785***	1.296*	1.284*	1.411**
<i>Gender</i>				
Female	1	1	1	1
Male	1.611***	1.794***	1.838***	1.778***
<i>Family structure</i>				
Nuclear family		1.00	1.00	1.00
Other situation		1.04	1.01	1.06
<i>Family's financial circumstances</i>				
Average or better		1.00	1.00	1.00
Below average		0.98	0.92	0.88
<i>Parents' employment</i>				
Father working		1.00	1.00	1.00
Other situation		1.52*	1.49*	1.46
Mother working		1.00	1.00	1.00
Other situation		0.98	0.94	0.96
<i>Parents' social control</i>				
High		1.00	1.00	1.00
Average		1.41*	1.35	1.26
Low		1.98***	1.88***	1.61**
<i>Peer delinquency</i>				
Low		1.00	1.00	1.00
Average		3.75***	3.68***	3.29***
High		13.24***	12.12***	11.05***
<i>Neighbourhood disorganisation</i>				
Low			1.00	1.00
Average			1.15	1.05
High			1.56**	1.36*
<i>School disorganisation</i>				
Low			1.00	1.00
Average			0.81	0.75
High			1.20	1.01
<i>Morality</i>				
Strong				1.00
Average				1.70**
Weak				2.12***
<i>Self-control</i>				
High				1.00
Average				1.12
Low				2.02***
Pseudo R <sup>2</sup>	0.0515	0.2196	0.2274	0.2533
Khb 1st Generation (sig. Indirect effect)		0.216	0.244	0.393
Khb 2nd Generation (sig. Indirect effect)		0.566	0.684	0.660

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.001$ .

committed some type of offence, the difference was greater in the case of violent offences. Therefore, there is a worst score for the school disorganisation factor in the case of the young people who had committed some type of violent offence than in the case of those who had committed non-violent offences. Delving deeper, we found that the greatest difference was in the score related to the first component of this factor (see **Table 2**, “School disorganisation” factor), which involved *school bonds* (liking and an interest in going to school), and to a lesser extent in those scores that measure delinquency

at school (the sale of drugs, fights, and so on). Therefore, it appears that lack of interest and motivation to go to school is a distinctive feature of those who developed violent offending behaviour compared to the other groups analysed. This finding might explain why *school disorganisation* was a significant predictor of violent (**Table 7**) but not of non-violent (**Table 6**) offending behaviour. Regarding the influence of the *neighbourhood disorganisation* factor was similar to the development of the two types of delinquency (with and without violence). *Parental control* exerted a significant influence on the output variable,

**TABLE 7 |** Logistic regression models predicting violent offending behaviour.

Predictor	Model 1	Model 2	Model 3	Model 4
<i>Immigrant status</i>				
Native	1.00	1.00	1.00	1.00
1st Generation	1.87**	1.83**	1.86**	2.13**
2nd Generation	0.88	0.91	0.90	0.86
<i>Age</i>				
<=15	1	1	1	1
>15	2.262***	1.094	1.116	1.176
<i>Gender</i>				
Female	1	1	1	1
Male	2.521***	2.754***	2.697***	2.512***
<i>Family structure</i>				
Nuclear family		1.00	1.00	1.00
Other situation		1.30*	1.25*	1.30*
<i>Family's financial circumstances</i>				
Average or better		1.00	1.00	1.00
Below average		1.07	0.99	0.97
<i>Parents' employment</i>				
Father working		1.00	1.00	1.00
Other situation		2.72***	2.56***	2.62***
Mother working		1.00	1.00	1.00
Other situation		1.05	0.97	0.95
<i>Parents' social control</i>				
High		1.00	1.00	1.00
Average		1.23	1.19	1.13
Low		1.85***	1.70**	1.50**
<i>Peer delinquency</i>				
Low		1.00	1.00	1.00
Average		4.25***	3.86***	3.43***
High		11.62***	9.36***	8.16***
<i>Neighbourhood disorganisation</i>				
Low			1.00	1.00
Average			1.40*	1.29
High			1.74**	1.35*
<i>School disorganisation</i>				
Low			1.00	1.00
Average			1.65**	1.52**
High			2.31***	1.86**
<i>Morality</i>				
Strong				1.00
Average				1.37*
Weak				1.93***
<i>Self-control</i>				
High				1.00
Average				1.06
Low				2.17***
Pseudo R <sup>2</sup>	0.0631	0.2289	0.2489	0.2751
Khb 1st Generation (sig. Indirect effect)		0.083	0.090	0.211
Khb 2nd Generation (sig. Indirect effect)		0.450	0.569	0.617

\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.001$ .

although it turns out that its preventive effect was a little stronger for non-violent offences.

The explanatory power of the violent offences' model was very similar to that of the non-violence model, only a little higher (pseudo  $R^2$  0.27). In violent offences, the indirect effect of the *structural explanatory factors*, such as *father not working*, *low parental control*, and *high peer delinquency*, was non-significant at 5% level (khb 1st Generation sig. Indirect effect=0.08), moreover their influence on the decrease in the

OR of the 1st generation variable was minimal (the coefficient changes from 1.87 to 1.83). Something similar happened when the rest of risk factors were included (Model 3 and 4). Therefore, it appears that these risk factors did not significantly mitigate the direct relationship found between being a 1st generation immigrant and the development of violent offending behaviour.

In order to measure the predictive ability of the fitted logistic regression models, with respect to the estimation of the class to which a young person would belong (according to the likelihood

**TABLE 8 |** Average proportion of well-classified participants (in total and by class, considering non-offenders vs. non-violent offenders) applying a 10-fold validation.

Group	Sample	
	Original samples	Balanced samples
Non-offending (majority class): True Negative rate	94%	74.6%
Non-violent offending (minority class): True Positive rate	36%	76.7%
Total cases: Correct classification rate: CCR	83.2%	75.6%

**TABLE 9 |** Average proportion of well-classified participants (in total and by class, considering non-offenders vs. violent offenders) applying a 10-fold validation.

Group	Correct classification rate	
	Original samples	Balanced samples
Non-offending (majority class): True Negative rate	94.5%	76.3%
Violent offending (minority class): True Positive rate	40.3%	72.1%
Total cases: Correct classification rate CCR	83.6%	74.3%

of developing offending behaviour without or with violence), a 10-fold cross validation was applied to the original sample. For that purpose, Waikato Environment for Knowledge Analysis (WEKA 3.8) software was used. Considering the confusion matrix obtained for each case (predictive non-violent and violent offending models), 83.2 and 83.6% of the correct classification rate (CCR) was reached on each model, respectively. However, as expected, there was an overfitting of the majority class (non-offending behaviour), with 94% of right classification, and a worse recognition of the minority classes (non-violent and violent offending behaviour) in each model, with 36 and 40% of the right classification rate (“True positive rates”) respectively.

The WEKA-supervised instance filter “Resample” was applied to balance the sample between participants who developed offending (both non-violent and violent) behaviour and those who did not develop any offending behaviour. In this case, undersampling was applied for training, maintaining the instances of the minority class (offending behaviour) and reducing those of the majority class (non-offending behaviour) in order to improve the learning of the minority class. The new sample was used to carry out Logistic Regression and a 10-fold validation was also applied.

Although the overall Correct Classification Rate (CCR) decreased somewhat when the class balancer was applied (75.6 and 74.3% vs. 83.2% and 83.6% of the CCR with the original samples, as can be seen in **Tables 8, 9** in the “Total cases” row), the minority class (those who developed some offending behaviour) was more clearly recognised (almost 77% of non-violent offending behaviour vs. 74% of non-offending, and 72% of violent offending vs. 76% of non-offending).

Undersampling indirectly achieved a higher representation of the 1st Generation group in the balanced sample, as this group had a higher presence in the minority class (those who reported having engaged in some kind of offending behaviour). The logistic functions obtained when the classes were balanced showed very similar variable coefficients in most variables to those shown in the original samples (**Tables 6, 7**), except that they resulted in higher odds ratios for the variables reflecting immigrant status (first-generation) and peer influence. Therefore, it could be argued that the results obtained with the LR analysis are quite robust.

## DISCUSSION

The main aim of this study was to explore which of the key elements identified by the literature for explaining differences in juvenile delinquency between immigrant and native youths could be applied in a southern European country such as Portugal. Three important findings have emerged from the research:

1. First-generation immigrants displayed higher crime rates than young Portuguese natives and second-generation immigrants. The difference was significant for both violent and non-violent crimes. These results were maintained with the original samples and also after applying resampling techniques to overcome the existing class imbalance.
2. The risk factors identified by various theories as predictors of the development of offending behaviour and empirically tested in northern European countries are also applicable to southern European countries such as Portugal.
3. There are no significant differences in predictive factors due to the seriousness of the crime (violent vs. non-violent). It was only appreciated that some factors, such as being male or having an unemployed father, exerted a higher influence on the probability of committed a violent offence. Additionally, school disorganisation, concretely, not having interest or motivation for attending school, is another factor that was directed associated to a higher likelihood of development a violent offence.

The descriptive findings indicate that first-generation immigrant youths have a greater tendency towards both non-violent and violent behaviour when compared with native youths. Specifically, a first-generation immigrant is almost twice as likely to engage in an offending behaviour (with or without violence) than a native, whilst there are no significant differences between natives and second-generation youths. These findings are in line with earlier research according to which there exists a positive correlation between being of immigrant origin and offending behaviour (Killias, 1989; Junger-Tas, 1997, 2001; Marshall, 1997; Kardell and Martens, 2013; Salmi et al., 2015; Bovenkerk and Fokkema, 2016). However, the native and second-generation groups do not present the differences found in other studies (Torgersen, 2001; Killias et al., 2010; Salmi et al., 2015). The crime rate in the immigrants’ country of origin and that of the destination country that receives them could, at least partially, explain some of these differences.

Cape Verde and Brazil, the countries from which most immigrants residing in Portugal originate, are amongst those countries with the highest crime rate. In the UNODC violent crime statistics around the world, ranked from the highest to the lowest violent crime rate, Brazil is in 17th position in 2018 (with an index of 27.38 in homicides and 274.32 in serious assaults), Cape Verde is in 56th position (with an index of 6.8 in homicides and 554.47 in serious assaults); whilst Portugal, considered one of the safest countries, is in 166th position (with an index of 0.79 in homicides and 5.86 in serious assaults) (UNODC, 2018).

The results demonstrate that the theoretical construct identified by control and strain theories, as well as by situational action theory, can be applied to adolescents living in Portugal in general, both immigrant and native. It has been found that both structural and individual factors have a direct effect on the committing of juvenile offences (both non-violent and violent). The most influential variable for both types of offending behaviour is *peer delinquency*, followed by *morality* and *self-control*. The marked influence of peer delinquency on juvenile delinquency has been empirically demonstrated by several authors (Wikström and Butterworth, 2006; Wikström and Svensson, 2008; Marshall and Enzmann, 2012; Schils and Pauwels, 2016; Pauwels, 2018). Low *parental social control* directly affects the likelihood of developing offending behaviour (violent and non-violent); although the strength of this influence decreases when structural and individual risk factors are included in the model. It seems, therefore, that whilst *parental control* is indeed important in reducing the propensity for engaging in an offending behaviour, it becomes less so when other factors such as *neighbourhood* and *school environment*, as well as the individual's *morality* and *self-control*, are considered.

Family socioeconomic factors do not affect the likelihood of developing an offending behaviour (Salmi et al., 2015), except for *father not working*, particularly in the case of violent offences. We have to bear in mind that the data are based on the adolescents' own assessment and might not constitute accurate information regarding income but do regarding the father's employment situation, which is a more objective measurement of financial circumstances. With respect to *age* and *gender*, it was found that offending behaviour was more frequent amongst older and male participants, as was expected.

As regards *external factors*, *neighbourhood disorganisation* had a greater significance for non-violent offences, whilst *school disorganisation* was only significant for violent offences. The statistical analysis demonstrates that adolescents who had committed violent offences achieved, on average, a worse score for the latter factor, especially in the component associated with *school bonds*. Therefore, it appears that the young people who had committed violent crimes were often characterised by a greater dislike of and disinterest in going to school. This is in consonance with the findings of other studies that highlight the importance of a lack of educational commitment and a low educational status in explaining juvenile delinquency (Dinovitzer et al., 2009; Aaltonen et al., 2011). With respect to the *neighbourhood disorganisation* factor, the average score was very similar for both types of offence (with and without violence). Then, the high concentration of first-generation immigrant youths in some

urban neighbourhoods could explain why this risk factor is significant (Kardell and Martens, 2013; Zimmerman et al., 2015).

The application of *khb* command showed that the indirect effect of risk factors was non-significant for any type of crime, which means that, as was already concluded by Salmi et al. in a similar study conducted in Finland in 2015, we cannot explain the high prevalence of offending behaviour amongst first-generation immigrant youths by differences in the risk factors analysed, even though these are indeed strong determinants of offending behaviour amongst young people in general.

The predictive ability of the fitted LR models can be considered quite acceptable given the complexity of the problem analysed, especially when the class imbalance problem is solved with some balancing technique.

## LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

A limitation of this study is that, owing to sample size considerations, there is no evidence regarding the pattern of predictors based on country of origin, with young people from immigrant backgrounds thus being treated as a single group. Even though young immigrants with different origins might be more similar to the majority population than their immigrant parents, more detailed research is still needed that takes these different origins into account.

Another limitation is that the sample sizes of immigrant groups, especially first-generation, were relatively small, which must be considered when drawing conclusions in general terms (although, as explained above, the results were quite similar when cross-validation and class-balancing techniques were applied to the original samples, resulting in a somewhat higher representation of first-generation immigrants).

Nonetheless, the study has contributed to the validity of current approaches by combining the influence of different variables that act simultaneously on delinquent behaviour amongst adolescents.

Hence, as a group, second-generation immigrant youths tend to assimilate native youths' patterns of juvenile delinquency, as Bersani argued in her study on first- and second-generation immigrant offending trajectories (Bersani, 2014). According to Titzmann et al. (2008), the social processes leading to offending behaviour can be assumed to be the same for both second-generation immigrant and native adolescents. Cultural identity development and social belonging amongst second-generation youths must not be lost sight of in multicultural societies because lack of cultural alignment can increase the propensity for juvenile delinquency in the most vulnerable minors (Aronowitz, 2002; Suárez-Orozco et al., 2009; Neto and Neto, 2014; Van der Gaag, 2019). In this context, the process of social inclusion of immigrant youths should play a crucial role in public policy. The results underline the need to evaluate integration policies in southern Europe more from the perspective of the social and individual development processes of young people of immigrant origin than from an economic perspective. Integration trajectories must be encouraged based on the promotion of structural models

that sustain the generation of cultural links with the host society, attachment to the family and participation in social activities.

To summarise, the results of the present study underscore the need to examine in greater depth the explanatory capacity of the risk factors analysed in other southern European countries, as well as the country of origin of young people as an explanatory variable. Likewise, it would be worthwhile to look more closely at those differences between first- and second-generation immigrant youths that contribute to their respective propensities for offending behaviour. For instance, peer delinquency and certain individual factors used as study variables could lead to a reorientation of government intervention when dealing with first-generation migrant youths. All things considered, interventions with immigrant youths should aim to promote their well-being, considering migrant background to be a differential factor in their relationship with crime, and focus on the performance of host countries in order to make an improvement sustainable. Being first-generation immigrant, male and with an unemployed father seems to have a direct association with the likelihood of committing a violent offence. These results suggest the necessity of undertaking a specialised intervention suitable for the aforementioned group. Regarding the second generation youths, addressing peer influence as a central factor in public policy, as well as enhancing cross-cultural moral norms and improving young people's capacity for self-control should be at the core of public policy. The need to make cities and human settlements in general inclusive and sustainable calls for a reconsideration of integration policies so that they employ evidence-based interventions, for example, by using risk assessment tools based on the different profiles offered by children for more effective risk management.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Minho's Ethics Committee. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

## AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation and data collection were performed by SM, PM, and GF-P. The first draft of the manuscript was written by GF-P and analysis was performed by MT-J, and all authors commented on previous versions of the manuscript. All authors contributed to the article and approved the submitted version.

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## SUPPLEMENTARY MATERIAL

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# Mediating Role of Psychological Capital in the Relationship Between Social Support and Self-Neglect Among Chinese Community-Dwelling Older Adults

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**Objectives:** Self-neglect in older adults has become an important public health issue and is associated with negative health outcomes and increased morbidity and mortality. Social support has been recognized as a prominent predictor of self-neglect, but the underlying mechanism is unclear. This study aims to investigate and illustrate the associations among social support, psychological capital, and self-neglect.

**Methods:** This study used a cross-sectional convenience sampling design. A total of 511 older adults were recruited in Chinese communities. Spearman's correlation coefficient and hierarchical multiple regression analysis were performed to assess the influencing factors of self-neglect. A structural equation model was applied to test the hypothesized mediation model.

**Results:** Social support and psychological capital were found to be negatively related to self-neglect. Social support and psychological capital explained 5.1 and 11.9% of the incremental variances of older adults' self-neglect, respectively. Psychological capital acts as a mediator between social support and self-neglect.

**Conclusion:** Self-neglect among older adults is a rising problem in China. Social support and higher psychological capital could decrease the risk of self-neglect in older adults. It is crucial to improve social networks and facilitate psychological interventions to reduce such self-neglect.

**Keywords:** self-neglect, social support, psychological capital, older adults, mental health

## INTRODUCTION

The Chinese population is aging at an unprecedented pace, and older population aged over 65 years will reach 336 million by 2050, accounting for one-third of the total Chinese population (National Bureau of Statistics of China, 2017; Zhong et al., 2018). Alongside the increased aging population, self-neglect is becoming a prominent problem that challenges healthy aging (Cipriani et al., 2021; Yu et al., 2021).

Self-neglect, the result of complex interactions between social, psychological, and medical factors, refers to older adults' neglect of their personal hygiene, health, and living environment either intentionally or unintentionally, and their refusal or failure to engage in self-care behaviors, which threatens their own health and safety (Dong, 2014; Touza and Prado, 2019; Wang et al., 2021). Evidence has suggested that self-neglect among older adults can induce negative outcomes, including nonadherence to medication, multiple forms of abuse, and impairment of cognitive function and physical function (Dong et al., 2009a, 2013; Dong and Simon, 2013). According to Papaioannou et al. (2012), self-neglect can also lead to malnutrition, frailty, and the deterioration of physical ability among older people, thus increasing their risk of falls and fractures. Furthermore, self-neglect has been identified as an independent risk factor for mortality among older adults. A large-scale prospective research, investigating self-neglect in 9,318 community-dwelling older adults with a follow-up period of over 5 years, revealed that the 1-year mortality of older adults who were diagnosed with self-neglect was 5.87 times that of older adults who were not thus diagnosed (Dong et al., 2009b). It has also been reported that self-neglect is significantly associated with an increased risk of short-term, long-term, and lifetime suicidal ideation among older adults (Dong et al., 2017; Yu et al., 2019). In China, the prevalence of self-neglect among older adults has reached 23.2% (Yu et al., 2019), whereas its incidence rate is only 8.4% in Chicago (Wang et al., 2020) and 11.5% in Iran (Mohseni et al., 2019). Chinese culture, a collectivist culture, influence many older adults to devote all their time and energy to their offspring rather than to their own well-being; this might offer an explanation for the high incidence of self-neglect (Wu et al., 2020). Furthermore, Chinese older adults consider self-neglect normal (Wu et al., 2020), which might lead to them refusing relative interventions. However, *Health China Action* (2019–2030), released by the Chinese government in 2019, emphasizes the importance of improving mental health among older adults. It encourages family members to concern themselves with the psychological state of older adults in the family, and encourages communities to carry out activities to provide psychological support (National Health Commission of China, 2019). Therefore, it is necessary to investigate the precipitating factors and root causes of self-neglect in the Chinese context to develop effective and alternative interventions.

From the perspective of sociology, multiple theoretical models have indicated that social support, a type of social capital, is a prominent predictor of self-neglect among older adults (Dyer et al., 2007; Iris et al., 2010). For instance, conceptual model proposed by Dyer states that a lack of social support would lead to inadequate support services (such as medical care and assistance with bathing, dressing, home-cleaning, laundry, and procuring/preparing food), which ultimately results in self-neglect among older adults (Dyer et al., 2007). In Iris et al. (2010) model, social network is considered an important and independent risk factor for self-neglect among older adults (Iris et al., 2010). Additionally, several studies report a significant association between social support and self-neglect in different countries (Burnett et al., 2006; Dyer and Reyes-Ortiz, 2017). However, the

implementation of the one child policy, changed family structures, and the large-scale migration of younger adults seeking employment has decreased the social support for older adults in China (Cao et al., 2015; Zhong et al., 2018; Gao and Cheng, 2020). Therefore, there is an urgent need to find alternative solutions. Meanwhile, exploring the underlying mechanism between social support and self-neglect at the psychological level might provide a more comprehensive theoretical basis for alleviating self-neglect.

Psychological capital (PsyCap) refers to a positive psychological state of personal development (Minglu et al., 2020; Chen and Yitao, 2021; Gu et al., 2021). It stems from positive psychology, which is an emerging area in psychology and holds the view that positivity is one of the remedies to negative social and psychological indicators, such as self-neglect (Hefferon and Boniwell, 2011; Pluskota, 2014; Gu et al., 2021). The risk and vulnerability model of self-neglect indicates that psychological status impacts older adults' vulnerability to self-neglect (Paveza et al., 2008). Furthermore, four key features of PsyCap—self-efficacy, optimism, hope, and resilience—have been shown to have a negative association with self-neglect. For example, self-efficacy is associated with self-neglect and mediates the relationship between self-neglect and related factors such as functional dependency and social networks (Dahl et al., 2020). Optimism and hope are reported to be negative predictors of self-neglect, and resilience is considered an important factor for reducing the risk of self-neglect among older adults (Gunstone, 2003; Genke, 2004; Minayo et al., 2019). A qualitative study demonstrated that self-realization is part of the understanding of PsyCap from the perspective of Chinese older adults that is recognized and appreciated by Chinese culture (Shi, 2013) and might increase older adults' acceptance of interventions and enhance their resistance to self-neglect. Meanwhile, PsyCap can be converted from an external social support to an internal resource (Gu et al., 2021). Studies report that PsyCap mediates the relationship between social support and loneliness (Luthans et al., 2007). Additionally, an increasing number of studies suggest that the components of PsyCap—self-efficacy, optimism, and resilience—can be predicted by social support (Labrague and De Los Santos, 2020; Jemini-Gashi et al., 2021; Sagi et al., 2021). Therefore, we hypothesized that PsyCap mediates the relationship between social support and self-neglect.

Although an increasing number of studies pay close attention to the exploration of the mechanisms of self-neglect from a sociological view, the role of psychology in the relationship between social support and self-neglect remains to be investigated. Therefore, the present study aims to measure social support, PsyCap, and self-neglect among Chinese community-dwelling older adults and to explore the potential relationships among these variables, which might enrich the existing theoretical model and offer a breakthrough for future interventions.

*Hypothesis 1:* Social support is negatively associated with self-neglect.

*Hypothesis 2:* PsyCap is negatively associated with self-neglect.

*Hypothesis 3: PsyCap mediates the relationship between social support and self-neglect.*

## MATERIALS AND METHODS

### Study Sample and Data Collection

The present cross-sectional study was carried out between October 2017 and January 2018 in the Zhejiang Province, using a simple random sampling method. Older people who (i) were permanent residents; (ii) were  $\geq 65$  years old, (iii) were able to communicate in Chinese and express themselves clearly, and (iv) consented to participate in the study were included. Older people who (i) had a history of cognitive, psychiatric, or neurological disorder in electronic health records or (ii) had severe diseases were excluded. This study was conducted by four nursing graduates who had adequate experience in site survey. Before data collection, the investigators received uniform training in questionnaire administration and interviewing. With the assistance of local contact people, including community leaders, health workers, or community nurses, the investigators performed household visits to recruit the participants. During data collection, face-to-face interviews were conducted. The investigators offered a detailed explanation of the study to the participants, including the aim and procedures, and obtained their written consent. Questionnaires were completed by the participants themselves, and assistance was provided whenever they did not understand any of the items. The questionnaires were collected and examined on the spot. Manual double entry of survey data was adopted to minimize data-entry errors (Zhong et al., 2018; Wang et al., 2021). Overall, 533 older adults responded to the survey (effective response rate: 95.9%); of these, 511 questionnaires were valid.

### Measures

#### Sociodemographic and Clinical Characteristics

Based on the literature, the survey questionnaire examined the following sociodemographic characteristics: age, sex, marital status, religious beliefs, educational level, monthly income, living arrangement, health insurance, and presence of chronic illness (es; San Filippo et al., 2007; Papaioannou et al., 2012; Yu et al., 2021).

#### Self-Neglect

Self-neglect was measured using the Elder Self-Neglect Assessment (ESNA), which was developed by Iris and translated into Chinese by Wang (Iris et al., 2014; Wang, 2018). While the original ESNA was a 25-item short form consisting of two dimensions (behavioral characteristics and environmental factors; Iris et al., 2014), its Chinese adaptation is a 24-item form measuring three dimensions (lifestyle/condition, health care, and living environment; Wang, 2018). The items are scored as follows: 0 = “no (problem does not exist),” “not applicable,” or “do not know”; 1 = “suspected problem” and; 2 = “yes (problem exists).” Cronbach’s alpha for the ESNA in this study was 0.918; additionally, the Cronbach’s alpha coefficient for each dimension ranged from 0.803 to 0.884, and the test–retest reliability was 0.893.

### PsyCap

PsyCap was assessed using the Geriatric Psychological Capital Scale, which was developed by Shi (2013) and is widely used in China for measuring geriatric PsyCap. The scale consists of 4 dimensions—self-efficacy, diligence and adamancy, honesty and steadiness, and gratitude and dedication—assessed using 20 items such as “suffering strengthens me” and “I understand my own worth.” A five-point Likert scale ranging from 1 to 5, where 1 = “totally disagree,” 2 = “mostly disagree,” 3 = “not sure,” 4 = “mostly agree,” and 5 = “totally agree,” was used to rate each item. A higher score indicates a higher level of PsyCap. Cronbach’s alpha for this scale was 0.935 in the present study.

### Social Support

Social support was assessed using the Social Support Revalued Scale developed by Xiao, which has been used extensively in research conducted in China (Ren et al., 2020; Zhan et al., 2020). It consists of 10 items and measures subjective support, objective support, and support availability (Geng et al., 2017). Items assess the support received from friends, neighbors, families, colleagues, and the society. The cumulative score ranges from 12 to 66 points, with higher scores indicating higher levels of social support. The Cronbach’s alpha for this scale was previously found to be 0.896 (Xiao, 1994). In this study, the Cronbach’s alpha for the scale was 0.799.

### Ethical Considerations

This study was approved by the Ethics Committee of Hangzhou Normal University (approval number: 2022014). Written or verbal informed consent was provided by every participant, each of whom was informed of the aim of the research, its significance, and the data collection processes. In this process, the researcher explained the participants’ right to refuse or withdraw at any time during the survey interview.

### Statistical Analysis

Prior to analyses, normality, outliers, and multicollinearity were assessed. Normality was tested using skewness(sk) and kurtosis(ku), and values fell within the acceptable range ( $sk < |3|$ ;  $ku < |10|$ ; Kline, 2015). The Cook’s distance was applied to identify the outliers. The maximum Cook’s distance was  $< 0.5$ , indicating that no outliers existed in this data (Huang et al., 2022). Multicollinearity was tested by variance inflation factor (VIF), and the finding showed no  $VIF > 10$ , indicating the absence of multicollinearity.

The relationship between older adults’ self-neglect and sociodemographic variables was analyzed with t-tests and one-way ANOVA using SPSS version 25 (IBM, Armonk, New York, United States). Spearman’s correlation analysis was applied to explore the associations among self-neglect, social support, and PsyCap. Hierarchical multiple regression analyses (HMR) were conducted to test the factors influencing older adults’ self-neglect and their contribution toward predicting self-neglect, which comprised—Step 1: participant’s sociodemographic characteristics; Step 2: participant’s social support; and Step 3: participant’s PsyCap. Standardized parameter

estimates ( $\beta$ ) were performed to evaluate the magnitudes of associations among social support, PsyCap, and self-neglect. The mediation pathways of PsyCap between social support and self-neglect were analyzed using SPSS Amos 26.0 (IBM Corp., Armonk, NY, United States). When the value of  $\chi^2/df$  (degree of freedom)  $< 5$ ; goodness of fit index (GFI), adjusted GFI (AGFI), incremental fit index IFI, and Tucker–Lewis index (TLI)  $> 0.90$ ; and root mean square error of approximation (RMSEA)  $< 0.08$ , the hypothesized model was considered to be a close fit of the data (Bagozzi and Yi, 1988; Joreskog and Sorbom, 1993). To estimate the indirect effect, bootstrapping was applied due to non-normal distribution variables in the sample (Shrout and Bolger, 2002). Indirect effects were assessed with a 95% confidence interval (95%CI) of indirect effects in an empirical sampling distribution. If the 95% CI was nonzero, the indirect effect was considered significant. Statistical significance was set as  $p < 0.05$ .

## RESULTS

### Sociodemographic Characteristics of Participants

The mean scores for older adults' self-neglect, social support, and PsyCap were  $13.65 \pm 10.65$ ,  $35.89 \pm 8.90$ , and  $74.85 \pm 15.51$ , respectively, which were approximately 28.4, 54.4, and 74.9% of the total score, respectively. Table 1 shows participants' sociodemographic characteristics and the distribution of

self-neglect. A total of 511 older adults participated in the study. The mean age ( $\pm$ SD) of the participants was  $76.14 \pm 6.99$  years, and 53.62% were women. The percentages of older people living with a spouse and children, with a spouse, with children, alone, and with others were 12.13, 58.12, 9.39, 19.57, and 0.78%, respectively.

### Associations Among Self-Neglect, Social Support, and PsyCap

As shown in Table 2, both social support ( $r = -0.638$ ,  $p < 0.01$ ) and PsyCap ( $r = -0.812$ ,  $p < 0.01$ ) were negatively associated with self-neglect in older adults, revealing that they were suitable for further hierarchical linear regression analysis and SEM. At the same time, social support was positively associated with PsyCap ( $r = 0.674$ ,  $p < 0.01$ ).

### Hierarchical Linear Regression Analysis of Self-Neglect

Table 3 shows the result of HMR models for older adults' self-neglect. Older age was positively associated with self-neglect ( $p < 0.01$ ). Additionally, higher monthly income (1000–1999, 2000–2,999 yuan) was negatively associated with self-neglect ( $p < 0.05$ ) compared with lower income (0–999 yuan). Social support was significantly and negatively associated with self-neglect, contributing to 5.1% of the variance. PsyCap was also significantly and negatively associated with self-neglect, explaining for an additional 11.9% of the variance. The regression coefficient

**TABLE 1 |** Sociodemographic characteristics of the participants ( $N = 511$ ).

Variable	N (%)	Self-neglect Mean (SD)	P	Variable	N (%)	Self-neglect Mean (SD)	P
Age (years)			<b>0.035</b>	0–999	247 (48.34)	20.53 (9.974)	
60–69	112 (21.92)	13.09 (7.531)		1,000–1999	56 (10.96)	12.95 (6.454)	
70–79	214 (41.88)	13.02 (10.362)		2000–2,999	55 (10.76)	11.36 (6.337)	
80–89	169 (33.07)	14.15 (11.919)		3,000–3,999	65 (12.72)	4.34 (3.332)	
90–99	16 (3.13)	20.75 (15.931)		$\geq 4,000$	88 (17.22)	3.10 (2.905)	
Sex			<b>0.151</b>	Living arrangement			<b>&lt;0.001</b>
Male	237 (46.38)	12.92 (9.783)		Living with spouse and children	62 (12.13)	13.82 (10.519)	
Female	274 (53.62)	14.28 (11.321)		Living with spouse	297 (58.12)	12.23 (9.846)	
Marital status			<b>&lt;0.001</b>	Living with children	48 (9.39)	12.31 (7.066)	
Married	364 (71.2)	12.52 (9.945)		Living alone	100 (19.57)	18.95 (12.644)	
Widowed, divorced, and other	147 (28.8)	16.46 (11.785)		Living with others	4 (0.78)	0.50 (1.000)	
Religious beliefs			<b>&lt;0.001</b>	Health insurance			<b>0.194</b>
Have	154 (30.14)	16.73 (10.724)		Have	503 (98.43)	13.57 (10.483)	
Do not have	357 (69.86)	12.32 (10.348)		Do not have	8 (1.56)	18.5 (18.701)	
Educational level			<b>&lt;0.001</b>	Presence of chronic illness(es)			<b>0.152</b>
Primary school and below	366 (71.62)	17.28 (10.139)		0	66 (13.11)	13.18 (9.067)	
Junior high school	58 (11.35)	6.17 (5.663)		1	215 (42.07)	13.13 (10.444)	
Senior high school	55 (10.76)	4.07 (4.350)		2	135 (26.42)	13.13 (10.914)	
Training school and above	32 (6.26)	2.13 (1.50)		$\geq 3$	95 (18.40)	15.92 (11.561)	
Monthly income (RMB)			<b>&lt;0.001</b>				

SD: Standard Deviation, 1RMB=US \$0.15.

**TABLE 2 |** The correlation between self-neglect, social support, and psychological capital.

S. No.		1	2	3
1.	Self-neglect	1		
2.	Social support	-0.638**	1	
3.	Psychological capital	-0.812**	0.674**	1

\*\*significant at the 0.01 level (two-tailed).

( $\beta$ ) for the association between social support and self-neglect was reduced from 0.323 to 0.153 when PsyCap was added to the model, indicating that PsyCap might partially mediate the effect of social support on self-neglect among Chinese community-dwelling older adults.

### SEM of the Mediating Role of PsyCap Between Social Support and Self-Neglect

To further confirm the mediating effect of PsyCap between social support and self-neglect, SEM was conducted, with results shown in **Table 4**. A good fit of the model with obtained data reveals that social support not only directly influences self-neglect, but has a significant indirect effect on self-neglect *via* PsyCap. **Figure 1** details the direct path from social support to self-neglect. As hypothesized, social support had a negative and direct impact on self-neglect ( $\beta = -0.97$ ,  $p < 0.01$ ). The model fits the data well ( $\chi^2/df = 2.74$ ,  $p < 0.05$ ; GFI = 0.991; AGFI = 0.964; IFI = 0.993; CFI = 0.993; TLI = 0.979; RMSEA = 0.058). **Figure 2** shows the indirect path from social support to self-neglect mediated by PsyCap ( $c = -0.20$ ,  $p < 0.01$ ), which yielded acceptable goodness-of-fit statistics ( $\chi^2/df = 4.26$ ,  $p < 0.001$ ; GFI = 0.955; AGFI = 0.915; IFI = 0.975; CFI = 0.975; TLI = 0.961; RMSEA = 0.080). As shown, PsyCap was associated with social support ( $\beta = 0.84$ ,  $p < 0.001$ ) and self-neglect ( $\beta = -0.88$ ,  $p < 0.001$ ). The path coefficient between social support and self-neglect significantly decreased when PsyCap was added as a mediator ( $\beta = -0.20$ ,  $p < 0.01$ ). Furthermore, bias-corrected and accelerated bootstrap method demonstrated that PsyCap had indirectly mediated the association between social support and self-neglect ( $\beta = -0.568$ , 95% CI:  $-0.658$ ,  $-0.474$ ,  $p < 0.001$ ), confirming the mediating role of PsyCap between social support and self-neglect.

## DISCUSSION

This study is the first to explore the relationship between social support, PsyCap, and self-neglect in older adults, and to test the mediating role of PsyCap in the relationship between social support and self-neglect. The correlations between social support, PsyCap, and self-neglect were significant. Additionally, the structural model demonstrated that social support has a negative effect on self-neglect but a positive effect on PsyCap. Further, PsyCap has a negative effect on self-neglect. Our finding supports the hypothesized model that social support negatively influences self-neglect through PsyCap among older adults.

In this study, social support demonstrated a negative association with self-neglect, which is consistent with previous studies. A prior Chinese study reported that older adults with disabilities who received more social support had a lower level of self-neglect and a more stable psychological state (Dong and Sun, 2021). A qualitative study revealed nurses' perception that limited social support exacerbates the severity of self-neglect (Wu et al., 2020). Decreased mobility because of disease or aging perpetually limits older adults' ability to maintain their environment and seek treatment or care (Pavlou and Lachs, 2008). Without timely assistance from families and neighbors, self-neglect may be reinforced in case of difficulty (Wu et al., 2020). In China, the children of older adults often struggle with their own work-related responsibilities and spend less time caring for their parents. Increasingly, older adults migrate to cities where they have little interaction with neighbors, resulting in limited support (Yu et al., 2021). This poor social support may further increase older adults' sense of isolation and neglect (Al Ghassani and Rababa, 2021). Over time, they may doubt their worth, believe they are a burden on society, and feel shame and guilt over asking for help (Burnett et al., 2006; Wu et al., 2020).

A positive relationship was found between social support and PsyCap, which is consistent with prior studies. Mishra and Shafiq reported that social support was positively associated with PsyCap ( $r = 0.37$ ,  $p < 0.01$ ; Mishra and Shafiq, 2018). Gu et al. (2021) found that social support had a positive effect on PsyCap, and PsyCap mediated the relationship between social support and treatment burden in Chinese older patients with chronic obstructive pulmonary disease (Gu et al., 2021). It is possible that material or emotional support, an external positive event, can help older adults preserve existing resources and increase internal psychological resources (Ren and Ji, 2019). Furthermore, social support from family, friends, and the neighborhood has been shown to enhance older adults' self-efficacy for health-promoting behaviors (Wu and Sheng, 2019) and ultimately improve the status of PsyCap. In general, direct and indirect effects of social support on PsyCap have been evidenced in practice, as detailed above.

This study also revealed a negative correlation between PsyCap and self-neglect. The HMR analysis demonstrated that PsyCap was a protective factor against severe self-neglect. In addition, according to the SEM analysis, PsyCap was found to have a mediating role in the relationship between social support and self-neglect; the negative effect of social support on self-neglect weakened with the mediation of PsyCap, indicating that social support can reduce self-neglect *via* effective control and increase in PsyCap. When living in an environment with stress, difficulties, and limited social and material resources, PsyCap is a protective factor that facilitates active coping behavior and psychological processes (Zhang et al., 2019; Yang et al., 2020). Previous studies have found that PsyCap is closely related to strengthened resilience, psychological wellbeing, and life satisfaction (Pramanik and Biswal, 2020), and those who embrace higher PsyCap are less likely to experience negative psychological effects such as anxiety, depression, and learned helplessness in adversity (Dixon and Frolova, 2011). In Chinese culture, self-actualization, a

**TABLE 3** | The hierarchical multiple regression analysis of elder self-neglect (N = 511).

Variable	Model 1			Model 2			Model 3		
	$\beta$	Standardized $\beta$	95%CI	$\beta$	Standardized $\beta$	95%CI	$\beta$	Standardized $\beta$	95%CI
<b>Sociodemographic characteristics of the participants</b>									
Age (years)	0.154**	0.104**	0.055 to 0.252	0.136**	0.092**	0.043 to 0.228	0.127**	0.086**	0.048 to 0.205
Sex	-0.192	-0.009	-1.552 to 1.169	-0.214	-0.010	-1.499 to 1.071	-0.689	-0.032	-1.776 to 0.399
Marital status	-3.842	-0.164	-9.763 to 2.078	-2.971	-0.126	-8.566 to 2.624	-0.131	-0.006	-4.875 to 4.612
Religious beliefs	-0.341	-0.015	-1.833 to 1.150	0.186	0.008	-1.229 to 1.601	0.704	0.030	-0.494 to 1.901
<b>Educational level</b> (reference category: Primary school and below)									
Junior high school	-0.875	-0.026	-3.538 to 1.788	-0.846	-0.025	-3.360 to 1.669	-0.324	-0.010	-2.450 to 1.802
Senior high school	-1.949	-0.057	-4.900 to 1.002	-2.093	-0.061	-4.880 to 0.695	-1.152	-0.034	-3.510 to 1.207
Training school and above	-3.084	-0.07	-6.768 to 0.600	-2.950	-0.067	-6.429 to 0.529	-0.298	-0.007	-3.260 to 2.664
<b>Monthly income</b> (reference category: 0–999 RMB)									
1,000–1999	-6.739***	-0.198***	-8.942 to -4.536	-5.525***	-0.162***	-7.627 to -3.422	-2.207*	-0.065*	-4.043 to -0.372
2000–2,999	-7.600***	-0.221***	-9.872 to -5.328	-6.355***	-0.185***	-8.523 to -4.186	-2.375*	-0.069*	-4.289 to -0.461
3,000–3,999	-15.227***	-0.477***	-17.795 to -12.66	-10.729***	-0.336***	-13.406 to -8.052	-0.728	-0.023	-3.386 to 1.931
≥4,000	-15.599***	-0.554***	-18.573 to -12.626	-10.587***	-0.376***	-13.666 to -7.507	-1.319	-0.047	-4.226 to 1.587
<b>Living arrangement</b> (reference category: Living with spouse and children)									
Living with spouse	-0.873	-0.04	-2.941 to 1.195	-0.451	-0.021	-2.406 to 1.505	-0.646	-0.030	-2.298 to 1.006
Living with children	-0.771	-0.021	-6.641 to 5.098	-2.093	-0.057	-7.646 to 3.460	-4.284	-0.118	-8.985 to 0.417
Living alone	5.526	0.206	-0.835 to 11.887	2.460	0.092	-3.596 to 8.516	0.074	0.003	-5.053 to 5.201
Living with others	-7.02	-0.058	-16.789 to 2.750	-4.934	-0.041	-14.175 to 4.306	-1.223	-0.010	-9.047 to 6.600
Health insurance	-5.127	-0.06	-10.403 to 0.148	-5.886*	-0.069*	-10.871 to -0.900	-3.625	-0.042	-7.849 to 0.599
<b>Presence of chronic illness(es)</b> (reference category: 0)									
1	0.803	0.037	-1.298 to 2.904	0.860	0.040	-1.124 to 2.844	-0.013	-0.001	-1.694 to 1.667
2	2.137	0.089	-0.126 to 4.401	1.351	0.056	-0.795 to 3.498	-0.175	-0.007	-2.001 to 1.651
≥3	3.573**	0.130**	1.147 to 5.998	2.848*	0.104*	0.550 to 5.146	0.170	0.006	-1.807 to 2.147
Social support				-0.387***	-0.323***	-0.484 to -0.289	-0.183***	-0.153***	-0.270 to -0.096
<b>Psychological capital</b>									
$R^2$		<b>0.535</b>			<b>0.586</b>			<b>0.705</b>	
Adjusted $R^2$		<b>0.517</b>			<b>0.569</b>			<b>0.692</b>	
$\Delta R^2$		<b>0.535</b>			<b>0.051</b>			<b>0.119</b>	

$R^2$ : A statistical measure in a regression model that determines the proportion of variance. Adjusted  $R^2$ : A modified version of  $R^2$  that accounts for predictors that are not significant in a regression model.  $\Delta R^2$ : The change in  $R^2$  between two equations

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

component of PsyCap, emphasis self-worth and endeavor, which might also play a role in mitigating self-neglect (Shi, 2013; Stodolska et al., 2020). All in all, the present study's

results indicate that the promotion and enhancement of PsyCap might be crucial for reducing or eliminating older adults' self-neglect.

## Theoretical Significance

This study makes several theoretical contributions. First, it expands our understanding of the potential mechanisms of self-neglect by providing evidence of the key role of PsyCap between social support and self-neglect, which further refines the self-neglect conceptual model proposed by Dyer et al. (2007) and Iris et al.'s (2010) model. Second, a novel model was constructed from the perspectives of both society and positive psychology, providing a basis for building a multidisciplinary and comprehensive theory of handling self-neglect.

**TABLE 4** | The path coefficients of the mediation model.

	$\beta$	SE	CR	P
Psychological capital	0.84	0.162	14.475	<0.001
Self-neglect ← Social support	-0.88	0.052	-10.191	<0.001
Psychological capital	-0.20	0.121	-2.769	0.006
Self-neglect ← Social support				

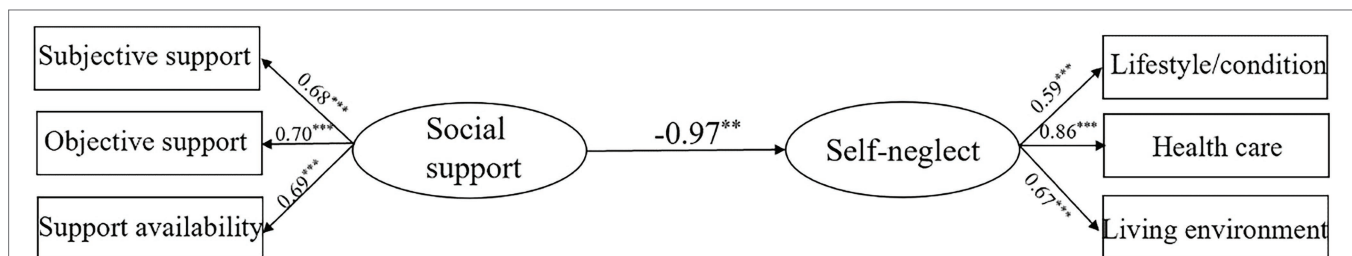
$\beta$ , the standardized path coefficient; SE, the standard error; CR, the critical ratio.

## Practical Implications

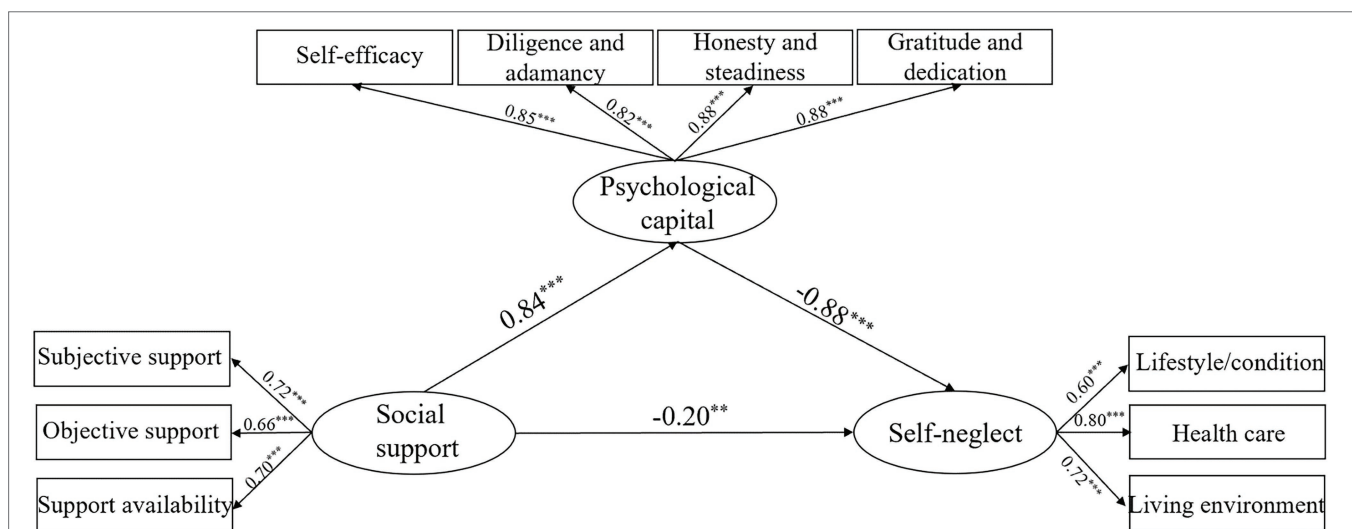
The study shows that social support and PsyCap affect self-neglect among Chinese older adults, which is meaningful to the process of improving policies and community-based services. On one hand, the government should pay more attention to older adults, with interventions such as investing more to assist older adults with decreased mobility and establish a PsyCap-related cultural atmosphere like “self-actualization is important for the entire society: children and older adults. Caring for children is not everything.” Opportunities for self-actualization are also needed. On the other hand, health workers in the community should not only help older adults increase social contact and address maladaptive social cognition, but also focus on their mental health. To avoid refusal of self-neglect interventions, PsyCap interventions should be undertaken given their recognition in Chinese culture. Family members should also be encouraged to pay attention to older adults' psychological health, especially in Asian countries where filial piety is practiced.

## Limitations

Although the present study is the first to elucidate PsyCap's mediating role in the relationship between social support and self-neglect, several limitations should be noted. First, owing



**FIGURE 1** | Standardized solution for the structural equation model of social support and self-neglect. \*\* $p < 0.01$ .



**FIGURE 2** | Standardized solution for the structural equation model of psychological capital, social support, and self-neglect. \*\* $p < 0.01$  and \*\*\* $p < 0.001$ .

to the cross-sectional nature of this study, conclusions cannot be made about causality between variables. Further prospective longitudinal studies are necessary to confirm and build on these findings. The second limitation is that the self-reported questionnaire could be affected by both social desirability bias and shared-method variance. Therefore, future studies are needed to verify the accuracy of the self-reported method.

## CONCLUSION

Self-neglect among older adults is a rising problem in China. In this study, we found that social support and PsyCap reduced self-neglect, and PsyCap mediated the relationship between social support and self-neglect. Effective interventions should be established to help increase older adults' social support and PsyCap, which may help promote a positive and stable psychological state, reduce self-neglect, and, more importantly, improve quality of life.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Hangzhou Normal University. The patients/participants provided their written or verbal informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

BZ: methodology, software, and writing—original draft. HW: investigation. CX: writing—original draft. XH: formal analysis. MC: revision. All authors contributed to the article and approved the submitted version.

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# Diversity attitudes and sensitivity of employees and leaders in the German STEM-sector

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The increasing diversity of cultural backgrounds, migration status and age is shaping modern working life. Previous research demonstrated that the attitudes and competences of team members and leaders toward diversity play a crucial role in utilizing the potential of heterogeneous teams and preventing detrimental behavior and discrimination. But even though leaders appear to be key figures in the process of diversity management, their perception of diversity as well as related challenges and chances are poorly investigated. The current paper aims to contribute to the understanding of leaders' perspective on and role in diversity management building on a comparative analysis of two explorative qualitative studies with 16 employees and 22 leaders. The overall research questions are how employees and leaders perceive diversity of culture and age from their specific point of view, which experiences are likely to contribute to their opinion on and perception of diversity and in how far do employees and leaders differ in these aspects. Participants come from the German sector of science, technology, engineering and mathematics (STEM), which is the most internationalized and least psychologically investigated sector in Germany. The results show that employees are aware of the topic of diversity in general but have poor competences in dealing with diversity in their daily work life. This seems to be associated with a lack of experience with intercultural interaction and a lack of support from the respective organizations/leaders. We further found that individuals with a migration background do not show any signs of stereotype threat rather than expressing a feeling of being isolated from employees without a migration background. By comparing perspectives of leaders and employees, the current study contributes to the understanding of the processes underlying the experiences of inequalities of migrants and experiences of intercultural miscommunication and faultlines of people without migration background. Theoretical and practical implications are discussed.

## KEYWORDS

diversity, STEM sector, discrimination, culture, migration, age, older migrants

## Introduction

Structures that are characterized by a high level of heterogeneity among their members are successful if they succeed in utilizing the given diversity of skills and perspectives (van Dick and Stegmann, 2016). This is the aim of the approaches and methods summarized under the term diversity management. On the one hand, depending on how diversity is dealt with in work groups, age and cultural diversity lead to better group performance (Stegmann, 2011; Wang et al., 2019). On the other hand, intergroup prejudice might deprave successful coworking of individuals with different cultural backgrounds and from different age cohorts.

The utilization of diversity in the workplace is naturally linked to the interaction of the individuals involved. Previous studies, in which coworking in diverse groups was understood as “intergroup-behavior,” demonstrate the central role of employees’ attitudes toward and perception of diversity for fairness and performance outcomes in diverse teams (van Knippenberg et al., 2004; van Dick and Stegmann, 2016). Furthermore, managers play a crucial role in the implementation of diversity management. While has the task of developing a general strategy and public position, senior and middle managers are required to exemplify this strategy by demonstrating openness and flexibility, sanctioning inappropriate behavior and selecting employees based on fair and valid criteria (Rosken, 2016). They are therefore also described as multipliers (Wildermuth and Gray, 2005). Previous studies on leadership and diversity indicate that many German managers do not recognize the importance of diversity (Bader et al., 2019; Genkova and Schreiber, 2019), compared to other countries (Buttner et al., 2006; Eger and Indruchová, 2014; Madera et al., 2017). Quantitative studies demonstrate that manager’s attitudes towards diversity are predicted by organizational climate and organizations affirmative action (Buttner et al., 2006; Biswas et al., 2021). While these studies underline the importance of such actions comprehensively, they fail to investigate managers specific perspective on and perception of diversity or if they differ from employees’ perspectives. Accordingly, explorative research is needed for groups of managers (e.g., in a special sector) in the first place in order to investigate and support managers dealing with diversity.

Studies by Krell (2013) show that in Germany most diversity-related challenges regard the dimensions gender, age, and cultural background (Genkova and Ringeisen, 2016). One sector, to which diversity-management is thus especially important is the German STEM-sector (sciences, technology, engineering, mathematics). It is one of the most important sectors in German economy and the most internationalized sector as well. According to the Institute of German Economics, the STEM sector is characterized by high international mobility on the labor market, and a high proportion (19%) of foreign experts (Anger et al., 2018). At the same time, Germany is experiencing demographic change, related to a higher proportion of older workforce. While gender-diversity in the STEM sector received extensive attention

in public discourse and research lately (Anger et al., 2018), perspectives on and consequences of age and cultural diversity remain mostly unattended. Recent reports indicate that handling of diversity is neither established in curricula (Koller et al., 2017; Auferkorte-Michaelis and Linde, 2018) nor in public awareness (Anger et al., 2018). Thus, investigating culture and age diversity-management in the German STEM-sector appears especially promising.

We therefore explore the questions how STEM employees and leaders in Germany perceive diversity of culture and age from their specific points of view, which experiences are likely to contribute to their opinion on and perception of diversity, and in how far do employees and leaders differ in these aspects. By revealing social attitudes, challenges, and chances of STEM leaders (which are important stakeholders in decreasing discrimination at the workplace), we strive to contribute to the examination of discrimination and potentials of migrants aging in place. The following section thus describes phenomena related to diversity of cultural background and age, followed by explanations on the management of diversity and the role of leadership.

## Diversity and diversity management

The central topic of diversity management is the variety of members in an organization. In this sense, diversity refers to personal variety, i.e., the similarities and differences between individuals (Krell, 2013). Diversity includes both obvious and barely perceptible stable traits, such as religion, sexual orientation, cultural values, as well as changing characteristics such as language and competence (van Dick and Stegmann, 2016). While all those characteristics are more or less relevant, some dimensions of diversity are especially meaningful due to their importance for an individual’s identity as well as the challenges and chances related to it.

Research on challenges and chances of cultural and age diversity mostly based on two underlying theoretical perspectives: the information-processing perspective and the social-identity approach (Schneid et al., 2016). The information-processing perspective suggests that diversity is linked to application and better elaboration of relevant information and thus to greater performances of diverse teams. The core of the social-identity approach is that the formation of subgroups based on the common expression of relevant attributes (e. g. in age or cultural background) leads to conflicts and hostile behavior (van Dick and Stegmann, 2016).

Culture and age are both relevant aspects of social-identity for an individual and are used to categorize themselves and others, with a greater emphasis on subjectively relevant differences between groups (social-identity approach; Tajfel and Turner, 1979). Thereby, culture is defined as a psychological orientation system that provides identity through norms for perception, thinking and acting (Thomas and Simon, 2007). The moment the belonging to a certain cultural or age-group becomes more salient,

or subjectively more relevant, people tend to see themselves and others less as individuals and more as prototypical representatives of a single group (van Dick and Stegmann, 2016).

The categorization elaboration model (CEM, van Knippenberg et al., 2004) is based on the understanding of identity in line with the social-identity approach and was the first model that could explain the performance differences between different diverse teams in a replicable way (van Dick and Stegmann, 2016). The core assumption of the CEM is that groups with diverse members have a higher potential for perspectives, knowledge or general information if they work together efficiently with the corresponding subgroups. Ideally, the diversity of information should lead to more in-depth information elaboration and thus to better thought-out or more innovative solutions. Subgroup formation (subjectively relevant group characteristics and salience of this group) then leads to negative affective consequences and consequently to poorer performance if the subgroups have a hostile relationship with one another. According to this model, this occurs when the subgroups do not recognize each other or their respective contribution, i.e., threaten their identity (van Dick and Stegmann, 2016).

Beyond behaviors directly related to organizational performance, research reveals that subgroup formation based on age and cultural background is related to severe consequences for fair chances and appropriate intergroup behavior (Kunze et al., 2013). Individuals with cultural backgrounds other than the company majority as well as very young or old employees might be disadvantaged due to discrimination and hostility from colleagues and managers (Sanchez, 2018), but also by limited access to career options, social capital and networks (Ferris et al., 1993; Kunze et al., 2013). Especially when there are strong expectations toward migration status or age for holding a certain position, individuals might experience disadvantages during selection/promotion or discrimination in the workplace (Ferris et al., 1993; Kunze et al., 2013). Experiences of discrimination overtake victims' cognitive resources and disturb individual performance (Walker et al., 2021). Consequences of experiences of discrimination may also include minority stress (Goldman et al., 2008), depression, anxiety, or somatization (Torres et al., 2012) as well as less commitment to the organization (Cox, 1991). Thereby, intersectional perspectives emphasize that, in average, older people with migration background are more disadvantaged than younger people with migration background in the life-course compared to non-immigrants of the same age, respectively. This might indicate that older employees with migration background are excluded more strongly from organizational networks and have been disadvantaged in selection and promotion processes in the past (Stypińska and Gordo, 2018). While anglophone literature often focuses on race diversity when considering intergroup relations and migration (Yadav and Lenka, 2020), previous studies in Germany revealed that race diversity plays a smaller role in Germany. While there is race diversity and racism in Germany, many relevant cultural minority groups do not differ in appearance (e. g. former soviet-union

immigrants), but experience discrimination and challenge of intercultural interaction as well (Krell, 2013; Genkova and Ringeisen, 2016).

## Diversity management and leadership

van Dick and Stegmann (2016) conclude that the main challenge for modern diverse teams is not the diversity of their members, nor the inevitable subjective relevance of differences—fault lines (break lines)—between subgroups. Rather, the most important task of diversity management is to replace any threatening relationship between the groups with a productive and meaningful relationship. This requires a positive, shared attitude toward diversity, awareness for heterogeneity and challenges through diversity as well as skills for cooperating. A superordinate identity that increases cohesion and commitment is fundamental to collaboration (van Knippenberg and Schie, 2000). Based on the in-group projection hypothesis (Mummendey and Wenzel, 1999), this also requires an awareness that the superordinate group, the team or the organization is not culturally homogeneous, but becomes what it is through the multitude of different perspectives. Moreover, Gutentag et al. (2018) show that the basis for diversity-sensitive behavior is a differentiated awareness of cultural diversity. This runs on a spectrum between the culture-blind (assuming there are no cultural differences, all people are equal) and colorful (accounting for cultural differences; Cox, 1991) perspectives, which are used both by organizations and people. In addition, individual attitudes toward the instrumentality of diversity are crucial (Stegmann, 2011). The term diversity beliefs was originally introduced by van Knippenberg et al. (2003) to denote individual beliefs that diversity is beneficial to a group.

Those attitudes toward diversity among employees are shaped by the behaviors of leaders (for an overview see Genkova, 2019). Ashikali and Groeneveld (2015) use a large study with more than 10,000 participants to show that the perception of fair selection processes by the employees, the perception of appreciation and a conscious, competent handling of diversity by managers are significantly positively associated with the diversity attitudes and the commitment of the respective employees. This relationship is partially mediated by a transformational leadership style (Ashikali and Groeneveld, 2015). They explain this relationship by the fact that employees in general, and in particular under transformational leadership, adopt attitudes and behaviors in the sense of developing a diversity culture. The diversity culture, i.e., a socially shared set of opinions and behaviors (Schein, 2010) with regard to the assessment of how to deal with diversity, is a central predictor of the performance of heterogeneous work groups (Kundu and Mor, 2017) and managers evaluation of diversity (Bader et al., 2019; Biswas et al., 2021). Supportive organizational structures and a diversity-promoting climate are thus particularly beneficial, which can reduce intolerance and promote openness toward “otherness” (Biswas et al., 2021).

Previous meta-analyses by Stegmann (2011) and Wang et al. (2019) show that cultural diversity can have a positive effect on team performance depending on participant attitudes toward diversity. While Schneid et al. (2016) could not find a consistent effect of age diversity on team performance, Kunze et al. (2013) show that managers' diversity attitudes and diversity-friendly HR-policies predict diverse team performance *via* age-related diversity culture.

Managers are generally caught between understanding the connections and relevance of diversity management, considering their other management tasks and possible professional tasks, developing sensitivity and possibly leaving their own animosity and insecurities behind (Ashikali and Groeneveld, 2015; Genkova, 2019; McCallaghan et al., 2020). Research on the implementation and success of diversity management emphasizes that in order to actually reduce discriminating structures and behaviors, a common understanding is needed of which behaviors and perspectives are considered discriminating (Auferkorte-Michaelis and Linde, 2018). Also, people with migration background as well as younger and older employees might hold specific needs for support in order to overcome established forms of discrimination. However, you cannot change what you do not see, and this kind of sensitivity toward diversity is not widespread among German companies (Charta der Vielfalt, 2019; Genkova and Schreiber, 2019). Also, corporate strategies might differ strongly from employees' actual needs. While managers' orientation toward diversity is correlated with organization diversity actions (Buttner et al., 2006), this might cause a misfit between managers' and employees' perceptions of diversity, decreasing efficiency of diversity actions and maintaining barriers. Thus, managers are required to be not only aware or sensitive toward general forms of diversity, but they need to develop a good knowledge of challenges and strengths for their company and their team.

In summary, efficient diversity-management requires in-depth understanding of managers' and employees' perception of and attitudes toward diversity. Previous studies on this topic focused mostly on examining predictors of managers' awareness of general issues of diversity (Buttner et al., 2006; Eger and Indruchová, 2014; Genkova and Schreiber, 2019) and evaluation of diversity (positive/negative; Bissles et al., 2001; Bader et al., 2019), rather than investigating the specific meaning of and perspectives on diversity that might root in an in-depth or superficial awareness of diversity. As described in the introduction, these insights are particularly crucial for the STEM industry (Anger et al., 2018). Although it can be assumed that the skills, attitudes and perspectives of STEM graduates differ from those of people with a degree in the humanities or economics (Canagarajah, 2018), there are no differentiated results for managers in the STEM industry in front. The aim of this study is therefore to contribute to a better understanding of the attitudes toward and perception of diversity of managers in STEM professions. To allow identification of discrepancies in the perception of needs, conflicts and power asymmetries, we analyze employees' and managers'

views on diversity of age and cultural background comparatively. The following key questions were formulated accordingly:

1. What are the attitudes toward diversity among the STEM employees and leaders surveyed?
2. Which experiences and perspectives are particularly relevant for their attitudes toward diversity?
3. In how far do attitudes of surveyed managers and employees differ?

## Methodology

In order to explore those research questions, we used semi-structured qualitative interviews in order to provide a picture of the subjective theories (Hilmer, 1969) of managers and employees from the STEM sector on diversity. The interview guide contained a total of 58 questions. To ensure conceptual equivalence and comparability (Genkova, 2019) across the subgroups (managers and employees with and without a migration background, with a lot and little experience), the completed interview key questions were discussed by several experts on diversity with and without a migration background and released after minor changes with regard to general formulations.

The interviews took place between July 2019 and March 2020. Managers and employees from various companies who have a degree in MINT subjects and work in this field were acquired for telephone interviews *via* scientific and economic networks. The acquisition aimed to reach participants from different age groups, with and without migration background, different sexes, with different hierarchical status and from different types of companies. In accordance with the privacy policy, explicit consent was obtained for the interviews to be recorded and used for academic purposes only. The interviews lasted between 20 and 45 min. No incentive was paid. The recorded interviews were transcribed and analyzed according to the inductive qualitative content analysis described by Mayring (2019). Thereby, categories were formed inductively by paraphrasing (removing filler-phrases, slang, etc.), generalizing (increasing abstraction level) and then categorizing participant statements (summarizing generalized statements) in order to allow for a high level of abstraction while sticking closely to the original statements. To verify the identified categories, three diversity experts from universities discussed the findings. This corresponds to a triangulation procedure proposed by Bengtsson (2016).

## Participants

A total of 22 managers and 16 employees from various German companies were interviewed. The aim was to obtain a heterogeneous sample regarding age, sex, migration status, position, and size of the affiliated company. Managers were

between 26 and 69 years old ( $M=49$ ), while employees were between 24 and 46 years old ( $M=34$ ). Seven respondents were female, and 31 were male. All respondents had a degree in a STEM subject. Eight respondents had a migration background (according to the definition of Kemper (2010): people who immigrated to Germany themselves or at least one of their parents). Five respondents (23%) said they worked in a small company (up to 50 employees), 16 (36%) in a medium-sized company (up to 250 employees) and 17 (41%) in a large one companies with more than 250 employees. All participants were working in some form of team-structure requiring interpersonal interaction and coordination on a daily base (e.g., project based work or agile work). From the 22 managers, ten classified themselves in the middle management level, 12 in the upper management level.

## Results

The following section presents the results of the current study, reporting frequencies of answer categories and pattern, relationships between answers, and illustrating conclusions with quotes. Thereby, we roughly follow the order of the research questions. However, experiences and relevant perspectives might be better understood by examining contrasts between employees and managers. We thus start with an analysis of the given attitudes and shift toward a comparison more and more when looking at the related experiences and social environment factors.

In order to answer the question, which attitudes toward cultural and age diversity exist among the participants, various questions were asked, which intended to reveal the perceived and assumed advantages and disadvantages of cultural and age diversity in companies. While all interviewees were able to express an opinion about diversity, the perspectives, underlying assumptions and experiences with aspects of diversity differed between participants. Around two-thirds of the interviewees referred to cultural diversity in their answers, giving examples like team members with migration background or international cooperation with partners and customers. Not surprisingly, nearly all of the participants with migration background gave answers in the category of intercultural diversity, but they rarely talked about other issues of diversity. One-third of the participants referred to fields of specialization as a diversity characteristic; for example: *“To develop an app, one needs a diverse team, including different competences in programming and probably in user-interface design.”* There were also participants with migration background who gave answers in this category. References to age groups, gender, diverse opinions and worldviews were made three times each. Considering the number of mentions as an indicator for the relevance of the respective dimension, fewer participants were aware of the issues age, gender and opinions, at least compared to the issue of cultural diversity. Besides focusing on certain dimensions of diversity, answers varied in their degree of elaboration.

Five managers and three employees gave several answers in which they discussed various aspects of diversity, advantages, and

disadvantages in an elaborated way (categories: work motivation, openness, working more efficiently, promoting integration, mutual learning, additional skills). They also expressed a generally open perspective toward hierarchy and roles, referring to age, culture, and other dimensions. For example, one participant emphasized the role of diversity in the corporate climate and employee performance. *“(…) there are different people every day who have different backgrounds, sometimes cultural backgrounds, but simply also come from different life situations. And if we are open, ‘um’/ well, if we already learn that internally, (…), then we can also use these positive experiences to be open to external parties, i.e., to our customers, and learn from them.”* Those participants also expressed the belief that the challenges and stress levels of employees with a migration background differ and describe both opportunities and risks for people with a migration background. Five of them had a migration background themselves. None of the participants expressed the belief that challenges for older and younger employees differ. However, most younger employees and managers described that they sometimes have to prove themselves in order to be accepted in their professional role. The younger and older participants who demonstrated a higher sensitivity to diversity also stated that they experience the cooperation of older and younger employees sometimes as challenging. Older workers, in particular, reported that they find it challenging to rely on new ways of working while at the same time contributing their expertise.

In contrast, 12 of the remaining respondents could not give any or only a brief answer referring to direct consequences of diversity (categories: access to other markets (international and to migrants), languages, other perspectives, working methods). Uncertainty seemed to show itself in short, choppy responses that took up more general positions, sometimes combined with requests to continue the interview (e.g., *“Um, diversity brings advantages (..) Especially with project work. Next question, please!”*). Later in the interviews, those participants focused more on preventing individual difficulties that arise from intercultural misunderstandings. Many of them also stated that learning German was the most important thing for migrants to do in their company. However, when asked when and where a migrant has the opportunity to learn German in their company, they emphasized that this should be accomplished during free-time. Accordingly, more than half of the interviewees without a migration background expressed the opinion that it is the best to ignore one's own cultural peculiarities, to hide them or to show them only cautiously in appropriate situations to avoid problems. A similar assimilative perspective was expressed when referring to age diversity. Younger, less sensitive participants reported that it is challenging for them to prevail against established concepts. Older, less open-minded or sensitive participants, however, expressed no awareness of such conflicts. It was rather considered as a natural asymmetry, that younger employees want to establish new concepts, but due to a natural lack of experience their attitudes and perspectives usually do not work out.

In summary some participants displayed high levels of awareness for diversity irrespective of migration status or age. However, the majority of participants were rather insensitive toward diversity and related challenges and chances. This came along with a strong focus on assimilation, demanding for homogeneity and commitment to established working and role models. Additional challenges for younger or older people and employees with immigration background were not considered either. Moreover, most participants were not aware of the opportunity to actively influence diversity or diversity culture.

Regardless of being sensitive toward diversity or not, employees and managers differed in how they defined their respective in-group from which they looked at diversity. While employees answered questions from an individual perspective exclusively (what does diversity do to me?), managers mostly referred to an organizational perspective. The conclusion seems obvious that one's own negative attitudes, or one's own insecurity and lack of skills are legitimized by higher authorities:

*"Yes, well, the management levels would certainly not accept it if employees align their carpet towards Mecca. In a German family company, German-run, that is not acceptable from the management, so: they would never do that".*

In contrast, 17 of the managers surveyed expressed the opinion at various points in the interview that *"everyone is equal"* and—in six cases—that it is therefore particularly important to treat everyone equally, which is why no special actions are taken to support cultural diversity and equality. A closer look at the interviews shows that most of the interviewees act as representatives of their respective company and justify established social structures and norms. Those norms refer to thinking and acting, but also to age and migration background. All but two of the managers argue from the perspective of the company when it comes to personnel decisions (e.g., *"We have not done that much there yet; well, anyone can come to us."*), or, for example, about dealing with errors (e.g., *"This is how we handle it..."*). The more frequently there are indications of a strong identification, the more the managers seem to see themselves as typical representatives of the company, especially with regard to the cultural background. Deviations, especially cultural deviations, seem to be viewed more critically when identification is high:

*"Apart from professional suitability, what criteria do you use to select your academic staff?" "EDP also means communication, and these are not just any tasks that have to be done in the back room, but you have to be able to talk and communicate with people. And we're a German family business, so yes, I'll say it, we're actually very limited locally. We do have branches in France and Poland, but German is definitely spoken in the management positions there too."*

Those participants also expressed that people with a migration background and of the same age got along best with each other.

This also applies to those managers who have a culturally heterogeneous workforce, or who often interact internationally. No such in-group projection can be observed for the four respondents who not only see abstract advantages in cultural diversity, but also see cultural diversity as a concrete strength of their own company.

Moreover, the actual experiences with diversity differ between employees and managers. While experiences of age diversity (fit to role models, ageism, prejudice, different perspectives and expertise) were very similar, experiences with cultural diversity differed strongly. First of all, there was a difference in the attitudes of participants who work a lot with international partners, clients or colleagues and those who do not. Those who operate internationally a lot, especially employees and managers from the IT sector and particularly large companies, often have a culture-blind attitude, but at the same time, have concrete strategies for dealing with cultural diversity. These respondents with many international contacts focused very much on the interaction with foreigners, while second-generation migrants are considered less relevant. Thereby, the focus was less on understanding intercultural differences, but rather on avoiding individual pitfalls. In three cases, managers emphasized an agile way of working and mentioned the Scrum framework as well, which provides for equal treatment of all team members. Agile working summarizes an extremely popular set of methodological frameworks that aim to enable efficient and flexible project management in the context of a volatile, uncertain, complex and ambiguous environment (VUCA, Schwaber and Sutherland, 2020). However, there seems to be no awareness within the company of issues relating to the proactive handling of cultural diversity.

Managers and employees who interact only slightly with international contacts or people with a migration background in their daily work (although the company can certainly serve international markets) show a more negative attitude toward cultural diversity. All managers who have the impression that cultural subgroups have formed in their companies have very little contact with people with a migration background in their everyday work. At the same time, these leaders were far less sure of what cross-cultural leadership requires and what immigrant and non-immigrant people can do to interact successfully. It is assumed that people with a migration background must learn German in any case.

On average, employees reported more interactions with employees, customers or clients with migration background. While less regular contact was also associated with negative attitudes, more experiences were not necessarily associated with better attitudes. Employees stated that they experienced very stressful or challenging situations during their first intercultural experiences or even later. It became apparent that they felt a lack of support during these experiences, as they felt ill-prepared and could not ask anyone with more expertise. Challenges thereby referred to misunderstandings or conflicts based on different understandings of hierarchy or working style. During interaction with employees with migration backgrounds, challenges also

included language problems, misunderstandings and prejudices. Managers partially reported similar experiences; however, most of them (except three) showed no awareness that employees might need support to deal with cultural diversity. While most managers demonstrated that they consider cultural diversity as an obstacle that can be solved or ignored easily, employees were exposed much more intensely to the challenges of intercultural interaction and discrimination in the workplace. However, they report a lack of support, which might be explained by the managers' lack of knowledge.

In contrast to this result, all managers except one were convinced that they were good at managing a diverse workforce and reacted sufficiently sensitively to the employees. Managers with a migration background did not differ in their response behavior from managers without a migration background. Although they were more sensitive than most other respondents, they did not necessarily seem to think in a more nuanced way about the issue. This could be an indication that while sensitivity is a necessary part of dealing competently with diversity, knowledge and "practical skills" may also be required. This coincides with the statements made by 11 of those surveyed that junior managers often have problems in this area. Five explicitly point out that they see this as a deficit in university education:

*"More tools, more education. I also said at the beginning that [diversity] leadership is practically non-existent at the university, at least I didn't have it as a subject at all, not even as an elective. And I get that mirrored by other people too. And when I think about the things I've learned in recent years, take Friedemann Schulz von Thun, his peer one model, or the different levels of communication and so on and so forth, all of these are actually basics, so really basics that you would normally have to pack in, let me say, the fifth to tenth grade. Because that's just incredibly important in further progress. And management simply has to go to universities, and that has to be one of the most important subjects, because afterwards you have to deal with people, everywhere."*

This statement goes in line with the result that employees feel badly prepared and not sufficiently supported. Those who particularly emphasized this point in the course of the interviews have mostly completed various training courses in "soft skills" on their own, or with the support of their company. Managers who rarely attend these trainings have little awareness of the fact that employees and managers can be prepared for intercultural leadership. The fact that this could be the standard in other departments is not mentioned in any of the interviews, although it is repeatedly pointed out that too little is actually known about it.

## Discussion

The results show that only a small proportion of employees and managers of German STEM companies are aware of the

opportunities and risks of diversity and the specific challenges for people with a migration background and younger and older employees. In this context, both one's own experiences and sensitivity, as well as the position of the company and previous measures, seem to be relevant and interact with one another, predicting attitudes toward diversity. Different patterns emerge among respondents when they interact a lot or little with people with a migration background and when they identify more or less with their company. These findings are broadly consistent with existing findings on attitudes toward cultural diversity (van Dick and Stegmann, 2016; Gutentag et al., 2018; Genkova and Schreiber, 2019), implying that STEM leaders' and employees' diversity attitudes are quite comparable to those in other industries, although stereotypes of intelligent but unemphatic men in STEM professions suggest the opposite. However, inter-individual differences between the respondents seem to be due to the work context and systematic deficits in knowledge and competence in dealing with cultural diversity and less to the affiliation to the STEM industry, or particularly strong matches with the stereotypical STEM. Managers who rarely work with people with a migration background show fewer specific skills in dealing with diversity, are less sensitive to diversity challenges, and represent a more culture-blind perspective. They justify why diversity is important by arguing that all people are equal, but because they treat everyone equally, they do not have a problem with diversity.

This result is in line with the results of Genkova and Schreiber (2019), who found many managers from all industries to not even notice the challenges in their employees' everyday work. Those who showed these more negative attitudes in this study also agreed that applicants must speak German to belong to the organization. Pehrson et al. (2009) used a cross-sectional study to show that the connection between national identity and prejudices against foreigners is stronger when nationality is defined by ethnicity or language compared to when nationality is defined by citizenship. The fact that the participants speak from a company perspective and link reservations to operational issues suggests that identification with the company can also lead to a more negative and undifferentiated attitude toward people with a migration background if the German language is perceived as a relevant part of the corporate culture. Future studies should further elaborate on this result.

Those who have contact with people with a migration background are not necessarily more sensitive to people with a migration background or more competent in dealing with them. This awareness is only present if diversity measures have already been implemented. A clear positioning of companies as "pro-diversity" with a high level of identification with the company means that positive and differentiated attitudes are more likely to be adopted, which corresponds to the results of Ashikali and Groeneveld (2015). If there is a high level of identification and a lacking or negative positioning of the company, the term "them" is used more regularly talking about people with a migration background. Apparently, people with a migration background are perceived as external to the

organization or team. Based on Mummendey and Wenzel (1999), this assessment can be traced back to the ingroup projection hypothesis, which states that people experience a superordinate group, such as a company, as more homogeneous and similar to themselves than it actually is. Gutentag et al. (2018) show that on the one hand, prejudice and xenophobia can be the reason for culture blindness, but also the feeling of being overwhelmed by the complexity of the topic. In fact, most of the participants seem to have realized that the topic of cultural diversity is present but very complex and that their existing knowledge is not sufficient. Employees in particular feel inadequately supported by the organization and interact in a complex, diverse social environment unaware of risks or potentials. A previous study by Genkova and Schreiber (2019) points out that such negative experiences without support or explanation are very likely to lead to problematizing diversity. This could explain the tendency among employees to ignore cultural diversity in particular and just try to avoid conflicts.

It is also pointed out that dealing with diversity is not taught in STEM courses, although it is not mentioned that other courses do this as standard. Respondents seem to differ in how they deal with this uncertainty. This fits with the tendency of some of the STEM leaders surveyed to legitimize their own views with the attitude of management or the company, which can be taken as a sign of insecurity. Other managers (particularly from larger companies) solve the problem by continuing their education. This may be due to better access to further training opportunities in large companies, but also because there appears to be a greater variety of specialist areas at management level and often a clear company line. Thereby, managers are more likely to devote time and attention to the topic of cultural diversity, if it is subjectively anchored in the corporate identity. Those managers who are more aware of the problems and the challenges are also convinced that leadership in general and diversity leadership in particular requires special training or further training. This supports the connection between company positioning, further training opportunities and the experience of a lack of competence.

It is emphasized that junior managers and employees often do not meet the requirements of a diverse working environment and go through a not unproblematic try-and-error process until they can work without problems. This also corresponds to the cross-industry observations of Barmeyer et al. (2019). A central result of this study is therefore that both companies and universities need to take greater account of cultural and age diversity in order to be able to meet the requirements of a diversifying society.

The analysis of the interviews also shows that agile working and diversity sensitivity do not necessarily go hand in hand. McCallaghan et al. (2020) conducted a cross-sectional study to demonstrate that servant leadership, a core concept of agile frameworks, is positively associated with employees' diversity attitudes. However, they also point out that they operationalize diversity attitudes only as an instrumental component (i.e., whether respondents believe diversity represents an economic benefit) and do not capture diversity sensitivity. Like Ashikali and

Groeneveld (2015), they show that an employee-oriented leadership style enables the manager to pass on their attitudes, which can have advantages and disadvantages. On the one hand, equality is firmly anchored in both agile frameworks and transformational leadership style (Pusenius, 2019). On the other hand, neither concept addresses other facets of diversity management. The IT people, who describe their leadership style as agile emphasize equality but have no in-depth knowledge or awareness of the opportunities and risks of cultural diversity. Although the rest of the mechanisms outlined in this work could also work for this attitude, a connection seems obvious and further studies should address a connection between agile methods and diversity attitudes, especially given the increasing prevalence of agile working methods.

## Limitations

Women and men showed no differences in response behavior, but a separate consideration of possible connections between attitudes and experiences was not undertaken. As all participating employees were working in some form of team structure rather than alone, results might not be transferable to STEM-scientists working mostly on their own. Although the perspectives of managers with a migration background were considered separately, it is likely that this study cannot be transferred to other groups with regard to this aspect either. Future studies should resolve this problem and specifically address women and people of different genders as well as people with a migration background, also in order to take possible effects of intersectionality into account. Since no suitable comparative material is available, no statements can be made about the extent to which the participants provide a typical or generalizable picture of the STEM industry. Neither is it possible to draw any conclusions about actual skills and characteristics, as this would have required an additional survey of employees and customers, for example. However, the results suggest that the participants' deficits in terms of diversity awareness and competencies are mainly caused by the work context and lack of training, rather than by a specific predisposition of people in STEM professions. In addition, for further studies, it seems promising not only to ask about perspectives and opinions, but to have them substantiated by means of situational questions. While some respondents backed up their discussions with many examples, others were very reluctant, especially when it came to negative experiences.

## Conclusion

Despite its limitations, the present study was able to explore relevant connections for further research in the field of diversity and diversity management. It should be emphasized in particular that managers are by no means mere intermediaries between an overarching diversity strategy and employees, as studies such as

the work of Ashikali and Groeneveld (2015) implicitly assume. The perception of the dimensions of age and cultural diversity appears to be a crucial precondition for fighting structural discrimination, such as lower payments for older migrants over the life course. Future studies are encouraged to consider special aspects of the perspectives toward diversity, i.e., identification with the company and companies' diversity cultures for managers, as well as feeling of support and preparation of employees. In practice, the results of this study implicate that diversity management in STEM is very relevant for the support of managers and employees and that workforce must be equipped with the necessary knowledge and understanding to be able to act efficiently and appropriately. Furthermore, the present results indicate that agile working does not create diversity awareness. Even university graduates cannot be assumed to have experience in this area.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants

provided their written informed consent to participate in this study.

## Author contributions

PG was responsible for study design, project planning and coordination, evaluating results, and supervising the analyses and writing process. HS was involved in conducting interviews and analyses and writing the first draft of the manuscript. All authors contributed to the article and approved the submitted version.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Analysis of the impact of social insurance on farmers in China: A study exploring subjective perceptions of well-being and the mechanisms of common prosperity

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**Objective:** Exploring common prosperity in China, this study focuses on the impact of social pension insurance on the well-being of rural communities. It explores the direct beneficiaries and policy effects of the Rural Social Pension Insurance system (RSPI), which was piloted in 2009 and achieved full coverage in 2012. It summarizes the performance and implementation of social pension insurance and the development of the rural social pension system.

**Methods:** The article uses microdata from the four most recent periods of China Family Panel Studies (CFPS), which were undertaken in 2012, 2014, 2016, and 2018, and uses the Order Probit model to analyze the effects of participating in insurance on rural residents in terms of their subjective well-being. The study identifies diverse effects on farmers from different age groups, genders, and regions, with a focus on subjective well-being. The article also tests the mediating effects of health status and self-rated social status on farmers' subjective well-being and their mechanisms of action.

**Results:** Findings reveal that participating in the insurance system significantly improved the subjective well-being of rural residents. Its biggest beneficiaries were groups of rural residents with poor health status, living in good overall conditions. Taking into account the most recent aims of this policy, to promote rural revitalization and common prosperity, further optimization of the rural pension insurance system should improve the living standards of low-income groups, enabling more comprehensive coverage, and potentially helping to mitigate the risk of returning to poverty due to illness.

**Conclusion:** Developments in basic social security and the rural basic pension system could effectively guarantee the basic standards of living of rural residents. Future development of the system should take into account the heterogeneous characteristics of rural residents and implement social pension protection policies in accordance with local conditions.

#### KEYWORDS

new rural social pension insurance, rural residents, subjective well-being, mediation effect, CFPS

## 1. Introduction

As an important feature of Chinese modernization, common prosperity is an essential requirement of socialism, encompassing the common pursuit of “double prosperity” in terms of both the material and spiritual life of all people (The Communist Party Member Network, 2022). The creation of a “happy China” through common prosperity has become an important priority in recent years and the country has entered a new era of socialist modernization and facilitating a move to people being more comprehensively well-off in terms of common prosperity. This also coincides with the value orientation of happiness economics, outlining that happiness is the goal of residents and fits the value expectations of government policies. This is a universal expectation and an ultimate goal in human life all over the world.

Since R. Easterlin introduced happiness into economics research in the 1970s. Since then, it has attracted widespread academic attention because of its strong subjective focus and its methods of measuring individual well-being more comprehensively (Easterlin, 1995), and a focus on subjective well-being has become the mainstay of happiness research (Easterlin et al., 2012). Subjective well-being as “happiness” is the most important aspect of happiness research. As an important object of study in “happiness economics,” subjective well-being reflects not only the material aspects of people’s daily life but also their spiritual satisfaction. This involves measuring individual utility and national welfare and is a comprehensive indicator through which we can evaluate people’s life satisfaction and well-being (Ferrer and Carbonell, 2005; Oshio et al., 2011). According to the Global Happiness Report 2022, although China’s happiness has improved, it is still 2.24% lower than that of Finland, which has been in first place for many years. Since 2000, the size and proportion of China’s elderly population have been increasing year by year, with 267 million people aged 60 and above (18.9%), and 201 million people aged 65 and above (14.2%) at the end of 2021. It is expected that by the middle of the 21st century, China will enter a stage of deep aging and that the size of the elderly population will reach about 500 million people. The proportion of people aged 65 and above in rural areas will be as high as 46.4%, which is approximately 2.1 times that of urban areas. As a society, China will face increased pressures due to the old age of urban residents (Wang et al.,

2019) and the growth dilemma of “happiness stagnation” will be more complicated and severe in rural residents.

In response to the pressures of these aging populations, the Chinese government has introduced a series of policies that attempt to address growing rural pension problems, including the Rural Social Pension Insurance system (RSPI), which launched as a pilot program in 2009 and achieved full coverage in 2012. As one of the core elements of China’s current rural social pension insurance system, the 2012 RSPI is still one of the key initiatives for coping with the aging rural population and improving the future living conditions of elderly people in rural areas. The 2012 RSPI is also an important institutional guarantee that the government aims to improve the quality of life of rural residents and ensure a balanced urban and rural pension service. It has become a safety net and social shock absorber for the wider population, providing bottom-up basic protection for the public. On the theoretical level, the policy design of the 2012 RSPI aims to provide a system that will help guarantee China’s aim to eradicate poverty and build a moderately prosperous society. The most important feature of this aim adopts a model that combines three funding channels: including individual contributions, collective subsidies, and government subsidies, and providing a new pension income for people in agricultural households that will relieve pressures on living and improve their living standards through external subsidized support from the government. The government provides this new pension income for people in agricultural households to relieve their living pressures, improve their standard of living, provide some support and protection for economic life, and improve their quality of life (Yi and Zhao, 2021). As a compensatory social pension system, the 2012 RSPI policy provides farmers with stable material security through regular pension payments and increases their income level in old age. In addition, for the rural elderly, the 2012 RSPI policy also has a greater effect in securing basic livelihoods, as pensions increase the total wealth of the elderly and this increase in total wealth enables the rural elderly to reduce the various types of agricultural and non-agricultural labor they supply or withdraw from the labor market, facilitating their ability to enjoy leisure time, and thus improving their physical functional status and ability to care for themselves (Liu et al., 2021).

Despite these aims, by the end of 2021, China's basic pension insurance participation rate was approximately 72.82%, which is far from the ultimate goal of "universal coverage and comprehensive coverage." Since it has now been over 10 years since the implementation of the 2012 RSPI, the question of how the effectiveness of this policy can be assessed needs to be addressed. Has the social pension insurance system, which aims to equalize basic public services, achieved the expected goal of providing rural residents with a sense of security in their old age? The answer to this question is ultimately reflected in these systems have improved the living conditions of rural residents. Based upon the fact that the system is designed to provide "wide coverage" and contribute "more contributions, more benefits," has the 2012 RSPI changed the subjective sense of well-being of rural residents, and how will it do so in the future? Will it alleviate the plight of rural residents and improve their quality of life? Which groups of rural residents will benefit most? Scientific and rigorous measurement studies that address these questions are thus of great practical significance for the formulation and optimization of public policies in this new era.

## 2. Policy background and literature review

In the face of the increasingly serious problem of an aging population, gradually promoting multi-level pension security system and continuously improving social security policies are important fundamental solutions. From a historical perspective, the security systems that support China's older rural populations can be roughly divided into four stages. First, the germination and incubation period between 1954 and 1985: this stage saw the implementation of the "five security support" and collective pension system (Wang, 2019), focusing on the loss of income sources and living without support for specific groups, such as farmers and veterans, aiming to provide appropriate production and living security and supporting the costs associated with living, sickness, death, and burial, etc. This created a precedent for China's rural social pensions and opened up the exploration of a pension insurance system. Second, the initial exploration period between 1986 and 1998, during which rural social pension insurance was implemented. This system mainly relied on farmers' unilateral contributions, proving a social security model for rural residents that enabled them to implement self-saving, generally known as "old farmers' insurance." However, due to a lack of government investment and farmers' unwillingness to participate in insurance, the system was withdrawn in 1998 when the state rectified the insurance industry. Third, the period of exploration and adjustment between 1999 and 2008. This phase of rural social pension insurance was mainly focused on the independent exploration of provinces and formed some typical experiences and practices, but at the national level is still in the policy gap period. The fourth period is that of steady development

from 2009 to the present, a time marked by the State Council's promulgation and implementation of the "Guidance Opinions on the Launching of New Rural Social Pension Insurance Pilot," which officially opened a new chapter in the development of institutional pension security in rural areas. In 2011, the State Council issued and implemented the "Guidance Opinions on the Launching of Urban Residents' Social Pension Insurance Pilot." In July 2014, the 2012 RSPI system was officially recognized and merged with the urban residential insurance system, and a national basic pension insurance system was established.

In literature on these stages, attention to social insurance is largely focused on macro and micro aspects. The macro aspects are mostly explained in terms of institutional design (Wang and Hetzler, 2015; Caro and Parada-Contzen, 2022) and institutional effectiveness (He and Jiang, 2015; Zhang et al., 2016; Huang and Zhang, 2021). Many studies have found that the predictable results derived from these traditional theories are not consistent with the real evidence. In recent years, more relevant studies on micro aspects have focused on influencing factors and group differences levels, and literature mainly reflects on the relationship between higher income and happiness enhancement (Zhao et al., 2013) and the relationship between individual characteristics and happiness (Mackerron, 2012; Zhou et al., 2022). The conclusions of these different studies are not identical (Liu et al., 2013) and few studies have focused in depth on the mechanisms of influence and the pathways of action.

To date, little attention has been paid to the relationship between rural social pension insurance and subjective well-being in general, and theoretical research has to an extent, lagged far behind the development of practice. Using 2-period CHARLS panel data, He and Zhou (2016) confirmed that the new rural insurance can effectively improve the degree of depression of rural residents; however, the same use of CHARLS data from the Gansu and Zhejiang provinces in 2008 and 2012 led to the opposite conclusion, arguing that family retirement is still the current mainstream concept of retirement in rural areas, coupled with a lack of external subsidies, meaning it is difficult to increase the welfare of the rural elderly (Xue, 2012; Xie, 2015; Cheng and Hua, 2020). In addition, the scope of 2012 RSPI coverage does not only involve a group of residents over 60 years old but also has an impact on rural residents under 60 years old, while the above-mentioned studies do not pay enough attention to heterogeneity, the in-depth research on the relationship between the social pension insurance and subjective welfare is very limited, which provides room for expansion of this manuscript. Specifically, this manuscript attempts to improve the existing studies in the following three aspects, hoping to make up for the "shortcomings" and regrets of the above-mentioned studies, which are also possible contributions of this study. First, in terms of research data, the total amount of sample data is sufficient and covers a wide range, which can better reflect the current situation of rural residents and

help ensure that the research results are representative. Second, in terms of research methodology, can participation in the 2012 RSPI enhance farmers' subjective perception of happiness? To date, existing studies do not provide a convincing answer. Using the latest four periods of large-volume CFPS data from 2012, 2014, 2016, and 2018, the present study applies scientific and rigorous econometric strategies to clarify the magnitude and paths of the effect of participation on rural residents, to provide systematic empirical data that enables us to measure the impact of old-age security at an institutional level. The empirical research methods used in the present study differ from those used in previous research by seeking more consistent and comparable analysis through matching methods. This empirical research methodology innovates by seeking more consistent and comparable samples, to avoid the possible shortcomings brought about by the self selection bias of survey respondents. Third, in terms of research significance, previous studies have mainly focused on urban and rural residents or special groups, such as migrant workers and the elderly (Deng and Yang, 2019; Zhao and Feng, 2020), but few have focused on rural residents alone. Moreover, the introduction of public policy variables into the factors influencing subjective well-being is conducive to providing theoretical insights into policies that might help society to cope with increasing aging, the construction of rural social security systems, and help accelerate the realization of common prosperity.

The research structure design and the overall ideas of the article are arranged as follows: in the introduction, the background is explained and the origin of the problem is presented. The policy background and literature review are then discussed in the second section, which briefly explains the policy background of social insurance, comprehensively comparing existing literature and briefly reviewing the shortcomings of these studies before presenting the fundamental ideas and possible innovations of this article. The third section undertakes a theoretical analysis and presents the research hypothesis, which examines the relationship between social insurance, subjective well-being, and the possible mechanisms of action involved, constructing a theoretical hypothesis model of social insurance and subjective well-being. The fourth part of the article then explores the data source, variable selection, and model selection, and defines the relevant variables and the basis of their selection according to the specification. Section five presents the article's empirical results and undertakes analysis based on OLS benchmark regression. This section also undertakes further in-depth estimation by the Order Probit model, with an extended analysis of the individual effect test and a discussion of endogeneity using the Hausman test and PSM estimation. The sixth part tests the mechanism of relevant effects, which are further verified by the mediation model and Sobel test. Finally, the seventh section presents research conclusions and countermeasures.

### 3. Theoretical analysis and research hypothesis

Psychology believes that individual well-being broadly encompasses three dimensions that are connected to the innate genetic factors acquired by environmental influences and individual psychological traits. These include the influence of family environment, individual characteristics, social capital, and other extrinsic factors that might affect well-being (Martin, 2010). Although happiness economics also considers it to be a subjective feeling that is determined by factors such as one's thoughts, mood, and state of mind, it focuses more on portraying a personal utility. When individual capital and external environmental factors change, people make certain decisions to maximize individual utility to enhance their happiness level. Neoclassical labor supply theory summarizes the utility function as the choices made by workers based on leisure and consumption under the condition of individual utility maximization. In terms of the theory of leisure economy, there is also a certain complementary effect between leisure time and working time (Wei and Lü, 2018). To further simplify the relationship presentation, the study assumes that individual lifetime time  $T$  contains only labor time and leisure time,  $T_i$  is individual labor time, individual leisure time is  $T - T_i$ , and tries to construct individual utility functions of the following form (Chen et al., 2020):

$$E = E((T - T_i), Y) \quad (1)$$

$$s.t. Y = R(T_i, Z) + X + O$$

In the above Equation 1,  $E$  is individual utility, which depends on individual leisure time  $T - T_i$  and individual consumption  $Y$ ;  $R(T_i, Z)$  is total labor income,  $X$  is pension input,  $Z$  is capital input, and  $O$  is other transfer income. Under the realistic budget constraint, the individual utility of insured farmers and their subjective well-being may be enhanced because the pension income from social insurance reduces labor intensity and enhances leisure enjoyment. It may also enhance their subjective utility because the pension brings an increase in disposable income (Zhang and Tan, 2018), relaxes budget constraints, and increases consumption levels (Hong, 2017; Yue and You, 2018). Since subjective well-being originates from individuals' positive cognitive and affective assessment of their own living conditions, there must also be distinct individual heterogeneity characteristics (Huang et al., 2016; Leng et al., 2022). Accordingly, the current study proposes the following research hypothesis:

$H_1$ : rural residents' participation in social insurance can positively affect their individual subjective well-being,

which is the main presentation of the social insurance happiness effect.

H<sub>2</sub>: the impact of social insurance on rural residents' subjective well-being may be heterogeneous, with different insured individuals showing different perceptions of subjective well-being.

As a socialized livelihood project with economic welfare, social insurance is directly related to people's well-being, and maintaining health should be one of the basic objectives of the system design (Ni, 2020). As a form of government redistribution, it is supposed to play an important role in improving people's health status (He and Li, 2019). However, established studies have generally focused on health status as a control variable, arguing that social insurance, despite its short implementation time and low level of coverage, still improves the quality of old age and enhances the physical health of rural elderly people to some extent (Bai and Gu, 2019; Chen et al., 2019) and that it can reduce the "no care for the elderly" probability, providing a level of survival guarantee for subsequent life and significantly reducing the risk of long-term multidimensional health poverty (Galiani et al., 2014) and reducing the degree of happiness "deprivation" because rural insurance can eliminate the residents' worries about their old age (Oswald and Powdthavee, 2008; Hou, 2018). It can also reduce the dependence of elderly residents on their children, reduce their psychological stress and improve their self-esteem (Wang et al., 2004), making their evaluation of their health more optimistic. At the same time, studies have reached different conclusions, finding that the effect of pension insurance on the physical health of the elderly is limited (Xiang and Yao, 2016), because the act of participating in insurance exposes the rural elderly to severe consumption deprivation, leading to a deeper degree of consumption disparity between individuals, which in turn may create a sense of relative deprivation and have an impact on the nutrition and health of the rural elderly. This, in turn, impairs personal physical and mental health (Huang et al., 2019), and indirectly affects the well-being of the elderly. In this regard, this manuscript proposes another research hypothesis 3:

H<sub>3</sub>: self-rated health status may play a mediating role in the relationship between social insurance and well-being, because social insurance may affect rural residents' self-rated health level, which in turn affects residents' well-being through self-rated health status.

The pursuit of social status is also a basic human motivation (Chen et al., 2018). According to the theory of relative deprivation, individuals with lower levels of status are often at a disadvantage compared with "others" and are more likely to have negative feelings toward the outside world (Long and Liang, 2019; Pu and Zhao, 2020). Rural areas in China are

influenced by the traditional culture of "not having to worry about scarcity but not having to worry about inequality," rural residents' value judgments are embedded in the acquaintance society based on blood and geographical ties. People from these areas tend to externally present themselves by comparing their welfare with those around them and judging whether they are at a disadvantage. In this context, uninsured farmers may have a sense of relative deprivation that "we are entitled to but actually excluded from" in the process of social comparison, thus generating negative emotions. In this situation, the positive mediating effect of self-assessed social status is more significant (Zhang and Sun, 2019; Zhang and Qin, 2020). A person's social status depends on wealth and income (economic status), power, and prestige. It also determines the degree of respect, income distribution, opportunities, personal talent, and self-actualization, which is in line with Maslow's hierarchical needs theory for belonging, respect, and self-actualization (Xu and Chen, 2017; Ma et al., 2018; Hou and Ge, 2020). Accordingly, this manuscript proposes research hypothesis 4:

H<sub>4</sub>: self-rated social status may play a fully mediating role between social insurance and subjective well-being, as part of which social insurance influences residents' well-being through self-rated social status.

Based on the above theoretical analysis, this manuscript constructs a theoretical hypothesis model of social insurance and subjective well-being of rural residents, as shown in Figure 1, incorporating self-rated health status and self-rated social status into a unified analytical framework to verify the mechanism of social insurance influence on farmers' subjective well-being through self-rated health status and self-rated social status.

## 4. Data and method

### 4.1 Data

This manuscript is based on data released by the China Family Panel Studies (CFPS) conducted by Peking University (Xie and Hu, 2014). The CFPS survey is methodologically rigorous and representative, covering 16,000 households in 635 villages (communities) in 162 counties in 25 provinces, municipalities, and autonomous regions. Its stratified multi-stage systematic probability sampling approach improves the efficiency of the sample to represent the whole population, covering approximately 95% of the Chinese population (Xie and Lu, 2015). CFPS research has wide coverage, high authority, and large sample information, with good reliability and validity. It is a nationally representative sample, with complete public data currently available as of 2018. To ensure the scientific scope of this study and the comparability of data, the article used a valid sample of

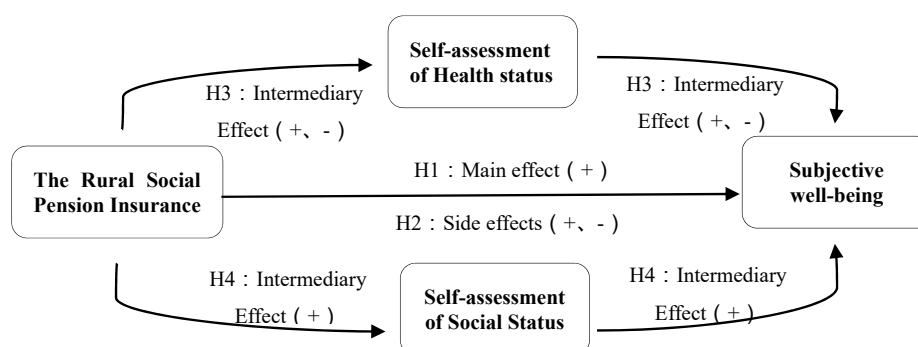


FIGURE 1  
Theoretical hypothesis model of social insurance and subjective well-being.

43,700 after eliminating some missing samples of variables, including 749 samples in 2012, 13,918 samples in 2014, 15,793 samples in 2016, 13,240 samples in 2018, and 11,894 respondents in the sample participated in four surveys at the same time, according to the non-balanced short panel data processed.

## 4.2 Variable selection and sample description

According to the needs of the study, the study selected a sample of adults whose current household status was marked as agricultural in the questionnaire, with the youngest resident in the sample being 16 years old (Table 1).<sup>1</sup>

### 4.2.1 Explanatory variables: Farmers' perception of subjective well-being

Based on existing literature and academic consensus, the CFPS questionnaire used two scales, one of "satisfaction with one's life" and the other on "confidence in one's future," to construct a double-latitude alternative indicator that better meets the needs of the study. The answers to the two questions were rated from very low to very high on a scale of 1–5. The respondents were asked to make subjective evaluations, with mean values of 3.73 and 4.05, between average and high, showing that the subjective well-being of the sample residents was generally at a medium to a high

level, with standard deviations of 1.07 and 1.01, confirming the established findings (Yu and Cai, 2019), reflecting the rationality of the indicator construction. The possible reason is that people's expectations of the future are better than their current feelings, which deserve further attention and exploration.

### 4.2.2 Core explanatory variables

Specific participation behavior was set as the core explanatory variable, in which participation was assigned a value of 1 and non-participation was assigned a value of 0. Individual residents who also participated in other pension insurance were removed to better reduce possible interference. At the same time, in terms of the actual participation of rural residents, data from 1,067 sample participants who chose to take part in urban residential insurance in 2016 and 2018 were included together to ensure the objectivity and validity of the sample to the greatest extent.

### 4.2.3 Control variables

Based on previous theoretical analysis, the following control variables (Table 2) were introduced in combination with the indicator portrayal of the questionnaire, controlling as much as possible for the base period variables that affect both the decision to participate and the individual's subjective well-being.

At the level of individual characteristics, the maximum age of respondents was 94 years old, with a mean value of 42.06 years, which confirms the necessity and seriousness of the institutional social pension problem compared with the average life expectancy of 77 years. The mean value of gender was 0.497, indicating that the ratio of men to women among respondents was balanced. This is in line with the principle of variable control; political outlook and marital status, which were set as binary dummy variables, with 3% of PPC members in rural areas. The mean value of marital status was 0.83, which is more in line with the actual situation. At the level of social characteristics, the mean values of self-rated income and self-rated social status were 2.58 and 2.90, respectively, which are between low and

1 The original questionnaire options were: 1 = very healthy, 2 = very healthy, 3 = fairly healthy, 4 = fair (no readout), 5 = unhealthy. To unify the positive indicators, the data were reversed to 1 = very healthy, 0.75 = very healthy, 0.5 = comparatively healthy, 0.25 = average, and 0 = unhealthy. In terms of regional distribution, according to the National Bureau of Statistics, the eastern, central and western parts of China are specifically covered as follows: the eastern region includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, and Guangdong; the western region includes Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Guangxi, Inner Mongolia, and Xinjiang; the central region includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, and Hunan.

TABLE 1 Variable definition table ( $N = 43,700$ ).

Variable type	Variable name	Variable symbols	Variable definition
Explained variables	Subjective well-being perception	Happiness	Drawing on existing studies, “life satisfaction ( $y_1$ )” and “future confidence ( $y_2$ )” were used as proxy variables in the questionnaire, and five levels from very dissatisfied to very satisfied were assigned a score of 1–5, respectively.
Core explanatory variables	Participation in the 2012 RSPI	x	Participation = 1, non-participation = 0
Control variables	Year interviewed	Year	Actual year of the questionnaire
	Age	Age	Actual age of survey respondents
	Gender	Gen	Male = 1, Female = 0
	Political Appearance	Par	Member of the CPC = 1, Non-members of the CPC = 0
	Marital status	Mar	With spouse (first marriage, remarriage, cohabitation) = 1, without spouse (unmarried, divorced, widowed) = 0
	Self-assessment of health status	Hea	Assign a value of 1–5 from very healthy to unhealthy, respectively
	Self-assessment of social status	Soc	Assign points 1–5 from low to high, respectively
	Self-assessed income level	Inc	Assign points 1–5 from low to high, respectively
	Region	Code	East = 1, Central = 2, West = 3

TABLE 2 Descriptive statistic results of variables.

Variable	Sample size	Mean	Standard deviation	Minimum value	Maximum value
Life satisfaction	43,700	3.7269	1.0685	1	5
Future confidence	43,700	4.0527	1.0137	1	5
Enrollment behavior	43,700	0.5476	0.4977	0	1
Gender (male = 1)	43,700	0.4971	0.5000	0	1
Marital status	43,700	0.8345	0.3717	0	1
Political status	43,700	0.0306	0.1722	0	1
Year interviewed	43,700	2015.9	1.6584	2012	2018
Region	43,700	1.9764	0.8443	1	3
Age	43,700	42.0565	13.5185	16	94
Self-assessed income level	43,700	2.5808	1.0456	1	5
Self-assessed social status	43,700	2.9018	1.0666	1	5
Self-assessed health status	43,700	0.5246	0.3097	0	1

average in the lower middle range, but the mean value of self-rated health status was 0.52, which is between relatively healthy and very healthy in the upper middle range, indicating that although most rural residents have an average living standard, they are more optimistic about their self-health status, which may be one of the important factors affecting the subjective well-being of rural residents. Therefore, we set it as one of the mediating variables, as tested and discussed later in this article.

### 4.3 Method

Given that the factors affecting individual well-being include many aspects and that well-being is an ordered response variable from 1 to 5, the Order Logistic model was used for regression estimation and its baseline model was set as follows:

$$\text{happiness}_{it} = \alpha_0 + \beta_0 X_{it} + \beta_1 X'_{it} + \gamma_{1t} + \varepsilon_{1it} \quad (2)$$

The explanatory variable  $\text{happiness}_{it}$  in Equation 2 represents the subjective perception of happiness of individual  $i$  at time  $t$  and is composed of  $y_1$  and  $y_2$  together.  $X_{it}$  is the core explanatory variable, which mainly measures the participation of individual  $i$  at time  $t$ . It is a binary dummy variable, with  $X_{it} = 1$  indicating participation and vice versa;  $X'_{it}$  denotes a series of control variables, including individual characteristics, social characteristics, regional characteristics, etc.;  $t$  is the time effect,  $\beta_0$  and  $\beta_1$  are the corresponding coefficient matrices,  $\varepsilon_{1it}$  denotes the random disturbance term.

$$\text{happiness}_{it} = b_0 + b_0 X_{it} + b_1 X_{it} \times C_{it} + b_2 X'_{it} + \gamma_{2t} + \varepsilon_{2it} \quad (3)$$

where  $C_{it}$  denotes a series of control variables for individual  $i$  at time  $t$ . The rest is the same as Equation 2. From the established studies and the current situation in rural areas, the mediating effect of insurance participation behavior on farmers' subjective well-being is likely to be influenced through self-rated health status and self-rated social status. We attempted to build a

mediating effect model to test the original hypothesis.

$$\begin{cases} Z_{ij} = d_0 + d_1X_{it} + d_2S_1 + \gamma_{3t} + \varepsilon_{3it} \\ \text{happiness}_{it} = g_0 + g_1X_{it} + g_2Z_{it} + g_3X'_{it} + \gamma_{3t} + \varepsilon_{3it} \end{cases} \quad (4)$$

In the baseline model with self-rated health status as the mediating variable,  $Z_{ij}$  is the content of self-rated health status, and  $S_1$  contains all the variables in the control variables in Equation 2 except for self-rated health status; while in the baseline model with self-rated social status as the mediating variable,  $Z_{ij}$  is the content of self-rated social status,  $S_1$  contains all the variables in the control variables in Equation 1 except for self-rated social status.  $S_1$  contains all other variables in the control variables in Equation 1 except for self-rated social status.

## 5. Results

### 5.1 Baseline regression

Based on the OLS benchmark regression, the ordered Order Probit model was used for in-depth estimation, which helped to judge the robustness of the regression results while more clearly reflecting the degree of influence of various factors. For the convenience of explanation, **Table 3** reports the results of the benchmark regressions of the two models separately.

1. Overall, the direction and significance of the estimation results of the main explanatory variables of the two models were fully consistent, all passing the 1% test, and the significance of the key variables increased. On the one hand, this shows strong robustness, and on the other hand, it highlights the high applicability of Order Probit regression, indicating that the participation behavior of social insurance is an important factor that influences farmers' subjective well-being, which is in line with expectations. Participation in social insurance not only significantly improves farmers' satisfaction with their present life, but also makes farmers' confidence in the future significantly higher and much higher, realizing the policy expectation of social insurance, which needs to be further consolidated and optimized.
2. In terms of specific variables, the regression results of the control variables are consistent with the findings of existing studies. Marital status and self-rated income are statistically significant at 1%, which is consistent with the common sense judgment. The gender variable showed a negative correlation with current life satisfaction and was significant at 1% statistical significance; however, in terms of confidence in the future, only the age variable showed a significant negative correlation at 1% statistical significance, while gender showed a significant positive correlation. This indicates that the subjective well-being of individual farmers shows a decreasing trend with age.

Women had higher results than men in terms of their perception of subjective well-being, but male participants showed higher results in terms of their confidence in the future. Of particular interest is that here, except for the political outlook variable, all other characteristic variables of individuals have a lower degree of confidence in the future than in the current period of satisfaction. A possible explanation for this is that party members bring a capital element or status identity to individual rural residents, making them more confident in the future development of the party and the country.

### 5.2 Individual effects test and endogeneity discussion

#### 5.2.1 Individual effect test

This article uses panel data from the 4-period CFPS, meaning it is necessary to estimate the parameters using the individual effects model and compare them with baseline regression. The Hausman test results show that the chi-square test statistic for dependent variable 1, life satisfaction is 192.27 ( $p = 0.0000$ ), and the chi-square test statistic for dependent variable 2, future confidence is 93.51 ( $p = 0.0000$ ). All dependent variables were highly significant at 1% statistical significance, so fixed effects were used. Further observations revealed that the direction, estimates, and significance of the effect of participation behavior on the two dependent variables were largely consistent, again confirming the robustness of the findings.

#### 5.2.2 Endogeneity discussion

Given the inevitability of the endogeneity problem, the article attempts to dissipate the omission bias phenomenon that may be brought about by the endogeneity problem by controlling for more variables and PSM tests. Since participation behavior is a binary dummy variable, participation behavior was first used as the treatment variable, and covariates including age, gender, political affiliation, marital status, region, and self-rated income were included in the series. Propensity score matching analysis is estimated by the logit model. Results showed a good  $R^2$  of model fit and a high overall significance level. The covariates age, gender, political outlook, marital status, self-assessed income, and region showed positive correlations with participation in social insurance and were statistically significant at 1%. In terms of econometric rigor, **Table 4** provides an in-depth calculation of the standard deviations of the treatment and control groups based on all matching variables with a  $t$ -test.

The results show that the control range of the standard deviation of the six variables is significantly lower. The absolute value of the standardized deviation of all variables after matching was less than 10, except for political outlook, which

TABLE 3 Results of the effect of social insurance on farmers' perception of subjective well-being.<sup>a</sup>

Estimation method	OLS returns	Order Probit	OLS returns	Order Probit
Variable model	y1 (M1)	y1 (M2)	y2 (M3)	y2 (M4)
Participation behavior	0.0498*** (0.0101)	0.0486*** (0.0107)	0.0580*** (0.0098)	0.0588*** (0.0110)
Year interviewed	0.0264*** (0.0029)	0.0309*** (0.0031)	0.0022 (0.0028)	0.0034 (0.0032)
Age	0.0033*** (0.0004)	0.0041*** (0.0004)	−0.0100*** (0.0004)	−0.0101*** (0.0004)
Gender	−0.1050*** (0.0097)	−0.1144*** (0.0104)	0.0316*** (0.0094)	0.0362*** (0.0107)
Political appearance	0.0393 (0.0275)	0.0349 (0.0300)	0.0689*** (0.0260)	0.0676** (0.0310)
Marital status	0.0851*** (0.0142)	0.0842*** (0.0147)	0.1537*** (0.0138)	0.1696*** (0.0151)
Self-assessed income	0.3122*** (0.0051)	0.3400*** (0.0052)	0.2324*** (0.0049)	0.2631*** (0.0053)
Region	−0.0242*** (0.0058)	−0.0266*** (0.0062)	−0.0373*** (0.0056)	−0.0423*** (0.0063)
Constant term	−50.5190*** (5.7822)		−0.5872 (5.6191)	
Observations	43,700	43,700	43,700	43,700
R <sup>2</sup>	0.1072		0.0746	

<sup>a</sup>As proxy variables, y1 refers to life satisfaction and y2 refers to future confidence. \*\* and \*\*\*Denote 5% and 1% significance levels, and the standard errors of the estimated coefficients are indicated in parentheses in the model, as below.

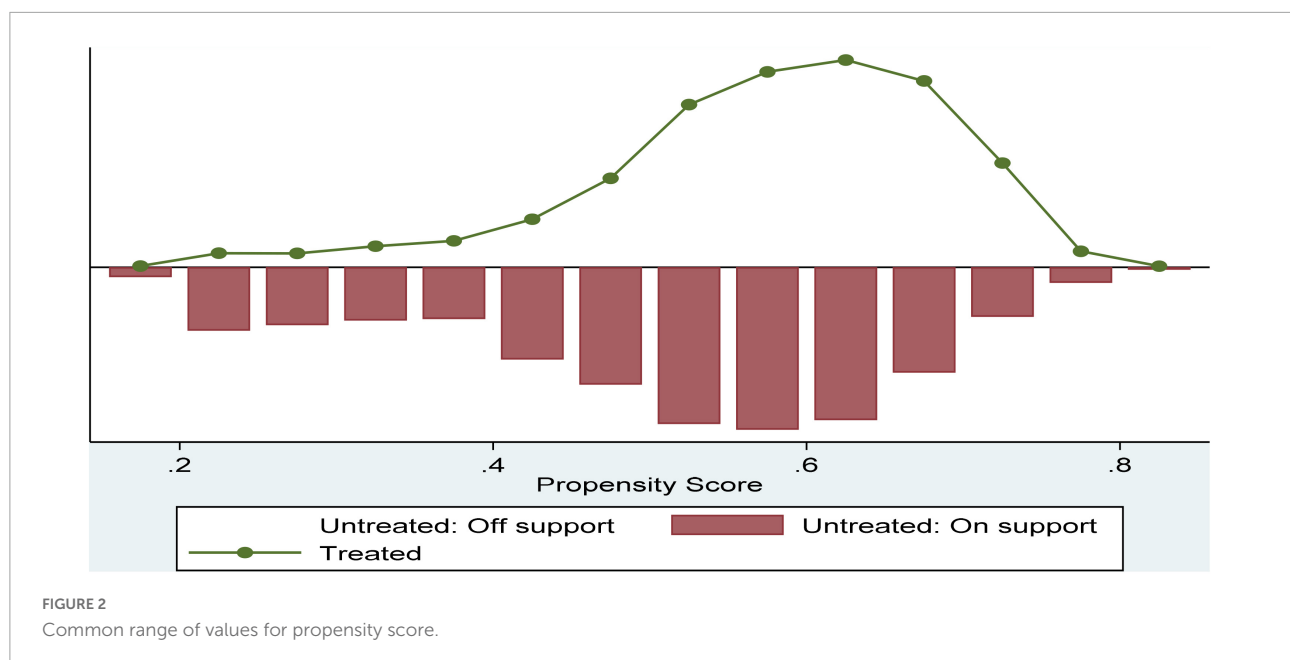
TABLE 4 Matching balance test results.

Variables	Sample	Mean		Marking deviation/(%)	Standard deviation reduction/(%)	T-value	P-value
		Processing group	Control group				
Age	Before matching	44.126	39.551	33.9	99.4	35.73	0.000***
	After matching	44.126	44.156	−0.2		−0.28	0.783
Gender	Before matching	0.50161	0.49173	2	26	2.06	0.040**
	After matching	0.50161	0.4943	1.5		1.6	0.11
Political Appearance	Before matching	0.03518	0.02499	6	−69.3	6.16	0.000***
	After matching	0.03518	0.01793	10.1		11.76	0.000***
Marital status	Before matching	0.89942	0.75583	38.7	93.8	40.96	0.000***
	After matching	0.89942	0.90828	−2.4		−3.29	0.001***
Self-assessed income	Before matching	2.6254	2.5269	9.4	99.4	9.81	0.000***
	After matching	2.6254	2.6248	0.1		0.07	0.947
Region	Before matching	2.0686	1.8647	24.3	95.1	25.31	0.000***
	After matching	2.0686	2.0587	1.2		1.29	0.196

\*\* and \*\*\*Denote 5% and 1% significance levels.

is 10.1%, and the overall standardized deviation of variables is also less than 15%, which is within a perfectly acceptable range. Moreover, the *t*-test results do not reject the original hypothesis that there are no systematic differences except for political outlook and marital status. The *t*-test results also did not reject the original hypothesis of no systematic differences, except for

political appearance and marital status, again indicating the reliability of the propensity value matching estimates. **Figure 2** visualizes the distribution characteristics of the absolute values of bias before and after matching, indicating that the treatment and control groups are highly similar and fully meet the needs of the study.



## 5.3 Robustness tests and extended analysis

### 5.3.1 Robustness tests

This study also conducted a double test. First, OLS and Order Probit were used to examine the effect of participating in social insurance and how this behavior affects farmers' perceptions of their subjective well-being, respectively. The results, although slightly different in value, were approximately the same in direction and significance, indicating that the conclusions were robust. On the other hand, to eliminate other effects that may arise from the extreme values of the sample, the robustness test was conducted again using the Winsorization data processing method. The results, shown in [Table 5](#), were robust overall and some of the estimated coefficients even become more significant.

In addition, this study further tested the dependent variable with a one-period lag by changing the instrumental variables and the results were shown to be robust and valid. Due to limitations in article length, the reported results are not repeated in detail here.

### 5.3.2 Expanded analysis

The above analysis of the effect of social insurance participation on farmers' perception of subjective well-being under the full sample were obtained as the average effect of participation on all farmers' subjectivity perceptions, and did not consider the heterogeneous effect of participation behavior on farmers' perception of subjective well-being. The heterogeneous effects of social insurance participation behavior are reported in [Table 6](#).

TABLE 5 Robustness test results.

	Life satisfaction	Future confidence level
	y1 (Order Probit)	y2 (Order Probit)
Winsorization processing	0.0486***	0.0588***
Enrollment after processing	(0.0107)	(0.0110)
Year of enrollment	0.0309***	0.0034
	(0.0031)	(0.0032)
Age	0.0041***	−0.0101***
	(0.0004)	(0.0004)
Gender	−0.1144***	0.0362***
	(0.0104)	(0.0107)
Political appearance	0.0349	0.0676**
	(0.0300)	(0.0310)
Marital status	0.0842***	0.1696***
	(0.0147)	(0.0151)
Self-assessed income	0.3400***	0.2631***
	(0.0052)	(0.0053)
Regional distribution	−0.0266***	−0.0423***
	(0.0062)	(0.0063)
Observations	43,700	43,700

\*\* and \*\*\*Denote 5% and 1% significance levels.

1. *Effect of gender.* Columns 1 and 2 of [Table 7](#) report on the different perceptions of insured farmers on subjective well-being according to their gender. In general, the difference

TABLE 6 Heterogeneous effects of social insurance participation on farmers' perception of subjective well-being: sub-sample regression results.

Variables	Male	Female	Eastern Region	Central Region	Western Region	Under 45 years of age	45–60 years old	Over 60 years old
	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction	Life satisfaction
Participation behavior	0.0727*** −0.0147	0.0727*** −0.0146	0.113*** −0.017	−0.00533 −0.0195	0.107*** −0.018	−0.00199** −0.0009	0.00507*** −0.0004	0.0134*** −0.0034
Self-assessed income	0.395*** −0.0089	0.306*** −0.0078	0.361*** −0.0098	0.351*** −0.011	0.326*** −0.0098	0.334*** −0.0082	0.344*** −0.0059	0.312*** −0.0186
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample observation size	21,725	21,975	16,104	12,525	15,071	24,597	43,700	3,024

Variables	Male	Female	Eastern region	Central region	Western region	Under 45 years of age	45–60 years old	Over 60 years old
	Future confidence level	Future confidence level	Future confidence level	Future confidence level	Future confidence level	Future confidence level	Future confidence level	Future confidence level
Participation behavior	0.0143 −0.0151	0.0434*** −0.0149	0.0582*** −0.0175	−0.0296 −0.02	0.0639*** −0.0183	−0.00686*** −0.001	−0.00857*** −0.0004	−0.00111 −0.0033
Self-assessed income	0.280*** −0.0086	0.246*** −0.0076	0.272*** −0.0094	0.276*** −0.011	0.245*** −0.0094	0.221*** −0.0081	0.265*** −0.0057	0.326*** −0.0183
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample observation size	21,725	21,975	16,104	12,525	15,071	23,391	43,700	3,024

\*\* and \*\*\*Denote 5% and 1% significance levels.

TABLE 7 Table of results of Sobel’s mediating effect test.

Variables	Intermediary effect regression results				Intermediary effect regression results			
	Life satisfaction(3)(9)				Future confidence level(6)(12)			
	Regression coefficient	Estimated standard error	T-value	P-value	Regression coefficient	Estimated standard error	T-value	P-value
Participation behavior	0.0578	0.0099	5.83	0.000	0.0681	0.0095	7.14	0.000
Age	0.0077	0.0004	19.74	0.000	−0.0055	0.0004	−14.6	0.000
Gender	−0.1474	0.0097	−15.23	0.000	−0.0114	0.0093	−1.23	0.220
Political appearance	0.0146	0.0278	0.52	0.601	0.0575	0.0268	2.15	0.032
Marital status	0.0773	0.0137	5.64	0.000	0.1492	0.0132	11.32	0.000
Self-assessed income	0.2944	0.0046	63.82	0.000	0.2084	0.0044	46.94	0.000
Region	−0.0133	0.0057	−2.33	0.020	−0.0263	0.0055	−4.80	0.000
Constant term	2.3303	0.0266	87.49	0.000	3.3102	0.0256	129.2	0.000
Sample size		43,700				43,700		
R <sup>2</sup>		0.1318				0.1067		
F-value		828.82				652.41		
Self-assessment of health status(1–6)	0.0599	0.0165	36.32	0.000	0.6290	0.0159	39.64	0.000
Sobel Z value		−5.717				−5.706		
Intermediary effect		−0.1683				−0.1500		
Intermediary effect as a percentage (%)		−20.24%				−17.65%		
Participation behavior	0.0330	0.0098	3.36	0.001	0.0451	0.0095	4.73	0.000
Age	0.0008	0.0004	2.15	0.032	−0.0122	0.0004	−33.7	0.000
Gender	−0.0832	0.0095	−8.73	0.000	0.0511	0.0093	5.53	0.000
Political appearance	−0.0303	0.0276	−1.10	0.272	0.0215	0.0268	0.80	0.422
Marital status	0.0797	0.0136	5.88	0.000	0.1521	0.0132	11.55	0.000
Self-assessed income	0.1989	0.0052	38.32	0.000	0.1323	0.0050	26.28	0.000
Region	−0.0387	0.0057	−6.85	0.020	−0.0450	0.0055	−9.11	0.000
Constant term	2.5130	0.0242	104.05	0.000	3.5542	0.0234	151.6	0.000
Sample size		43,700				43,700		
R <sup>2</sup>		0.1482				0.1085		
F-value		950.45				664.62		
Self-assessment of social status(7–12)	0.2416	0.0052	46.79	0.000	0.2043	0.0050	40.77	0.000
Sobel Z value		6.781				6.758		
Intermediary effect		0.4564				0.2822		
Intermediary effect as a percentage(%)		31.34%				22.01%		

in life satisfaction between insured men and women was not significant. A comparison of the regression coefficients of the self-rated incomes of male and female participants reveals the positive effect of self-rated income on life satisfaction and the degree of confidence they have in their future, which was higher for men than for women. Compared with men, women’s confidence in the future is significantly higher. The reason for this may be related to the traditional gender concept that women have relatively fewer negative emotions.

2. *Effect of region.* Columns 3–5 of Table 7 show the regression results relating to the subjective perception of well-being of insured farmers in the east, central and west regions of China. An increase in self-assessed income had

a significant positive effect on both life satisfaction and the degree of future confidence experienced by insured farmers. Further observation indicates that participation in the insurance system significantly increased the perception of subjective happiness in farmers in the east and west regions, with the former having greater life satisfaction than the latter; while the opposite is true for the degree of future confidence, and the opposite effect observed for both central regions. This might be because there are significant differences in the implementation of social insurance between regions, and different regions have different degrees of openness to adopting the policy. For example, the eastern region has a better level of economic development and a higher degree of acceptance of social

insurance policies, and there are relatively fewer pressures on residents to pay contributions, meaning farmers in this region have higher current life satisfaction with social insurance implementation. By contrast, farmers in the western region need to overcome real economic pressures to participate in the policy, hoping that the future pension will provide a stable source of income and livelihood security.

3. *Effects by age group.* Considering the realities of rural life, columns 6–8 of **Table 7** show the respective regression results relating to the life satisfaction and confidence in the future of insured farmers, divided into three age groups, including those below 45 years old, people aged 45–60 years old, and those above 60 years old. For all age groups, an increase in self-rated income showed a significant positive correlation with an increase in subjective well-being. In terms of future confidence, all age groups showed a negative correlation, indicating that the existing policy needs to be publicly strengthened and that farmers generally have doubts about longer-term policy expectations. In terms of current life satisfaction, those under 45 years old show a significant negative correlation, indicating that participating farmers have an overall distrust of whether the “new rural insurance” policy can guarantee their future retirement for a longer period of time. Those over 45 years old show a significant positive correlation, and those over 60 years old are significantly higher than those between 45 and 60 years old. This is because, residents who are not covered by the basic pension insurance for urban workers who have reached the age of 60 can receive a certain level of monthly basic pension without paying any fees, and this income will rise. However, for residents under the age of 60, the contribution cycle requires at least 15 years of contributions.

## 6 Discussion

With the help of Sobel’s mediator test, the mediating effect model Equation 3 was validated, and then the mechanism of the mediating effect and the impact effect were explored. Due to the limitation of data availability, this manuscript focuses on whether participation behavior leads to the improvement of farmers’ subjective well-being by enhancing their self-rated health status and self-rated social status. Due to further limitations of space, only the core test results are presented in **Table 7**.

As the results displayed in **Table 7** indicate, the mediating variables showed a significant positive effect, not only because they significantly pass the 1% statistical significance test but also because the Sobel Z statistic was significant, indicating that self-rated health status and self-rated social status play a fully mediating role in the transmission mechanism. The

Sobel Z values of self-rated health status and self-rated social status on life satisfaction and future confidence were  $-5.717$ ,  $-5.706$ ,  $6.781$ , and  $6.758$ . The proportion of mediating effects were  $-20.24$ ,  $-17.65$ ,  $31.34$ , and  $22.01\%$ , indicating that the existing mediating effects of self-rated health status and self-rated social status could explain (including masking) the effects of insurance participation on rural residents’ perception of subjective well-being were  $20.24$ ,  $17.65$ ,  $31.34$ , and  $22.01$ , which matched expectations. As mediating paths, health status and social status have different degrees of influence on current life satisfaction and confidence in the future. The mediating effects of self-rated health status and self-rated social status on current life satisfaction are greater than those on future confidence to a significant extent.

The potential mechanisms of the impact of social insurance on farmers’ subjective well-being are as follows: (1) as one of the economic sources that guarantee farmers’ lives, social insurance pensions have the effect of reducing expected risks. For the insured individuals, whether the pension has been received or not, it is likely to affect their psychological expectation of future life risks and uncertainties, thus obscuring the individuals’ judgment of their health status, subjectively paying more attention to their health status, objectively generating the psychological worry of suffering from loss and gain, and enhancing their subjective sense of well-being. Although the protective function of social insurance hedges some expected life risks, the contributions still create payment pressures for people with poor health conditions, which in turn reduces the positive impact of social insurance on their psychological well-being. For farmers who have already received pensions, since they are not under pressure to pay contributions and have stable livelihood security for the foreseeable future, they have a higher level of pursuit for a long and healthy life, which to a certain extent increases their judgment of their health risks and creates the “Rosenthal effect.” (2) The act of participating in insurance leads them to have a certain perception of their “identity” and this foundation enables them to enjoy the “retirement treatment” of city people. As an important variable of individual identity perception, self-assessed social status expresses the individual’s recognition of their characteristics, which indirectly affects their judgment of their subjective well-being, indicating the positive mediating effect of self-assessed social status.

## 7 Conclusion

This study first used the Order Probit regression model to provide an in-depth analysis of rural residents’ participation in insurance, examining its effect on individual subjective well-being before further exploring its possible effects on the subjective well-being of farmers from different regions, examining the perspectives of people of different genders across various age groups. The study also tested the influence of health status and self-rated social status on the farmers’ subjective

well-being and the moderating mechanisms of this perception. All results passed the robustness test, further confirming the reliability of the findings.

This article analyzed the impact of participation in social insurance on the behavior of rural residents and their subjective well-being. The results indicate that first, participation behavior can significantly improve rural residents' subjective well-being. Second, the heterogeneity study showed that gender differences in life satisfaction among insured farmers were not significant. The positive effects of self-assessed income on life satisfaction and confidence in the future were higher for men than for women; however, men had significantly lower confidence in the future than women. An increase in self-assessed income significantly increases the life satisfaction and future confidence of rural insured residents, but the act of participating in insurance significantly increased farmers' perception of subjective happiness in the eastern and western regions of China. The eastern region showed greater life satisfaction than the west, but the opposite was true in terms of confidence in the future, with the central region showing a negative effect. Third, an increase in self-assessed income significantly increased farmers' perception of subjective well-being in all age groups. However, specific to the act of participation, all age groups showed a negative correlation in terms of the degree of confidence they had in the future. Concerning current life satisfaction, people aged below 45 years old showed a significant negative correlation, those above 45 years old showed a significant positive correlation, and those aged over 60 years old had a significantly higher than those between 45 and 60 years old. Fourth, the act of participating in insurance can significantly obscure farmers' health status ratings and significantly contribute to the improvement of individuals' self-rated social status, which in turn affects their perception of their subjective happiness. Further tests exploring the mediation mechanism suggested that rural residents with poor health status and good overall conditions benefit most from social insurance.

Based on the above conclusions, the possible policy insights of the present study include: first, that even though the pursuit of a better life is undertaken for different reasons at different points in life and can vary among individuals, during the critical period in which rural revitalization and accelerating common prosperity are being encouraged and promoted, there are still shortcomings in terms of how best to apply them to agriculture and farmers in rural areas. Taking into account the aim to comprehensively eradicate poverty, when addressing the question of how best to further consolidate and deepen these aims and link them with rural revitalization, we need to continue to find ways of improving the living standards of low-income groups. Eliminating the risk of returning to poverty due to illness is an important aspect of promoting common prosperity and a more comprehensive realization of rural revitalization in the future. Second, the construction of the rural pension insurance system still has a long way to

go. Traditionally, absolute income has been used to measure the welfare status of rural residents, but there are large limitations to this approach. Absolute income as a flow indicator cannot reflect the differences in the wealth accumulation status of individual households, nor the differences in expenditure burden experienced by different households. Questions remain about how the basic social security functions of the rural basic pension system can be realized and how the basic livelihoods of rural residents can be protected more effectively. When implementing social pension security policies according to local conditions, is also necessary to take into account regional differences, economic differences, and other factors and encourage more comprehensive full coverage of basic pension insurance when appropriate. Thirdly, effectively enhancing the subjective sense of well-being of rural residents is key to promoting rural revitalization strategies. Strong agriculture, beautiful countryside, and rich farmers are the general goal of agricultural and rural modernization and a strategic goal of rural revitalization. Therefore, we need to pay attention to the growth of farmers' income and the improvement of their living standards and health conditions, which will in turn influence their subjective perception of their happiness. It is also necessary to continuously improve the social identity of rural residents and their social status by increasing basic medical insurance system coverage in rural areas and strengthening the public health service system through construction to effectively promote improvements in rural residents' subjective sense of well-being, which an important aim of current responses to coping with an aging society.

It should be noted that the empirical analysis undertaken in this study has some shortcomings. The first is that, due to the data limitation of CFPS, we constructed the empirical model based on the binary dummy variable of whether or not people participate in the insurance system. It is important to note that there are differences in the amount paid and types of insurance received and that changes in people's perceptions before and after participation in these systems are not reflected in the available data. There are also differences in post-retirement benefits due to the payment of different insurance premiums, which bring different degrees of impact on happiness that require further study.

Second, due to limitations in methods and data, further optimization should be undertaken to address and solve problems of reciprocal causality. In addition, whether the effect of social insurance on farmers' subjective well-being changes over time is also a topic worth further study. Finally, it is difficult to explore the influence of more control variables on the article's findings because there are too many missing values in individual and household information in the sample data. These questions have yet to be discussed, tested, and answered by relevant follow-up studies. Further attention should be paid to how to address these limitations in order to apply a more developed model more generally in the assessment of whether local welfare policy is

adequate and an indicator system for monitoring the progress of well-being, etc., should be established. Further research is important for the continuous implementation, improvement, and promotion of social security policies in the future, thus contributing to the realization of common prosperity.

## 8 Data availability statement

This data can be found here: The data underlying the results presented in the study are available from CFPS database. <http://www.issw.pku.edu.cn/cfps/>.

## 9 Author contributions

YC: conceptualization, methodology, software, and writing – reviewing and editing. DZ: supervision. Both authors contributed to the article and approved the submitted version.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# The role of social exclusion in the formation of suicidal ideation among the elderly in rural pension institutions

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**Introduction:** Social exclusion as well as a sense of belonging and depression have been identified as risk factors for suicide among older adults in pension institutions. In particular, the elderly living in rural pension institutions is more likely to have poor mental health and a higher incidence of suicidal ideation. This study explored the mechanism of social exclusion on suicidal ideation among the elderly in rural pension institutions, and the moderating effect of interpersonal trust.

**Methods:** The social exclusion experience scale, sense of belonging, depression self-rating scale (CES-D), suicidal ideation scale (BSI-CV), and interpersonal trust scale (ITS) were used to investigate the elderly in rural pension institutions. A total of 1,387 samples (53.35% female) were collected, ranging in age from 65 to 95 years ( $M = 72.8$ ,  $SD = 6.173$ ).

**Results:** The results of the study found that: (1) social exclusion increases the suicidal ideation of the elderly in rural pension institutions, and the sense of belonging and depression play a significant chain-mediated role in the relationship between social exclusion and suicidal ideation in the elderly. (2) Interpersonal trust moderates the impact of social exclusion on the sense of belonging, depression, and suicidal ideation. Specifically, interpersonal trust can alleviate the promotion effect of social isolation on suicidal ideation and depression, and can also reduce the adverse effect of social exclusion on the sense of belonging.

**Discussion:** This study validates that social exclusion is a risk factor for suicidal ideation in the rural elderly and identifies interpersonal trust as a protective factor against social exclusion and its negative outcomes in the elderly. This study provides a scientific basis for improving the depression status of the elderly in rural China and formulating suicide prevention measures.

## KEYWORDS

social exclusion, sense of belonging, depression, suicidal ideation, interpersonal trust

## Introduction

Suicide has become a serious global public health problem (Phillips, 2002). Every year, about 800,000 people die by suicide in the world, of which China accounts for about 17% of the total number, ranking second in the world (World Health Organization, 2019). Previous studies have shown that the group with the highest suicide rate is the

elderly aged 65 years and above (Li et al., 2009; Wang et al., 2014). The results of China's seventh census show that the aging process of China's population has accelerated significantly and the urban and rural differences are significant (Bulletin of the Seventh National Population Census of the National Bureau of Statistics). Compared with urban areas, the rural population has a higher level of aging, and the mental health of the elderly is lower (Chen et al., 2018). At the same time, with the transformation of the traditional multi-generational family model in rural areas, the number of empty-nest families in rural areas is increasing day by day, and the proportion of rural pension institutions in the elderly care choices will be further expanded. However, whether in urban or rural areas, the incidence of suicidal ideation among the elderly in pension institutions is generally higher than that in the elderly living in the community (Mezuk et al., 2014). In particular, the elderly living in rural pension institutions are more likely to have poor mental health and a higher incidence of suicidal ideation (Tomasz et al., 2015; Zhang et al., 2017). In this context, the mental health and suicidal behavior of the elderly in rural pension institutions have become an important topic.

Numerous studies have examined associations between sociodemographic and socioenvironmental factors in older adults and suicidal ideation at the community level (Lester and Gatto, 1989; Ekramzadeh et al., 2012; Wu et al., 2010; Cohen-Louck and Aviad-Wilchek, 2020). However, social exclusion is usually the main factor leading to the decline of social relationship function in the elderly, and its important role in old age is seriously underestimated (Mezuk et al., 2014). Joiner's interpersonal relationship theory of suicide also pointed out (Ribeiro and Joiner, 2009) that social exclusion is one of the most important causes of suicide, which can increase the individual's suicidal ideation by reducing the individual's perceived sense of belonging. Especially for the rural elderly with a small social range, the problem of social exclusion is even more prominent, because the elderly with experience of exclusion may not be able to find other alternative social relationships, and the resulting negative emotions will bring serious physical and mental health consequences (Frank et al., 2014; Eades et al., 2019). Importantly, those rural elderly who are socially excluded, they are likely to lose their sense of belonging to society, feel that they are separated from mainstream society, and eventually have a series of mental health problems (Feng et al., 2019). Empirical studies have shown that the most common negative emotion among socially excluded individuals is "depression" (Debono and Muraven, 2014; Wethington et al., 2016), and individuals with chronic depression will further develop into more severe conditions, such as self-harm and suicide and so on (Kim et al., 2018).

As an important social capital, interpersonal trust can not only help individuals cope with social exclusion and achieve the development of good interpersonal relationships, but also play an important role in promoting individual altruistic behavior, which is a key factor in suicide prevention (Righetti and Finkenauer, 2011). For example, the rural elderly with a higher level of

interpersonal trust had less social exclusion experience on negative emotions (Liu et al., 2021). Because they believe that most people can be trusted, there will be a greater willingness and greater opportunity to repair the relationship with the rejecter (Decarli, 2003). Even if the relationship with the excluded cannot be repaired, the rural elderly with higher levels of interpersonal trust are more likely to have good social relationships with others (Demura and Mitsumori, 2013). Individuals will produce positive physiological and psychological responses through the establishment of social relationships, which not only make up for the lack of psychological needs but also effectively alleviate the negative emotions caused by social exclusion (Yip et al., 2007). That is to say, whether it is to repair the relationship with the excluded person or establish a new social relationship, the individual's sense of belonging will be satisfied, and the depression caused by social exclusion will also be alleviated (Frank et al., 2014). In addition, other studies have also reported significant associations between social capital and suicidal behavior, and are thought to cure social factors that cause early suicidal ideation (Yamamura, 2010; You et al., 2011; Smith and Kawachi, 2014). Among them, interpersonal trust can play an important role in suicide prevention by keeping people away from the influence of suicidal ideation (Kim et al., 2017; Nie et al., 2020). Therefore, we can infer that interpersonal trust can be used as a protective factor for the elderly in rural pension institutions to help them effectively reduce the adverse effects of social exclusion on suicidal ideation.

Overall, although there is a strong relationship between social exclusion and suicidal ideation, the underlying processes that may mediate this relationship are largely unknown. Whether from the perspective of suicide prevention and control in the elderly or from the perspective of comprehensively achieving healthy aging, research on suicidal ideation in the elderly is a crucial topic. Therefore, in this particular era of increasing global population aging, it is crucial to explore the consequences of older people's experiences of exclusion. Our research aims to investigate the mechanism of social exclusion on suicidal ideation among the elderly in rural pension institutions in China.

## Theoretical framework and research assumptions

### Social exclusion and suicidal ideation

Social exclusion refers to the erosion of social cohesion, the destruction of solidarity, and the lack of social integration (Silver, 1994), and it emphasizes that marginalized and disadvantaged groups in society are "excluded" from the mainstream and suffer from a variety of interrelated deprivation factors, preventing them from participating fully in society. In the field of psychology, social exclusion is a form that is common in all interpersonal relationships. Whether it is relatives, friends, or strangers, they

may become the implementers and excluded persons of some forms of exclusion. Mental health and behavioral responses can have a huge impact.

Durkheim's theory of suicide (Alpert et al., 1951) pointed out that social exclusion is one of the most important causes of suicide, and lack of social support and low social participation are important indicators of social exclusion. Suicidal ideation is an early stage of suicide, defined as active or passive thoughts of suicide at some point or stage in life (Waern et al., 1999; Dong et al., 2015), and is the strongest predictor of suicidal behavior (Nock et al., 2008). Numerous studies have shown that social exclusion is widespread in daily life (Williams, 2007) and occurs almost every day of our lives (Nezlek et al., 2012, 2015). For example, social exclusion in older adults is associated with factors such as mental and physical illness and suicide risk (Moak and Agrawal, 2009; Cacioppo et al., 2010), and experiences of exclusion can lead to greater dysfunction in older adults (Everard et al., 2000), pain (Dewall and Baumeister, 2006), and suicidal thoughts in later life (Waern et al., 2003; Wiktorsson et al., 2010). Other studies have found that subjects in the high social exclusion group have significantly higher suicidal ideation scores than the low social exclusion group. Individuals in the high social exclusion group will have more non-adaptive behaviors, and their negative psychological directly leads to negative behaviors such as self-harm and suicide (Nezlek et al., 1997; Debono and Muraven, 2014). Therefore, we have reason to believe that social exclusion will increase the suicidal ideation of the elderly in rural pension institutions. Accordingly, we propose the following assumption:

*H1: Social exclusion increases the risk of suicidal ideation among older adults in rural pension institutions.*

## The chain mediating effect of sense of belonging and depression

People are considered to have a strong sense of belonging and social interaction needs, and positive and sustainable social relationships are critical to people's physical and mental health (Baumeister and Leary, 1997). However, the interpersonal interactions of individuals in everyday life are not always positive, social exclusion hinders people's need for social relationships, belonging, and intimacy, it has a strong negative impact on the individual, and is a painful and sad experience (Williams, 2009; Nezlek et al., 2012). Social problems such as mental illness, aggression, and suicide caused by social exclusion have attracted the attention of scholars. They argue that social exclusion, as a negative aspect of interpersonal relationships, may show increasing levels of psychological distress and negative effects (Williams, 2007; Williams, 2009; Niu et al., 2016), as well as higher levels of Depression (Williams and Nida, 2011; Dewall et al., 2012). As pointed out by the Temporal need-threat model

(Williams, 2007; Williams, 2009; Ren et al., 2013), when rejection persists, individuals feel a strong sense of insecurity, which eventually leads to suicidal behavior.

The sense of belonging of the elderly in the rural pension institution is the psychological feeling of satisfaction, recognition, love, and attachment of the elderly to the institution. Older adults who experience chronic social exclusion may experience a lower sense of belonging (Stillman et al., 2009). The interpersonal theory of suicide also proposes that social exclusion is a negative interpersonal experience, and the resulting low sense of belonging and perceived burden on others increases an individual's risk of suicide (Van Orden et al., 2011). In addition, social exclusion can also induce negative emotions such as depression and loneliness, and lead to behavioral problems such as suicide. This is also confirmed by empirical research, namely, that social exclusion can lead to hampered needs such as belonging, a state of rapid decrease in positive emotions and an increase in negative emotions, making them feel depressed, depressed, and helpless, seriously impairing the mental health of older adults (Debono and Muraven, 2014; Wethington et al., 2016). The social exclusion experience of the elderly in rural pension institutions has a more significant negative effect on their physical and mental health (Hawton et al., 2011; Tong et al., 2011; Tong and Lai, 2016; Zhang et al., 2017), which will lead to Internalized psychological problems such as insomnia, depression and social pain, and then externalized behavioral problems such as aggression and suicide (Niu et al., 2016). In conclusion, belongingness and depression are mediating factors between social exclusion and suicidal ideation in the elderly, and belongingness can also reduce depression in the elderly. Based on this, we propose the following assumption:

*H2: Belonging and depression play a chain mediating role between social exclusion and suicidal ideation in older adults.*

## The moderating effect of interpersonal trust

Interpersonal trust is a general expectation that individuals believe that others or other groups are trustworthy, and it is the basis for establishing interpersonal relationships (Dekker et al., 2013), and plays an important role in maintaining interpersonal relationships and promoting interpersonal communication (Betts et al., 2009). There is growing evidence that interpersonal trust is associated with mental disorders and physical health. For example, a prospective study in the United States found that individuals with high levels of interpersonal trust were less likely to suffer from mental disorders (Fujiwara and Kawachi, 2008). Conversely, there was a positive relationship between distrust and poorer self-rated health, depression, and functional limitations (Pollack and Knesebeck, 2004). Compared with younger people, older adults are more likely to experience cognitive impairment

and poor physical condition, which will lead to a greater need for the emotional support and material help typically found in trusting relationships, especially in the event of negative life events (Decarli, 2003; Demura and Mitsumori, 2013). The multiple motivational models of social exclusion state that individuals who are socially excluded will engage in prosocial behaviors (such as trying to repair social relations with the excluded person) and Anti-social responses (e.g., exhibiting aggressive behavior; Richman and Leary, 2009). Individuals with higher levels of interpersonal trust are more likely to engage in prosocial behaviors (Cadenhead and Richman, 1996) and produce positive physiological and psychological responses. Other studies have also confirmed this, that is, interpersonal trust is significantly positively correlated with mental health and social support, which can buffer the negative impact of risk factors on individual mental health (Frank et al., 2014). It can be seen that after being socially excluded from others or groups, the rural elderly with a higher level of interpersonal trust may have a stronger will and more opportunities to repair the relationship with the excluded person, produce more prosocial behaviors, and then have more prosocial behaviors. Satisfy the needs of inner belonging and relieve the negative emotions such as pressure, anxiety, and depression caused by social exclusion. On the contrary, after being socially excluded, the rural elderly with a low level of interpersonal trust may neither try to repair the relationship nor seek other alternative relationships due to the lack of trust in others, resulting in a lack of sense of belonging. And produce more intense depression, thereby increasing the possibility of suicide (Yu et al., 2019).

In addition, interpersonal trust also showed a strong association with the health and well-being of the rural Chinese population (Yip et al., 2007). The elderly in rural pension institutions in China have a smaller social circle, and interpersonal trust is crucial to their physical and mental health and well-being (Lu et al., 2011). They can obtain more social support through interpersonal trust, on the one hand, they can solve crisis of daily life, and negative life events, and adjust the bad psychological condition. On the other hand, it may also reduce the risk of mental disorders, suicidal ideation, and suicide attempts (Slater and Depue, 1981; Heikkinen et al., 1993).

Therefore, we can think that the lack of interpersonal trust will make the elderly in rural pension institutions unable to seek help and social support in time, leading to the lack of belonging and the deepening of psychological problems such as depression, and enhancing their suicidal ideation. Higher levels of interpersonal trust moderated the relationship between social exclusion and belonging, depression, and suicidal ideation.

*H3: Interpersonal trust moderates the relationship between social exclusion and belonging.*

*H4: Interpersonal trust moderates the relationship between social exclusion and suicidal ideation.*

*H5: Interpersonal trust moderates the relationship between social exclusion and depression.*

In summary, the research framework of this study is shown in Figure 1.

## Materials and methods

### Participants and procedures

All research procedures were approved by the ethics committee of the first author's university and were conducted between November 2021 and May 2022. Seventeen undergraduate and graduate students majoring in psychology and social were trained as research assistants, who were primarily responsible for data collection after receiving unified training. According to the statistics of Heilongjiang Province 2021, there are nearly 1,000 existing registered nursing institutions in 12 cities, including Harbin, Qiqihar, Jixi, and Hegang, and rural nursing institutions account for about 80% of the total. The subjects of this study were selected based on the home locations of the research assistants (Harbin and Jixi). Through the preliminary communication with the heads of the institutions, 26 institutions were finally identified, taking into account the basic conditions such as the location of the elderly institutions, the number of people, the physical and mental conditions of the elderly and the willingness to participate. First of all, the research assistant will contact the potential elderly participants, and use unified instruction to explain the purpose of the questionnaire and the way of answering the questionnaire to the subjects to ensure that subjects fully understood the content of the questionnaire. For some elderly people with low education levels or with reading difficulties, the research assistants will answer the reading questions. After the questionnaire is completed, the investigators will confirm the completion of the filling on the spot, fill in the missing items in time, and re-verify the question. If the respondents fail to complete the missing items in time due to various reasons, they will be judged as invalid questionnaires. In this study, a total of 1,439 questionnaires were distributed, 1,391 questionnaires were returned, 4 incomplete questionnaires were excluded, and 1,387 valid questionnaires were finally obtained.

The age of the elderly ranged from 65 to 95 years old, with a mean of 72.80 years and a standard deviation of 6.173 years. Most of the elderly are 75 years old and below, accounting for 71.01%, and the elderly over 85 years old only accounted for 4.11%. The proportion of men and women in the sample is relatively balanced, of which 740 are women, accounting for 53.35%. The vast majority of the elderly have 5 or fewer children, accounting for 95.10%, and the number of elderly people with 2 and 3 children is the largest 435 (31.36%) and 405 (29.20%) respectively. 259 elderly people consider their health status to be poor, accounting for 18.67%, 739 elderly people consider their physical health status to be Fair, accounting for 53.3%, and elderly people think their physical

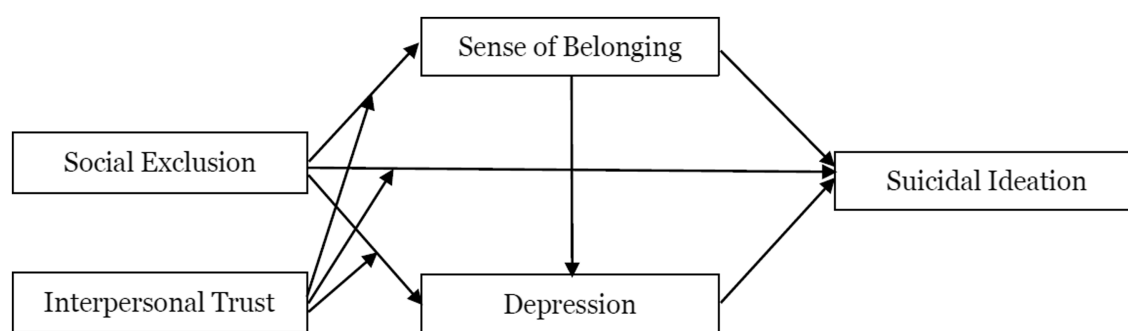


FIGURE 1  
Research framework.

health status is excellent, very good, and good are 14 (1.01%), 140 (10.09%) and 235 (16.94%) respectively. In addition, 145 (10.45%) elderly suffer from Diabetes, 32 (2.31%) elderly suffer from heart problem, 462 (33.31%) elderly suffer from Arthritis, and 144 (10.38%) elderly suffer from Dyslipidemia.

## Measures

### Social exclusion

Using the Chinese version of the Social Exclusion Experience Scale (Liu et al., 2021) revised by Liu et al. (2021), the scale contains two dimensions of neglect and rejection, with a total of 8 items, such as: “When everyone talks together, I am often ignored by others,” “It seems that others often cannot see me”; the rejection entries are “When I appear, others often turn their backs,” “Others are always cold to me.” The scale is scored on a 7-point scale (1 = never, 7 = always), with higher scores indicating stronger experiences of social exclusion. In the present study, Cronbach’s alpha for the scale was 0.720.

### Suicidal ideation

The Beck Suicidal Ideation Inventory-Chinese Version (BSI-CV) was compiled by Beck in 1979 based on clinical experience and theoretical research to measure the severity of suicidal ideation (Beck et al., 1979). The BSI-CV has a total of 19 items, and each item is scored on a three-level scale (0 moderate, 1 weak, 2 no), including “How much do you want to live?” “How much do you want to actively attempt suicide?” “You Questions such as how much you want to die,” measured the suicidal ideation of the subjects in the last week, and a higher total score means more serious suicidal ideation. In the present study, Cronbach’s alpha for the scale was 0.897.

### Sense of belonging

The belongingness scale compiled by Cui Jie is used, which is widely used in Chinese groups (Li et al., 2017; Wang et al., 2019; Meng et al., 2022). The scale analyzes the sense of belonging of the elderly from three dimensions, including treating this

pension institution as home, identifying with the institution, and being proud of this institution. There are a total of 10 questions, such as I do not think I belong to this pension institution, this pension institution makes you feel at home, etc. Each question is scored on a 5-point scale, ranging from completely agree (5 points) to completely disagree (1 point). Some items are scored in reverse, and the higher the score, the stronger the sense of belonging. In the present study, Cronbach’s alpha for the scale was 0.830.

### Depression

The self-rating depression scale (Center for Epidemiological Survey, Depression Scale CES-D) compiled by Sirodoff of the National Institute of Psychiatry in 1977 is used, with a total of 20 items, including (1) I am troubled by some small things; (2) I have trouble concentrating when doing things; (3) I feel down; (4) I find it hard to do anything, etc. The scale evaluation is based on the frequency of the corresponding situation or feeling in the past week; if it is less than 1 day, it is “none or basically absent”; 1–2 days is “rarely,” 3–4 days is “frequently,” and 5–7 days is “almost always.” The higher the score, the more severe the depression. In the present study, Cronbach’s alpha for the scale was 0.806.

### Interpersonal trust

The Interpersonal Trust Scale (ITS) developed by Rotter in 1976 was used to measure the individual’s estimation of the reliability of others’ behavior and commitment (Rotter, 1967). The content includes interpersonal trust in various situations. Most items are related to the reliability of social roles, but some items are related to the degree of optimism about the future society. The scale contains 25 items, including items such as “There is more and more hypocrisy in our society” “The future seems promising” and “In this age of competition, others will take advantage of you if you are not vigilant.” In reverse question scoring, the scale is scored on a 5-point scale (1 = completely disagree, 5 = completely agree), and the higher the score, the higher the degree of interpersonal trust. The scale has good reliability and validity in Chinese subjects (Xin et al., 2013). In the present study, Cronbach’s alpha for the scale was 0.879.

## Statistical analysis

In this study, statistical analyses were conducted using SPSS 22.0. Data processing included the following steps. First, we described demographic variables and calculated correlation coefficients between the main variables. Next, we used the PROCESS macro for SPSS (Model 6) to test the chain mediating effect of sense of belonging and depression in the relationship between social exclusion on suicidal ideation (Hayes, 2013). Finally, we used the PROCESS macro for SPSS (Model 85) to investigate the moderating effect of interpersonal trust in the relationship between social exclusion on suicidal ideation, sense of belonging, and depression. Additionally, Age, gender, number of children, and education as control variables. All of the main variables were standardized before testing for the mediating and moderating effects.

## Results

### Preliminary analyses

The descriptive statistics and correlation coefficients were presented in Table 1. The results showed that elders who scored high levels of suicidal ideation were more likely to have high levels of social exclusion ( $r=0.449, p<0.01$ ) and depression ( $r=0.456, p<0.01$ ), and more likely to have low levels of sense of belonging ( $r=-0.405, p<0.01$ ) and interpersonal trust ( $r=-0.577, p<0.01$ ). Besides, interpersonal trust was negatively associated with social exclusion ( $r=-0.373, p<0.01$ ) and depression ( $r=-0.322, p<0.01$ ). In addition, sense of belonging was positively associated with interpersonal trust ( $r=0.475, p<0.01$ ).

### Testing chain mediation effect of sense of belonging and depression

Hypothesis 1 predicted that social exclusion increased the risk of suicidal ideation among older adults in rural pension institutions. Hypothesis 2 predicted that sense of belonging and depression would play a chain mediating role in the relationship between social exclusion on suicidal ideation. We used Model 6 of

the PROCESS macro to examine the above hypothesis (Hayes, 2013), and the results were presented in Table 2.

Model 1 in Table 2 showed that social exclusion was negatively associated with sense of belonging ( $\beta=-0.299, p<0.001$ ). Model 2 showed that social exclusion was positively associated with depression ( $\beta=0.406, p<0.001$ ), and at the same time, sense of belonging was negatively associated with depression ( $\beta=-0.181, p<0.001$ ). Additionally, in model 3, social exclusion and depression were positively associated with suicidal ideation ( $\beta_{\text{Social Exclusion}}=0.212, p<0.001$ ;  $\beta_{\text{Depression}}=0.234, p<0.001$ ), but sense of belonging was negatively associated with suicidal ideation ( $\beta=0.220, p<0.001$ ).

Therefore, it can be seen that both sense of belonging and depression are the mediator in the relationship between social exclusion and suicidal ideation, further, they were also a chain mediating in this relationship. The bootstrap 95% CI has confirmed this conclusion. As shown in Table 3, the 95% BootCI of each path does not contain zero, so the mediating and chain mediating effect were all significant. Additionally, Social Exclusion has a significant effect on suicidal ideation. So, Hypothesis 2 was supported.

In model 3 shows a significant positively relationship between social exclusion and suicidal ideation, and we confirm this conclusion in the “X–Y” path of Table 3. So, Hypothesis 1 was supported.

### Testing moderation effect of interpersonal trust

Hypothesis 3~Hypothesis 5 predicted that interpersonal trust would moderate the effect of social exclusion on sense of belonging, depression, and suicidal ideation. We used Model 85 of the PROCESS macro to examine the above hypothesis (Hayes, 2013), the results were presented in Table 4. And we also conducted simple slope tests to plot the results. Figures 2–4 showed the difference of influent in the relationship between social exclusion on sense of belonging, depression, and suicidal ideation when interpersonal trust at Mean + 1SD level and Mean - 1SD level. In these figures, the Y-axis scale represents the values of this variable after standardization.

Model 1 in Table 4 showed that social exclusion was negatively associated with sense of belonging ( $\beta=-0.137, p<0.001$ ), and the

TABLE 1 Descriptive statistics and correlation analysis.

	Mean	SD	1	2	3	4	5
1. Suicidal Ideation	8.856	7.430	1				
2. Social Exclusion	18.949	4.336	0.449**	1			
3. Sense of Belonging	31.147	7.746	-0.405**	-0.316**	1		
4. Depression	48.442	8.207	0.456**	0.477**	-0.320**	1	
5. Interpersonal Trust	70.553	16.187	-0.577**	-0.373**	0.475**	-0.322**	1

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

TABLE 2 Testing chain mediation effect of sense of belonging and depression.

	Model 1: Sense of Belonging		Model 2: Depression		Model 3: Suicidal Ideation	
	$\beta$	t	$\beta$	t	$\beta$	t
Social Exclusion	−0.299	−11.542***	0.406	16.416***	0.212	8.726***
Sense of Belonging			−0.181	−7.374***	−0.220	−9.786***
Depression					0.234	9.680***
Age	−0.008	−1.896	0.000	−0.008	−0.002	−0.624
Gender	−0.120	−2.154*	0.046	0.911	0.081	1.769
Number of children	0.068	3.570***	−0.049	−2.798**	−0.198	−12.645***
Education	−0.010	−0.680	−0.004	−0.325	−0.037	−3.027**
R <sup>2</sup>	0.113		0.264		0.407	
F	35.083***		82.554***		135.274***	

\*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.01$ .

TABLE 3 Bias-corrected percentile bootstrap testing of each path.

Path	Effect	BootSE	95% Bootstrap CI	
			Lower limit	Upper limit
X→Y	0.212	0.024	0.164	0.259
X→M1→Y	0.066	0.011	0.046	0.087
X→M2→Y	0.095	0.014	0.069	0.121
X→M1→M2→Y	0.013	0.003	0.007	0.019

X = Social Exclusion; Y = Suicidal Ideation; M1 = Sense of Belonging; M2 = Depression.

interaction term of social exclusion and interpersonal trust was positively related to sense of belonging as well ( $\beta = 0.094$ ,  $p < 0.001$ ). Therefore, the association between social exclusion and sense of belonging was moderated by interpersonal trust. Furthermore, it meant that for the elder who has a high level of interpersonal trust, the negative relationship between social exclusion and sense of belonging was weaker ( $\beta_{\text{higher}} = -0.043$ ) than low level one ( $\beta_{\text{lower}} = -0.231$ ), we plotted the above slope changes on Figure 2.

In addition, model 2 showed that social exclusion was positively associated with depression ( $\beta = 0.357$ ,  $p < 0.001$ ), however, the social exclusion and interpersonal trust's interaction term was negatively related to depression ( $\beta = 0.094$ ,  $p < 0.001$ ). Therefore, the positively associated between social exclusion and depression was reduced by interpersonal trust. It meant that for the elder who has a high level of interpersonal trust, the positive relationship between social exclusion and depression was weaker ( $\beta_{\text{higher}} = 0.230$ ) than low level one ( $\beta_{\text{lower}} = 0.484$ ), we plotted the above slope changes in Figure 3.

Finally, the model 3 showed that social exclusion was positively associated with suicidal ideation ( $\beta = 0.128$ ,  $p < 0.001$ ), but the interaction term (social exclusion  $\times$  interpersonal trust) was negatively related to suicidal ideation ( $\beta = 0.094$ ,  $p < 0.001$ ). Therefore, the association between social exclusion and sense of belonging was moderated by interpersonal trust can relieve the

promoting effect of social isolation on suicidal ideation. For the elder who has a high level of interpersonal trust, the positive relationship between social exclusion and suicidal ideation was weaker ( $\beta_{\text{higher}} = 0.007$ ) than low level one ( $\beta_{\text{lower}} = 0.248$ ), we plotted the above slope changes in Figure 4.

Above all, Hypothesis 3 ~ Hypothesis 5 were supported.

## Discussion

There is growing empirical support for the adverse effects of social exclusion on suicidal ideation. However, the mediating and moderating mechanisms behind this association remain largely unexplored, especially for the elderly in rural pension institutions. To explore this mechanism, this study used a sample of 1,387 elderly questionnaires in rural pension institutions to examine the chain mediating effect of sense of belonging and depression and the moderating effect of interpersonal trust. The results show that social exclusion affects suicidal ideation in older adults by reducing their sense of belonging and increasing their depression, and the lack of sense of belonging also increases the likelihood of depression. More importantly, findings from the current moderated mediation model suggest that interpersonal trust partially moderates the association between social exclusion and suicidal ideation. Overall, this study revealed that social exclusion is widespread in rural pension institutions and is the main reason for the formation of suicidal ideation in the elderly. Therefore, the mental health problems of the elderly in rural pension institutions still require continuous and continuous attention, which can help to develop targeted prevention and intervention plans to improve the coping ability of the elderly when they experience social exclusion.

First, our study showed that there is a positive relationship between social exclusion and suicidal ideation, that is, older adults who experience social exclusion have higher levels of suicidal ideation (Waern et al., 1999). In China's traditional agricultural society, the elderly enjoy prestige and respect in rural households

TABLE 4 Testing moderation effect of interpersonal trust.

	Model 1: Sense of Belonging		Model 2: Depression		Model 3: Suicidal Ideation	
	$\beta$	t	$\beta$	t	$\beta$	t
Social Exclusion	-0.137	-5.348 ***	0.357	14.052***	0.128	5.676***
Sense of Belonging			-0.124	-4.681***	-0.073	-3.318**
Depression					0.174	7.819***
Interpersonal Trust	0.393	15.343 ***	-0.086	-3.147**	-0.353	-15.612***
INT	0.094	4.622 ***	-0.127	-6.309***	-0.121	-7.141***
Age	-0.004	-1.031	-0.001	-0.277	-0.005	-1.502
Gender	-0.082	-1.615	0.036	0.733	0.066	1.590
Number of children	0.024	1.371	-0.052	-2.994**	-0.176	-12.131***
Education	-0.010	-0.741	-0.002	-0.180	-0.035	-3.182**
R2	0.262		0.291		0.515	
F	69.777***		70.735 ***		162.447***	

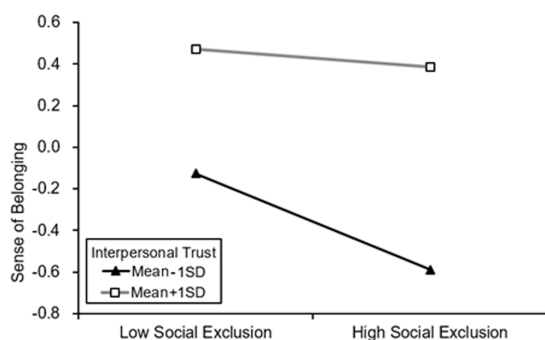
\*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.01$ .INT = Interpersonal Trust  $\times$  Social Exclusion.

FIGURE 2  
Interpersonal trust moderated the relationship between social exclusion on sense of belonging.

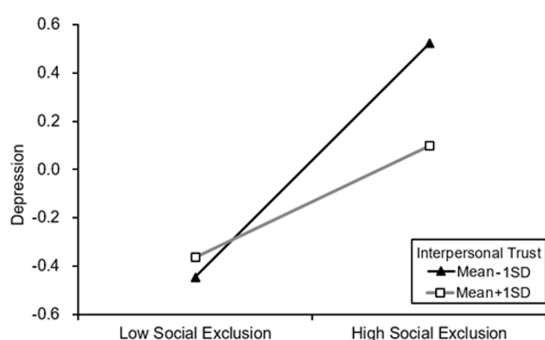
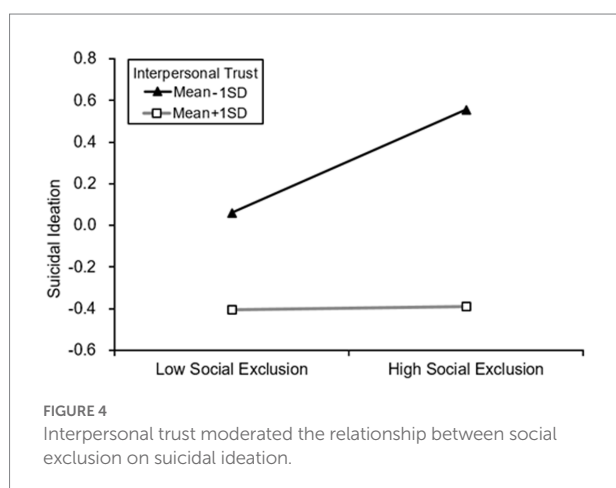


FIGURE 3  
Interpersonal trust moderated the relationship between social exclusion on depression.

(Dong et al., 2014). However, in recent years, more and more rural youth are working outside the home, and coupled with the shortage of family caregivers who can provide long-term home

care for the elderly, many elderly people have to live in pension institutions (Yang and Ou, 2013). This makes the elderly fall into a serious social, family, and personal crisis, and gradually become a vulnerable group in society and are “excluded” from the mainstream. In this case, if the elderly lack a certain amount of social support, they may be more vulnerable to stress in all aspects of life, resulting in suicidal thoughts (Yu et al., 2019).

Secondly, the results of the study found that belonging and depression play a chain mediating role between social exclusion and suicidal ideation in rural elderly. The sense of belonging of the elderly in the rural pension institution emphasizes their psychological feelings of satisfaction, identification, love, and attachment to the rural pension institution (Zhang, 2013), while the rural elderly who are socially excluded will have a series of problems due to the inability to satisfy their psychological sense of belonging. Negative emotions, which in turn increase suicidal ideation in the elderly. Because social exclusion or denial by social groups not only hinders the need to belong, but also reduces the relational value between individuals, and this often causes intense anxiety (too potential rejection) and depression (too actual rejection), and other negative emotions (Leary Mark, 1990; Sun et al., 2020), ultimately leading to adverse cognitive, emotional and physical effects on the individual (Pickett et al., 2004; Baumeister et al., 2005). Even excluded individuals will experience a significant increase in self-defeating behavior due to cognitive disintegration (Twenge et al., 2007). As indicated by the multi-motivation model of social exclusion (Richman and Leary, 2009), for the rural elderly who experience social exclusion, the lack of belonging and depression caused by social exclusion are key factors leading to suicidal ideation. In China, the concepts of “falling leaves return to their roots” and “raising children to prevent old age” are deeply rooted, and the elderly in rural areas seldom choose to live in rural pension institutions. However, they often have to



live in rural pension institutions due to reasons such as female migrant workers or a decline in their ability to take care of themselves (Zi-Wei et al., 2019). This means that the elderly will leave the original family environment and face the pressure of adapting to the new environment. In addition, the inability to take care of themselves and their disability will weaken the ability of the elderly to participate in social activities and social interactions, increase their sense of social isolation, and make rural pension institutions. The elderly are more prone to psychological distress such as loneliness, depression, and even suicidal ideation (Zhang et al., 2017). In addition, some elderly people cannot receive home care due to physical dysfunction, which is the most common reason for staying in pension institutions. This group of older adults may be more vulnerable to exclusion from others, which can lead to the onset and exacerbation of depression and an increased risk of suicide (Stegenga et al., 2012; Fässberg et al., 2015).

Finally, based on the above results, it can be seen that social exclusion is a common phenomenon of social connection destruction for individuals, which will lead to physical and psychological pain in individuals, but interpersonal trust can effectively alleviate the negative effects of social exclusion. Our findings found that interpersonal trust moderates the effects of social exclusion on suicidal ideation, belonging, and depression. Specifically, interpersonal trust can moderate the promoting effects of social isolation on suicidal ideation and depression, while also reducing the adverse effects of social exclusion on belonging. Elderly people with higher interpersonal trust are more likely to establish stable and harmonious interpersonal relationships within a smaller range (usually in pension institutions), thereby defusing the harm caused by social exclusion. It can also be said that interpersonal trust is associated with better social functioning, physical and mental health, and the development of interpersonal relationships (Cadenhead and Richman, 1996; Frank et al., 2014). It can not only meet the needs of the elderly's sense of belonging, but also enhance the individual's ability to adapt to the environment

and communication skills, help the elderly to reveal their inner emotions and feelings, and reduce the risk of depression and suicide. In addition, another study also confirmed the strong association between interpersonal trust and the health and well-being of the Chinese rural population (Lu et al., 2011). In the current context of China, the elderly in rural pension institutions have a smaller social scope, and the level of interpersonal trust is crucial to their physical and mental health and life well-being. They can gain more social support through interpersonal trust. On the one hand, it can solve the crisis of daily life, and negative life events, and adjust the bad psychological condition. On the other hand, it may reduce the risk of mental disorders, and reduce suicidal ideation and suicide attempts. Therefore, it is necessary to prevent the effect of social exclusion in daily life on the suicidal ideation of elderly people by enhancing the interpersonal trust of elderly people in pension institutions. Considering the weakened status, physical function, and social role of elderly people in pension institutions, they are prone to encounter the dilemma of insufficient resources in rural pension institutions. It is suggested that the government level can improve the supply of public services to rural elderly institutions, which may be beneficial to enhance the social inclusion and social trust of the elderly (Lu and Zhang, 2014). Therefore, there is a need to enhance policy interventions in this regard. In addition, the positive impact of personal well-being on the interpersonal trust of older adults is considered. In rural institutions, older adults who are happy with their situation are more likely to transmit this positive mindset to other older adults. Therefore, enhancing the personal well-being of older adults is of great practical importance in promoting their interpersonal trust.

Overall, this study validated social exclusion as a risk factor for suicidal ideation in rural older adults and identified interpersonal trust as a protective factor for social exclusion in older adults and its cascade of consequences such as depression and suicidal ideation. To provide a scientific basis for depression status and the development of suicide prevention measures among the elderly in rural China.

## Conclusion

This study shows that social exclusion was positively associated with suicidal ideation among older adults in rural pension institutions while belonging and depression play a chain-mediated mediating role in this relationship. Interpersonal trust levels in older adults moderate the adverse effects of social exclusion on belonging, depression, and suicidal ideation. Our study examines the social exclusion status of the elderly in rural pension institutions and its impact mechanism on suicidal ideation and provides empirical support for reducing the risk of suicide in the elderly. We hope that this study will draw scholars' attention to the elderly in pension institutions. Because interpersonal relationships are essential to health and quality of life at all ages, they may be a particularly

useful target for interventions for older adults to promote their mental health in later life. Although declines in physical, sensory, and cognitive function in older adults are associated with suicidal ideation, interpersonal trust remains malleable throughout life. Although rural pension institutions can provide professional and timely life care to the elderly and meet their basic physiological needs, they still need to be further strengthened in terms of providing psychological counseling and emotional support.

## Limitations and further research directions

This study also has some shortcomings. First, social exclusion can affect health status, but at the same time, individuals with lower health status may also be more vulnerable to exclusion from others (Sacker et al., 2017). Future research can further verify the relationship between social exclusion and health status and its psychological mechanism by collecting longitudinal data. Second, although existing studies analyzing suicide all mention suicide rates, there appears to be a large gap between suicidal behavior and suicidal ideation. It should be noted that there may be information bias when using suicidal ideation rather than completed suicide as the outcome variable. For example, some people are thought to exhibit greater suicidal thoughts, even though they are not planning to kill themselves. Therefore, differences in outcomes between suicidal ideation and suicide may reflect information bias. In future studies, this difference will be examined. Finally, the current study addresses only suicidal ideation due to social exclusion. To effectively prevent suicide in older adults, it is worth investigating how and why individuals consider suicide, even if they do not commit suicide. Therefore, further research is needed to better understand the background of the elderly in rural pension institutions and to examine the underlying factors that contribute to their suicidal ideation.

## Data availability statement

The original contributions presented in the study are included in the article/supplementary material; further inquiries can be directed to the corresponding author.

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## Ethics statement

The studies involving human participants were reviewed and approved by Ethics Committee of Northeast Agricultural University. The patients/participants provided their written informed consent to participate in this study.

## Author contributions

PW is the experimental designer and executor of this study. PG is the designer and person in charge of the project, guiding the writing and modification of the experimental design data analysis paper. ZY have completed data analysis and written the first draft of the paper. All authors contributed to the article and approved the submitted version.

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## Conflict of interest

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# Swedish experts' understanding of active aging from a culturally sensitive perspective – a Delphi study of organizational implementation thresholds and ways of development

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**Background:** International migration and aging populations make for important trends, challenging elderly care regimes in an increasingly globalized world. The situation calls for new ways of merging active aging strategy and cultural sensitivity. This study aim to illuminate the gap between cultural sensitivity and active aging to identify perceived thresholds by Swedish municipal officials in the understanding of older late-in-life-immigrants situation.

**Methods:** Delphi methodology in three rounds. Twenty-three persons in municipal decision-making positions participated and generated 71 statements, of which 33 statements found consensus.

**Results:** The 33 statements show that the decision makers prefer not to use cultural sensitivity as a concept in their work, but rather tailor interventions based on individual preferences that may or may not be present in a certain culture. However, as the complexity of care increases, emphasis drifts away from personal preferences toward text-book knowledge on cultures and activity.

## KEYWORDS

welfare organization, welfare theory of health, culturally sensitive elderly care, active aging, older adults

## Introduction

Culturally sensitive care is gaining importance as the world is becoming more globalized. International migration impacts several segments of host societies, not least the health care sector (Segal, 2019). The phenomenon of aging migrants is becoming increasingly common in the European Union and North America (White, 2006; Ciobanu and Hunter, 2017). Sweden have had an extended immigration in recent years leading up to the refugee crisis in 2015 (Hernes, 2018). Thus, an increased portion of older

adults with immigrant background is to be expected in the coming years. A Situation which will require new ways of grasping the concept of aging (Horn and Schweppe, 2017). One popular way of addressing the situation is known as culturally sensitive care. While popular, the concept is also controversial. Criticism has been aimed toward the concept of cultural sensitivity by researchers and the underlying foundation has conflicting values built into it. It has also conflicting values with other concepts that professionals within the elderly care are issued to safeguard. In this study we highlight the conflicts between culturally sensitive care and active aging and also present the thresholds and ways of promoting culturally sensitive active aging as perceived by experts within Swedish municipal elderly care.

## Literature review

The ways of approaching a multi-cultural clientele are often presented as a solution to the challenges that older adults with immigrant backgrounds are believed to pose for the welfare state (Torres, 2006; Lindblom and Torres, 2022). For professionals tasked with issuing care interventions, the care managers, meetings with the clientele of late-in-life immigrants have been described as challenging. Care managers' report difficulties to respond to the expressed needs of late-in-life immigrants due to lacking organizational support, fear of being called racist if disregarding cash-for-care solutions, and lacking knowledge to handle complex family relations tied to elderly care interventions (Forsell et al., 2014). Further, language barriers and lack of cultural knowledge have been reported to add to the practical complexities (Forsell et al., 2015).

Though the concept of cultural sensitivity is hard to define and tricky to navigate (Danso, 2018), both theoretically and practically, it has traditionally been advocated and pushed for by ethnic organizations (Sasson, 2001; Reidun, 2010), policymakers (Socialstyrelsen, 2010) and practitioners. A culturally sensitive practice requires a framework of cultural competence among those who claim to conduct such practice (Danso, 2018). It is a popular framework among several professions and organizations as it is presented as promoting respect for cultural diversity (Fisher-Borne et al., 2015). For example, practitioners respect individual clients' beliefs and values (Orlandi Ed, 1992; Setness, 1998; Lister, 1999; Zoucha, 2000), appreciate and value diversity (Meleis, 1999; Kersey-Matusiak, 2012), and that organizations and professionals reflect on how to conduct a culturally sensitive practices (Lister, 1999). Most conceptualizations of cultural competence spring from the notion of knowing the essence of the person from a minority culture (Nadan, 2017), rather than having a critical stance to such competence. A critical stance (to both the concept of cultural competence and culture itself as a meaningful concept) is essential for anti-oppressive and anti-racist practice

(Dominelli, 1996). To develop self-awareness of cultural values and biases, professionals must first discover their cultural heritage and understand how that may bias their acts and values (Kohli et al., 2010; Nassar-McMillan, 2014).

Houston (2002) argues that cultural sensitivity should be seen as a scale, ranging from a social constructivist approach to a realist approach. The social constructivist approach states that (cultural) experiences are socially produced rather than naturally given (Burr, 2015). A realist would rather argue that social phenomenon exists beyond the individuals that they are experienced by. Participants of institutions need to position against such social structures (Bhaskar, 1997). With a critical perspective, Houston (2002) argues that the pure social constructivist theorists may be trapped in a void where nothing is fixed or naturally given. While an extreme realist instead would have a tough time explaining how not all social relations are deterministic. Cultural sensitivity as a concept has been criticized for having a static approach to ethnicity and enhancing the idea of the other as fundamentally different and problematic than the person not in need of specialized (culture specific) care (Lill, 2010). Indeed, gerontological research and practice have been described as a construction site where the importance of ethnicity is shaped and re-shaped (Torres, 2006, 2015; Torres et al., 2016). Houston (2002) argues that new ways of approaching cultural sensitivity are needed in social work. Ways that can comprehend that ethnicity is constantly constructed and reconstructed. A perspective that considers power and that includes the oppressive structures that are essential determinants of cultural experiences.

On top of the complex practical situation for care managers, conflicting policy agendas are another obstacle: paradigms in conflict. Sweden has, in line with the EU-policy agenda, proclaimed that active aging is fundamental for the Swedish elderly care strategy (SOU, 2003). Active aging is a policy paradigm advocated by the World Health Organization (2002). Active aging rests on three pillars that states the need to integrate into elderly care practice: (1) health, (2) participation, and (3) safety. It has its theoretical roots resting in the activity paradigm which was developed when scholars in the 1950s noted that mortality beyond the age of 80 was dramatically reduced among those who behaved in a healthy way in alignment with "best practices" (Fernández-Ballesteros et al., 2013). The activity paradigm can be seen as a reaction toward the older disengagement paradigm that emphasizes the natural disengagement from the world of the living to ease the transition into the realm of death (Jönson and Harnett, 2015).

Though widely used the activity paradigm has been criticized for having a Western/neoliberal perspective that places moral responsibility on the individual to age in the right way (Dillaway and Byrnes, 2009; Schweda and Pfaller, 2014). The activity paradigm has been criticized for not considering structural and social factors of aging (Riley, 1998), not representing the voices of minority groups (Hilton et al., 2012), and for not being holistic

enough to include identity and spiritual related aspects of aging (Suryavanshi, 2016). Many of the critiques toward the activity paradigm are related to the lack of adherence to those that culturally prefer the disengagement theory.

Thus, active aging has arguably problems to comprehend the natural stages of decline and mortality, the disengagement process. Acknowledging the stages of decline and death may not be the mainstream aging view within many Western societies, although it is in non-Western dittos (Vatuk, 1980; Ranade, 1982; Prabhu, 1991; Van Willigen et al., 1995; Jönson and Harnett, 2015). We argue that these incompatibilities between the theoretical foundations of aging are becoming increasingly prominent in the daily work of representatives of the welfare state, such as care managers. Though empirical studies are still scarce, Olaison et al. (2021) argue that in this realm of uncertainty a space for institutional categorization is created. A process where errands or individuals are matched with organizational or juristic boundaries in which a person needs to fit to be considered for a certain intervention. Examples of this are cash-for-care solutions or home care based on cultural background and gender (Forssell et al., 2014, 2015).

Thus, implementing interventions for active aging with cultural sensitivity is much more complicated than first meets the eye. Among all the theoretical approaches, professional practices, policy frameworks, and general expectations from care recipients of both active aging and cultural sensitivity, the professionals are right at the intersection of several contradicting views of what should be done and how. This makes for a complicated situation in their daily work. In milieus where professionals do not have a consensual view of the problem and lacking support from management, as described by Forssell et al. (2015), so called silent knowledge can flourish (Eliasson Lappilainen, 2016). Silent knowledge isn't challenged, nor developed in the same rigorous settings as research-based knowledge. We want to tap into this knowledge, to see what is perceived as challenges and how these challenges can be overcome as a first step toward probing this entangled field.

## A way forward with the welfare theory of health

We have in previous research (Johansson et al., 2021) proposed a theoretical framework for merging culturally sensitive and active aging that could depart from the so-called Welfare Theory of Health (WTH) coined by Nordenfelt (1993). The WTH frames health as the ability to realize what is important for a person to experience a minimal level of happiness, so-called Vital Life Goals (VLG). This understanding of health within the concept of active aging makes a holistic, and inclusive, approach to cultural sensitivity possible. This is because if cultural preferences can be framed as VLG's, then cultural sensitivity would to a further extent be based on a

personal preference, and not be dependent on professionals' ideas of cultural traits that may or may not align with the individual. Personal preferences should in this sense be seen as dependent on a person's reality in terms of habitus (see Bourdieu, 1986). The kind of resources a person has accumulated over time in a new environment shapes the preferences of a person. Cultural capital is one such resource that shapes these preferences, making them embodied. Johansson et al. (2021) has described how older adults with immigrant background uses the accumulated resources to reach their VLG's. And that the lack of resources makes for an agency gap that is stressful for an individual.

As expressed by Johansson et al. (2021) "health promoting interventions would by necessity be more culturally sensitive if that lies within the scope of vital life goals for the older adult's minimum level of happiness" (p.4). However, WTH is a philosophical view of holistic health and is yet to be refined into a theory that is useful for practitioners. Along with other perspectives that rather describe professional approaches in care situations. For example, person-centered care where the view of health stands in a changed focus from traditional care, moving from a disease-oriented to a more person-oriented/centered care (Mc Cormack et al., 2010). The basis for person-centered care consists of values such as respect for the person, the person's right to self-determination and together create a common understanding. Since older persons often have a variety of needs person-centered care can also be seen as a way of working to establish health promoting and supportive relationships between the older person, professional caregivers and other important people in the older persons life. This is a perspective that informs the care professionals how to approach a person in need of care in a holistic way. It doesn't aspire to try and unveil what is important to a person the way that WTH does. We thus believe, that the WTH and person-oriented/centered care is both important tools for professionals to mitigate the risk of othering in a culturally sensitive care environment.

When WTH was used as a theoretical foundation by Johansson et al. (2021), it yielded both information on cultural preferences of the interviewed older adults, recommendations of how such culturally sensitive interventions would preferably be implemented, and what kind of personal resources can be mobilized to reach the VLG's of a person. The results of Johansson et al. (2021) adds to the notion that the WTH can be used to move cultural sensitive care away from the realist approach, described by Houston (2002), and toward a more social constructivist view.

## Aim

This study draws its methodology from the Welfare Theory of Health (WTH) coined by Nordenfelt (1993) and focuses on the gap between cultural sensitivity and active aging. We take departure from the previous work of Johansson et al. (2021).

Using the WTH, this study aims to illuminate the gap between cultural sensitivity and active aging to identify perceived thresholds by Swedish municipal officials in the understanding of older late-in-life-immigrants situation.

## Materials and methods

For the aim of this study, the Delphi technique was chosen. The Delphi technique excels at finding areas of consensus and where consensus is missing. This provides a solid foundation for reflection and development of new paradigms (Akesson and Canavera, 2021). Studies using a Delphi approach seek to mitigate the biasing effects of the dominant paradigm and formal hierarchies among participants. Using the Delphi technique means that several chronological questionnaires, known as rounds, are deployed to find consensus among a panel of experts in their field (Powell, 2003). It is a particularly practical and cost-effective way to gather, structure, and organize the thoughts and views of experts that are geographically scattered on a relevant topic (Powell, 2003; Thompson, 2009). By tapping into the consensus of experts in the field, more credible and accurate account evaluations are generated than if the general opinion or personal views are researched (Keeney et al., 2010). We use the Delphi technique to illuminate the gap between cultural sensitivity and active aging to identify perceived thresholds by Swedish municipal officials in the understanding of older late-in-life-immigrants situation. The chronological surveys of each round are based on the answers of the previous one. The results of each survey are transparent, yet anonymous among the participants. This allows for the experts to freely express their opinions, reflect on the views of the other experts, and revise their positions if they wish (Hasson et al., 2008). The panelists can review each other's answers but their identity is concealed to lessen the impact of social desirability bias that would occur in for example a group interview (Jairath and Weinstein, 1994).

## Sample

The sample is purposive. The panelists were drafted based on their role within Swedish municipal elderly care. They were all in decision-making positions both on strategic and at case levels. The group of panelists was interdisciplinary and inter-municipal, spread out over six municipalities across the Mälardalen region of Sweden. The represented municipalities are small to mid-sized in relation to Swedish peers, ranging from some 14000 to 150000 inhabitants.

The panel consisted of five males, 19 females, and included the roles of: head of social department, head of assistance officer, assistance officer, quality developer, integration coordinator, head of care homes, chair of social board (See Table 1 for a

full list of participants' characteristics). Panelist no. 7, a case manager, decided to drop out after the first round of inquiry.

Most panelists were recruited through a collaboration between Mälardalen University and municipalities in Mälardalen, Sweden. Some were approached through e-mail in cases where no such collaboration was in place with a particular municipality. Along with ethical information, information was also presented on the procedure of a Delphi study, and that the panelist was expected to participate through all three rounds of data collection. After a panelist accepted to participate, s/he received the first round of open-ended questions by e-mail. The three rounds of data collection were conducted between April and November 2021. Each round of inquiry had a deadline of 3–4 weeks with up to two reminders being distributed by e-mail.

## Data collection and analysis

Three rounds of data collection were conducted (see Table 2). The first round with qualitative open-ended questions was analyzed with thematic analysis based on Braun and Clarke (2006) and the result was converted into statements. The second round with a survey of statements based on the answers in round one was analyzed with descriptive statistics. The third round with a survey of statements along with information on how the panel had reasoned and positioned themselves in the previous round. The final round was analyzed with descriptive statistics and Kendall's W coordination coefficient.

### Delphi round 1: Open-ended survey questions

For the first round, a survey with 7 open-ended questions was developed based on Johansson et al. (2021) and their earlier research on the ability of WTH to work as a framework for developing culturally sensitive active aging. Johansson et al. (2021) argue that the notion of cultural sensitivity needs to depart from individual vital life goals, and what resources a person needs to attain those goals. This is reflected in the seven open-ended questions with the focus on differences between active and culturally sensitive aging, the role of personal preferences, and the role of other actors than the individual older adult in achieving a culturally sensitive active aging.

The seven questions were: (1) How do you think that older adults' personal preferences concerning what good aging constitutes should impact municipal care interventions? (2) Describe how you would define active aging and name five factors (in descending order) that you consider to be most important for enabling active aging for older adults with municipal care interventions. (3) Describe what you think culturally sensitive care constitutes and name five factors (in descending order) that you consider to be most important in offering culturally sensitive care for older adults with municipal

TABLE 1 Characteristics of the panelists.

Panelist	Role	Role in Swedish	Gender	Municipality
1	Chair of social board	Nämndordförande	Female	Mid-sized
2	Head of social department	Socialchef	Male	Mid-sized
3	Head of social department	Socialchef	Female	Small-sized
4	Head of assistance officer	Chef biståndshanläggare	Female	Mid-sized
5	Head of assistance officer	Chef biståndshanläggare	Male	Small-sized
6	Assistance officer/case manager	Biståndshandläggare	Female	Mid-sized
7	Assistance officer/case manager	Biståndshandläggare	Female	Small-sized
8	Assistance officer/case manager	Biståndshandläggare	Male	Mid-sized
9	Assistance officer/case manager	Biståndshandläggare	Female	Mid-sized
10	Assistance officer/case manager	Biståndshandläggare	Female	Small-sized
11	Quality developer	Kvalitetsutvecklare	Female	Mid-sized
12	Quality developer	Kvalitetsutvecklare	Female	Mid-sized
13	Quality developer	Kvalitetsutvecklare	Male	Mid-sized
14	Quality developer	Kvalitetsutvecklare	Female	Small-sized
15	Integration co-ordinator	Integrationskoordinator	Female	Small-sized
16	Integration co-ordinator	Integrationskoordinator	Female	Small-sized
17	Head of care home	Chef särskilt boende	Female	Small-sized
18	Head of care home	Chef särskilt boende	Female	Small-sized
19	Head of care home	Chef särskilt boende	Female	Small-sized
20	Head of care home	Chef särskilt boende	Female	Mid-sized
21	Head of care home	Chef särskilt boende	Female	Mid-sized
22	Head of care home	Chef särskilt boende	Female	Mid-sized
23	Head of ward	Avdelningschef (liknande chef särskiltboende)	Male	Mid-sized
24	Head of ward	Avdelningschef (liknande chef särskiltboende)	Female	Mid-sized
25	Head of care home	Chef särskiltboende	Female	Mid-sized

TABLE 2 The process of developing consensus.

Round	Panelists	Type of questions and information in the questionnaire	Analysis	Yield Statements
1	25	Seven open-ended questions	Thematic	71
2	24	71 statements. Likert-scale and comments	Descriptive analysis	
3	24	71 statements, written comments, level of consensus in round 2	Descriptive analysis	33

care interventions? (4) How do you see the municipality's role in enabling active aging for people who immigrated to Sweden late in life, and who come from a culture where it is natural for the family to take responsibility for care? (5) What other actors (rather than the municipality, region, and state) do you see as important in enabling active aging for older adults who immigrated to Sweden late in life? Why are they important? (6) How do you see the municipality's role in enabling active aging for older adults who have immigrated late in life in relation to other actors? (7) To enable active aging for older adults

who immigrated to Sweden late in life, would you like your municipality to take on a different role than it does today? If so, how? The data from round 1 were analyzed according to [Braun and Clarke \(2006\)](#). Three areas of content were identified. Area one (General obstacles for implementing interventions for culturally sensitive active aging) yielded 12 statements. Area two (Collaboration with civil society to implement interventions for culturally sensitive active aging) yielded 39 statements. And area three (Internal organizational thresholds for offering interventions for a culturally sensitive active aging) yielded 20

TABLE 3 The 33 statements that found consensus among the panelists and their consistency of opinion.

#	Statement	Consensus	Kendall's W
1	It can be complicated for caregivers to understand what cultural preferences a person who immigrated late in life has as there can be both linguistic and cognitive barriers	90%	0.810
2	To achieve good aging, care interventions need to be individually adapted as much as possible	100%	0.924
3	It is a good idea to start from the elderly's personal goals if an intervention is to be individually adapted	95%	0.895
4	To adapt the care interventions to the individual, it is important to consider a person's religious preferences. For example, what kinds of meat they eat or under what conditions s/he may show his/her body	85%	0.819
5	To enable active aging for people who have immigrated late in life, it is important that staff in elderly care have knowledge of different cultures so that they understand what a care recipient needs	85%	0.819
6	To enable active aging for people who have immigrated late in life, it is important that caregivers and care recipients have a common language	80%	0.733
7	To involve older adults in decisions about their care interventions by documenting their personal preferences creates meaningfulness for older adults	90%	0.876
8	So that a municipality can offer interventions that promote active aging for persons who immigrated late in life, it is valuable to know how resourceful s/he is in terms of informal social networks (for example family and friends that are important to the person)	80%	0.771
9	Personal preferences could be formulated as personal goals that need to be achieved for the person to experience happiness	80%	0.790
10	Finding out what a person's personal preferences are requires knowledge and a strategy for active listening	95%	0.781
11	An accessible flow of information in everyday life, in terms of language, is important to make active aging accessible	95%	0.857
12	Digital utilities have the potential to make the flow of information accessible, in terms of language	100%	0.810
13	It is important that professionals not only make healthy eating available but also encourage older adults to change their eating habits in line with the available healthy diet	85%	0.886
14	To make active aging available for older adults, it is important that municipalities take responsibility to create opportunities for older adults to be physically active	95%	0.781
15	Creating opportunities for individual adaptation are important for culturally sensitive elderly care	90%	0.886
16	Offering interventions that promote active aging means not only involving physical activities such as practical care or gym sessions, but also interventions for stimulating social interaction	95%	0.867
17	So that a municipality can offer interventions that also aim to create stimulating social interactions for older adults, it is important to know the person's life story	90%	0.895
18	To offer individualized interventions that promote active aging, it is important to know, and use, the personal driving forces of older adults	90%	0.848
19	To enable culturally sensitive care interventions for the older adults, staff need to have sufficient knowledge of different cultures in order not to violate things that are culturally important to a person	80%	0.886
20	It is important that care and nursing staff can reflect and put their own cultural preferences in relation to that of others	85%	0.819
21	To be able to offer culturally sensitive care interventions for older adults, care staff and officials need to have opportunities to reflect on their own ideas / prejudices about what different cultural expressions mean	85%	0.8
22	Having a diversified workforce provides better conditions for making active aging accessible to people who have immigrated late in life	95%	0.829
23	Offering culturally sensitive care to older adults is facilitated if the municipality's organization has planned for it. For example, by having inventoried what kind of diversity the staff at different facilities have	80%	0.838
24	It would be positive for the ability to make active aging available for people who immigrated late in life if older adults, caregivers, and integration caregivers collaborated to a greater extent	80%	0.848

(Continued)

TABLE 3 (Continued)

#	Statement	Consensus	Kendall's W
25	Implementation plans are an important tool for gathering and compiling information to make active aging accessible to people who have immigrated late in life	95%	0.771
26	To make active aging available to people who have immigrated late in life, it is reasonable for the municipality to ensure that those who receive municipal elderly care can participate in the holidays they are used to in the past, such as Ramadan or the Iranian New Year	80%	0.781
27	To make active aging accessible to people who have immigrated late in life, it is reasonable for the municipality to ensure that there is literature and music available at nursing homes that is usually associated with the person's background	80%	0.771
28	It is beneficial for active aging if municipalities can mediate contacts to organizations that can offer social gatherings for older adults	95%	0.895
29	It is important that the municipality, as the principal, collaborates with relatives of late-in-life immigrants to offer the older adults interventions that contribute to active aging	85%	0.8
30	If the municipality as principal cooperates with relatives of late-in-life immigrants who need care interventions, it contributes to the older adult gaining trust in the municipality as a caregiver	80%	0.8
31	If the municipality, as the principal, cooperates with relatives of late-in-life immigrants who need care interventions, it contributes to the municipality having a better basis on which to base its decisions of interventions, than if they had not collaborated	90%	0.781
32	It is important that the municipality, as the principal, collaborates with NGOs to offer late-in-life immigrants initiatives that contribute to active aging	80%	0.781
33	It is important that the municipality as principal interacts with ethnic, religious, and NGOs to offer late-in-life immigrants efforts that can contribute to active aging as these can provide a context that is independent of the role of care recipient which is difficult for the municipal elderly care to offer in-house	80%	0.876

items. All in all, 71 statements. Within each area, the statements were reformulated into survey items with a Likert scale to be used in round 2.

### Delphi round 2 and 3: Evaluation of statements

In the second round, the 71 statements were redistributed back to the panelist who was asked to evaluate their degree of agreement on a Likert scale ranging from 1 (do not agree at all) to 5 (fully agree). The panelists were also encouraged to comment on why they positioned themselves the way they did, although few did. The results were analyzed with descriptive statistics.

The results of the second round were compiled into one document specific for each panelist showing the mean value of agreement of the statements, the comments made by the other panelists, and a reminder of where on the Likert scale they positioned themselves.

In the third, and final round of inquiry, the personal document was sent back to the panelists. They were asked to revise their positions in the light of the mean agreement and commentaries of the other members of the expert panel. The panelist had the option to comment on their reasoning and was encouraged to do so if they deviated from the mean agreement. The threshold for consensus was set to 80 per cent based on the recommendations of [Green et al. \(1999\)](#). The third round were analyzed with descriptive statistics (mean value of positioning), inferential statistics (Kendall's W), and the

qualitative comments provided by the informants in rounds 2 and 3.

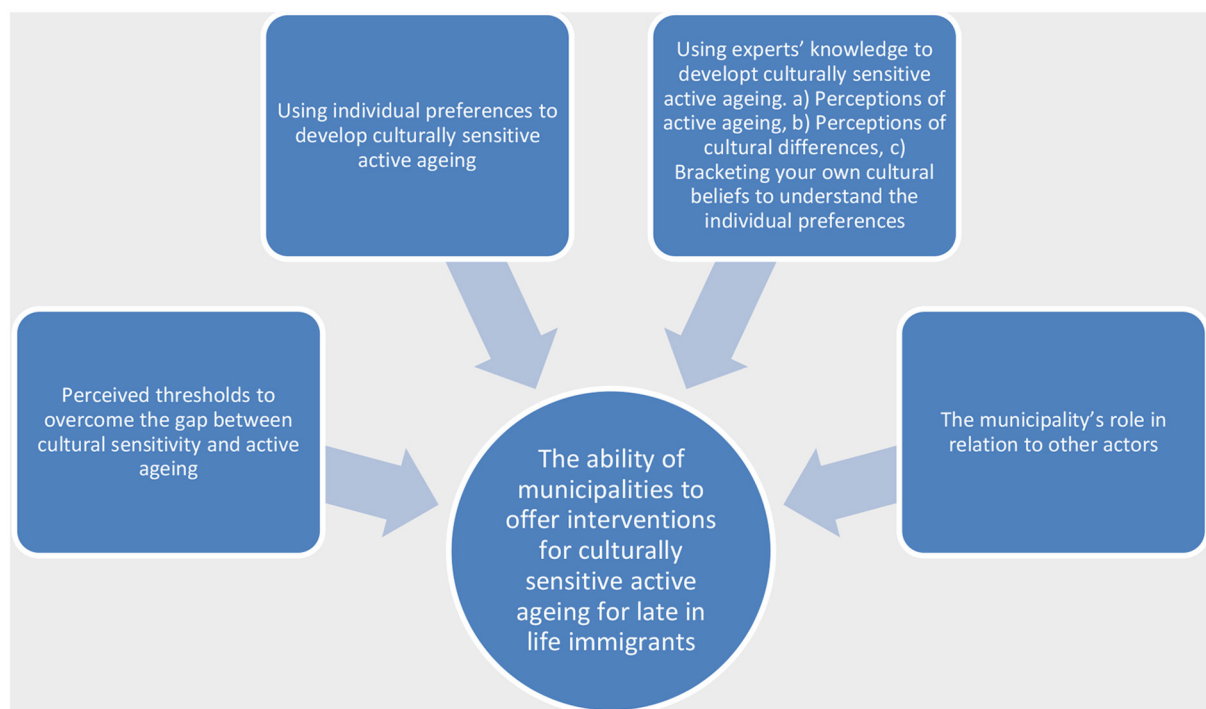
In total, 33 statements of the initial 71 statements reached consensus (over 80 per cent agreement) as shown in [Table 3](#). For the 33 statements that found consensus, consistency of opinion was calculated using Kendall's W coordination coefficient ([Legendre, 2005](#)). The total sample had a consistency of opinion of Kendall's W = 0.828 which is considered almost perfect agreement according to [Landis and Koch \(1977\)](#).

### Ethical considerations

The study was vetted and approved by the regional ethics committee in Uppsala (Dnr: 2018/279). The participants received written statements on the study's aim and procedure along with information on how the empirical data will be used, information about confidentiality, that participation is voluntary in alignment with the Swedish research council, and that of the declaration of Helsinki ([World Health Organization, 2001](#)).

### Findings

The statements reported above where the panelist's found consensus is presented here along with elaborating commentaries. The statements have been themed into four key themes (see [Figure 1](#)) to describe the thresholds perceived



**FIGURE 1**  
The ability of municipalities to offer interventions for culturally sensitive active aging for late in life immigrants.

by the panelists to overcome the gap between cultural sensitivity and active aging aimed at developing the ability of municipalities to offer interventions for culturally sensitive active aging for late in life immigrants. Based on the analysis of both the quantitative and qualitative data, the findings are presented.

## Perceived thresholds for culturally sensitive active aging

The qualitative material yielded 12 statements about the barriers for making opportunities for active aging for late-in-life immigrants. Many kinds of barriers were mentioned by the informants. IP 14, a quality developer, recognizes the challenge as a multi-depth problem where she as a municipal representative need to consider both the individual and his/her close family's situation not to negatively impact on the general situation of an older adult.

*"I see that the municipality has a very important role in enabling these people to have active aging as well. Both for the sake of the older adults, but also for relatives who are being exposed to double expectations from society regarding full-time work and from the family, where the expectations are*

*that the relative will take care of the elderly to a greater extent. Through my work, I have met many people in this group who become very isolated and dependent on their family, and that this has a clear negative impact on the elderly's mental and physical health" (IP 14).*

Other difficulties mentioned are communication during both the vetting process and the care itself "the difficulty of communicating and interpreting what the individual thinks is culturally important based on language" (IP 08, assessment officer). One way to bridge the linguistic gap is to use family members as interpreters. Using a family interpreter is a practice that is used with caution. They are not completely trusted to carry the message of welfare workers. The family interpreter is also in a vulnerable position. As IP 10 expresses, professionals don't fully trust family interpreters. They are also at risk of being involved in sensitive dilemmas that potentially may affect family relations (Crezee and Roat, 2019). Working as a professional in this sensitive environment requires special communicative skills and knowledge about different cultures from which they may meet an aid-seeking older adult "A challenge based on cultural differences / differences where, as above, we must respond with knowledge, respect and be very responsive and explanatory" (IP 01, chair of board).

However, only one statement reached a complete level of consensus. Statement 1, “It can be complicated for caregivers to understand what a person who immigrated late in life has for cultural preferences as there can be both linguistic and cognitive barriers”, which received 90% consensus. Communication and language are commonly reported as the most important things needed by the municipality to offer active aging with cultural sensitivity. It is seen as the gatekeeper to access the rest of the required information to deliver on the ambition to tailor care interventions to individual preferences (statements 6, 7, 9, 11, 12).

The concept of cultural sensitivity is criticized due to the emphasis on culture. If cultural sensitivity is in focus, other aspects that may also influence personal preferences are at risk of being overlooked. Thus, several of the panelists would rather approach cultural sensitivity from a stance of individual adaptation. Individual adaptation means that interventions are adapted to personal preferences rather than ideas on what is appropriate from a cultural stance.

## Using individual preferences to develop a culturally sensitive active aging

There is a risk of welfare professionals generalizing about older adults who have immigrated late in life. The professionals express concern over the risk that a person may be treated in certain ways because of their ethnicity. They mean that individual preferences should be in the foreground when designing interventions for active aging, and not ideas of cultural preferences that professionals may associate with certain ethnicity or cultures.

*“I think there is a risk in thinking that older people’s personal preferences differ significantly due to cultural background as there is so much else that can also affect personal preferences, even if cultural differences should not be completely overlooked, it should not be given too much importance in the interpretation of the individual needs of the elderly[...] I’m struggling with the concept of culturally sensitive care as it is not an accepted concept with us [the workplace, authors remark]. Instead, we always talk about individual assessments where, of course, cultural elements are part of the assessment.” (IP10, case manager).*

The main source of information on preferences for IP10 (that may or may not be culturally relevant) is the individual older adult. To access information on individual preferences, a strategy for active communication and listening is required (statements 10, 17).

One way of accessing this information is to interview the persons on the personal goals that are needed for the person to experience happiness (statements 3, 9, 18) and their

resourcefulness to achieve the goals that are important for them, for example informal social network (statement 8). Statement 3, “It is a good idea to start from the older person’s personal goals if an intervention is to be individually adapted,” received 95 per cent consensus. These goals would be expressed in the so-called implementation plans (statement 25) which is a document used by professionals to work uniformly around a person in accordance with her or his wishes. The implementation plan is grounded in a planning based on the individual’s self-determination and integrity (Socialstyrelsen, 2014).

## Using experts’ knowledge to develop a culturally sensitive active aging

Many statements indicated that active aging should also be achieved based on information grounded in external (aggregated or accumulated) knowledge from sources outside the individual. For example, knowledge on nutrition “It is important that professionals not only make healthy eating available but also encourage older people to change their eating habits in line with the available healthy diet” (statement 13) had an agreement of 85 per cent among the panelists. Thus, there are areas where the knowledge of professionals should be weighted stronger than that of the individual when designing interventions to help the individual age actively. Even if the older adult expresses a preference of eating in accordance with other habits than that proposed by professionals. This is especially prominent when designing interventions for active aging that are culturally sensitive. Cultural sensitivity is seen as something that professionals need external knowledge around to understand older adults who immigrated late in life.” Providers of care and nursing interventions must become even more aware of the way in which cultural aspects affect/can affect meeting the elderly. This applies regardless of whether the target group of older people is regarded as a collective or as individuals and may be about taking cultural aspects into account in each situation, which requires “correct knowledge” (IP02). IP02 advocates external sources of knowledge on cultural preferences, from for example textbooks, people familiar with a certain culture etc. The panel reached some consensus of what parameters mark the objective knowledge around activity and culture that the care givers should be equipped with.

## Perceptions of active aging

According to the findings, municipalities should predefine what active aging is (statements 14, 23) and work toward that. For example, that the activity of active aging expands beyond physical activity (statement 14) to also include social activity (statement 16). To inventory a person’s social network could be one way of identifying if a municipality can (and perhaps should) intervene to stimulate social activity (statement 8). Another

important tool for inventorying a person's social network is to listen to and understand a person's life story (statement 17).

### Perceptions of cultural differences

To understand different cultures lies also within the toolbox that professionals should be equipped with. Statements 5, 19, 20, 21, 22 and 23 indicate that the panel also think it is important that welfare workers have knowledge about different cultures to better interpretate a person's cultural preferences. This includes knowledge of religions (statement 4), holiday celebrations (statement 26), and culturally relevant music and literature (statement 27).

Professional knowledge on cultures and their markers are important partly so the care staff understand the needs of older adults with immigrant backgrounds (statement 5), and so they do not violate culturally important values of older adults with immigrant backgrounds (statement 19). One way of implementing such knowledge in care practices is to make sure that the workforce is diverse which is seen as a way of providing better conditions for practices to make active aging available for older adults with immigrant backgrounds (statement 22). Finally, other sources of knowledge around the older adults are relatives, who are seen as a source of information and valuable partners for collaboration (statement 29).

### Bracketing your own cultural beliefs to understand individual preferences

One important part of professional knowledge is to understand the complex dynamics of how mainstream culture and minority cultures are experienced from different social positions. To access information on personal preferences, a strategy for actively listening to the individual is important (statement 10), and to interpret the information from the perspective of the person's life-story (statement 17). While implementing whatever strategy a professional use for listening actively, IP10 and IP12 stress the importance of understanding that the teller and the listener may have different points of departure when discussing a topic. The listener needs to put their cultural preferences in relation to that of the teller. Especially prominent from a Swedish perspective is the very strong focus on autonomy, individualization, self-efficacy and universal welfare services throughout the whole welfare sector (Aspalter, 2011). "(...) the two extremes in the Nordic/Scandinavian culture with an individual focus and the cultural value of "managing oneself" in comparison with a family-based culture where the family is more important as a value than the individual" (IP12). It is important that the care and nursing staff have the tools and opportunity to reflect and bracket their own cultural preferences to how care recipients experience their own cultural identity from their perspective, and not the perspective of the workers (statements 20, 21).

The findings also indicate that the more complex a concept is (in this case active aging and culturally sensitive active aging), the more support from external (fixed) sources the professionals see is needed to guide their care activity. The individual perspective is still very important while tailoring culturally sensitive interventions for active aging. But external sources are increasingly important with rising complexity (see Table 4). External sources are more important while implementing interventions for active aging than they are while implementing interventions for good aging. And external sources are more important while implementing interventions for culturally sensitive active aging than they are while implementing interventions for active aging.

### The municipality's role in relation to other actors

There is a strong agreement that municipal organizations should take the role of information hub, gathering and spreading information between different stakeholders. This is especially important since the municipality lacks the perceived cultural competence that would be needed to make meaningful activities for late-in-life immigrants such as mediating contacts between older adults and NGO's that organize social gatherings for older adults (statement 28). "I'd love to collaborate with various associations and parishes with, for example, cooking teams, day activities, contact person activities." (IP 09). "The care we provide and offer today is unilaterally based on Nordic/Scandinavian cultural values and competence." (IP 12). Keeping contact with relatives to receive information that is useful to achieve active aging is also attributed to being an information hub (statements 29, 31, 32). If a municipality achieves the goal of being a hub for distributing information within the family, the panelists expect it to be easier to win the trust of an older adult with an immigrant background (statement 9). IP 14, a quality developer, explains that without the trust between the municipality and the older adults, it is hard for the older adults to accept the care interventions which makes it important to offer support to relatives that participate in care interventions. While relative support is seen as an important intervention, cash-for-care solutions are not. IP 09, assessment officer, thinks hiring relatives to do care work is harmful to the older adult, but also for the relative occupying such a position. "The municipality's role is not to enable employment of relatives. It can lead to increased passivity of the older adult when relatives provide support. It also contributes to relatives finding it harder to access the labor market or studies." (IP 09).

It is also important to offer late-in-life immigrants' social context that is independent of their role as care receiver, which is inevitable if a municipality tries to organize social activities in-house (statement 33). "Associations and congregations can

TABLE 4 The advancing need for external information as complexity of care interventions increase.

	Input from individual on personal preferences required	Input from sources outside the individual required
Good aging	Seven statements (1, 2, 3, 7, 9, 12, 17)	Zero statements
Active aging	Four statements (10, 11, 18, 28)	Three statements (13, 14, 16)
Culturally sensitive active aging	Nine statements (4, 6, 8, 15, 20, 21, 23, 26, 27)	Four statements (5, 19, 22, 23, 29)

offer activities that are more about interests and community rather than about demands/rules, ill health, or dependency. The person receives another value that is not linked to being a user, beneficiary, or patient.” (IP 09).

## Discussion

The result of the current study shows that there are plenty of ideas of thresholds for implementing active aging with cultural sensitivity, but consensus is scarce. This is not surprising considering the fact that case managers in Sweden have previously described a non-conformity in how they handle meetings with older adults with immigrant backgrounds (Forssell, 2013). The consequences of this non-conformity are that the knowledge base for vetting older late-in-life-immigrants is of the so-called silent type. Silent knowledge is rarely developed or challenged the way research-based knowledge is (Eliasson Lappilainen, 2016). The professionals also report a non-conformity on the very conceptualization of cultural sensitivity and its relevance in the kind of care that they conduct. Some pointed out that they do not use the concept of cultural sensitivity in their organizations at all and others rather talked about individual tailoring of interventions. The non-conformity understanding of cultural sensitivity among professionals makes for a threshold by itself, especially as Swedish elderly care around a person is fragmented, vertically ordered and involves several professions, persons, and stakeholders (Persson and Westrup, 2009).

Only one prerequisite found consensus among the difficulties to implement interventions for culturally sensitive active aging: language barriers. Language barriers have for a long time been described as problematic in cross-cultural care environments. For example, misunderstanding between the carer and caretaker on sensitive care tasks which make them unpleasant and potentially dangerous, misdiagnosis, et cetera (Jones and Van Amelsvoort Jones, 1986; Ekman et al., 1995; Bischoff et al., 2003). It is known that the language barrier to reach cultural sensitivity has been met with various innovations to be overcome. For example, the development of nursing homes with ethnically or linguistic profiles, a practice that can be traced back to the 1940's but has in recent years been

repackaged as an expression of lifestyle rather than a cultural preference (Jönson et al., 2018).

The results also show that while information from an individual is important to tailor interventions to achieve a culturally sensitive active aging, fixed, professional textbook-knowledge, is also perceived as important to make the right decisions. The fixed kinds of knowledge were also observed to be more prevalent the more complex the goal for an intervention is (see Table 4). Using the description of cultural competence by Houston (2002), this indicates that the professionals adhere to the idea that culture should be approached from a constructivist stance but as cases become more complex, a realist approach become more reasonable. Examples of such realist approach are expressed as the needs to adhere to different cultures, different languages, and good diets. Statement 13 clearly indicated that a certain nutrition is needed to achieve an active aging and if a person prefers to eat something else, s/he should be encouraged to change diet in accordance with aging actively. Acquiring knowledge of cultural entities such as what clothing is typical for a certain culture or what foods are common, is an expression of cultural competence and sensitivity that draws attention away from injustices and anti-discriminant practices toward not so nuanced knowledge of cultural markers (Dominelli, 1996; Payne, 2008). When it comes to cultural preferences, Payne rather emphasizes the importance of applying the cultural treats that are important to the individual. An aspect that the professionals also express as important. The way that the panelists describe how they need to balance what sources of information to base their decisions has not to our knowledge been described before. We cannot say from the results of this study that the decision to weigh fixed knowledge heavier in more complex decision making is a conscious choice or not. But it illustrates that the scale between realist and social constructivist approach to cultural competence (see Houston, 2002) is indeed something that is a part of the everyday work for the professionals. They do not just take a stance on the scale and stick to it, but rather take different positions on the scale in different situations.

The drift from individual preferences toward external sources calls for strategies for active listening to acquire relevant information from the individual, and for paraphrasing one's own cultural understandings to reduce the risk of othering. Especially in organizations with strong focus on autonomy, individualization, self-efficacy and universal welfare services,

which is common in the Swedish welfare state (Aspalter, 2011). However, to acknowledge cultural differences (pluralism) is a path one must tread lightly. While necessary to tailor care according to personal preferences, Swedish researchers have warned about how older adults with immigrant backgrounds are constantly constructed as different and especially demanding to care for (Torres, 2006). Thus, it is reasonable to apply strategies to mitigate the construction of the other, as well as listening actively to pick up on cultural preferences. The professionals in this study agree that a norm-critical practice is needed to bracket one's own cultural biases when interacting with an older adult from a position of power. For example, acknowledging that the autonomy ideals that is common in Scandinavian welfare states, may not be wanted for a person who come from welfare environments where family provided care are the commonality. One such strategy that has been proposed by Johansson et al. (2021) to be based on the so-called Welfare theory of health, where individual goals for happiness guide what a healthy person should be able to do to be considered healthy. It is a holistic and goals-oriented approach that aligns well with the informant's consensus in this article who advocates the use of personal goals for happiness as a route to access personal preferences with limited risk of (biased) cultural interpretations.

Working with goals for happiness has been proposed by Johansson et al. (2021) as a way to strategically handle the risk of othering while considering cultural preferences. Johansson et al. argue that care interventions based on what goals a person needs to achieve to experience a minimal level of happiness would have a reduced risk of othering. This is because there is limited space for interpretation by the listener, resulting in (1) a culturally sensitive approach to care interventions, (2) a culturally sensitive approach to health [based on Nordenfelt (1993)], (3) a culturally sensitive approach to active aging (Johansson et al., 2021). The result in this study is thus in line with Johansson et al. (2021) reasoning. The WTH is mainly a health theory but, as we have argued, the underlying reasoning has much to offer in the social gerontological field. The results in this study should be seen as a contribution in this direction. We do not propose that other approaches to cultural sensitivity, such as person-centered care as outlined above, should be traded for the WTH. But we do suggest that the WTH can be used as a tool alongside other theories in the professionals toolbelt to approach cultural sensitivity from a stance where being mindful of how the other is constructed is important. However, WTH journey into the social gerontological field has only just begun. More research is needed, for example on how it can be used to measure health in the group of older adults, how the goals-oriented holistic view of health can be applied in the active aging policy agenda, or how WTH can be used by practicing care workers for deeper or wider understanding of personal health dimensions.

## Strength and limitations

The Delphi technique is generally valued for its ability to organize and structure group communications and widely used in research areas within the welfare sector (Powell, 2003). Keeney et al. (2010) suggest that a heterogeneous sample should be used to voice a broad spectrum of opinions. In this study, a sample of diverse roles are represented from the Swedish municipal elderly care. Not only based on position/expertise, but also based on geographical differences that the different municipalities represent. We have included 25 panelists, representing 8 different roles, spread across 6 different municipalities.

A characteristic of Delphi studies is that the response rates of the panelists drop as the study progresses (Keeney et al., 2010). This was not the case in the current study. We had one drop out after the initial round, and no dropouts in the subsequent rounds. We consider this a strength partly because it is better to have as many views represented as possible, but also because it shows that the research question is relevant to the informants and motivates them to stay throughout the study. In a Delphi study the degree of expertise (for example level of experience in the field, working years) of the informants is positively correlated with the accuracy of the result. We did not draw any such data which is a limitation. We do however have a mixed representation from various levels of positions. From head of chairman and head of department to case-managers. And they all have a consistency of opinion (Kendall's  $W = 0.828$ ) which is considered almost perfect agreement according to Landis and Koch (1977).

The results and conclusions of this study are based on the panelist's professional experiences. As such the results should be considered to be the consensus of the described group of professionals, rather than evidence for agreement within a social democratic elderly care regime, such as Sweden. Thus, the findings will be useful for further research, for example how to balance the sources of information when implementing care interventions. And develop ways for mitigating othering in elderly care organizations.

## Conclusion

This study has shown that professionals in decision-making positions within elderly care struggle with how to offer interventions for active aging in a culturally sensitive way for older adults with immigrant background. The prominent threshold for culturally sensitive active aging is communication. The professionals would rather emphasize individual preferences before cultural sensitivity but struggle to find a hard line to what decisions should be based on information from the older adults (personal preferences) and

what should be based on professional knowledge on how cultures are and what activities are best. To overcome the linguistic barriers and tap into the sought-after information on personal preferences requires strategies for active listening and Interpretation.

The results in this study should be used to lay the foundation for further research on the merger between cultural sensitivity and active aging. They can also be used by professionals to reflect on what sources of information are appropriate in what situations when designing welfare interventions that aim to facilitate active aging for late-in-life immigrants.

## Data availability statement

The datasets presented in this article are not readily available because the informants have consented to participate with guarantee that their qualitative data are not shared with anyone beside the research team and is stored in a secure manner. Requests to access the datasets should be directed to [carl.johansson@mdu.se](mailto:carl.johansson@mdu.se).

## Ethics statement

The studies involving human participants were reviewed and approved by Regionala etikprövningsnämnden i Uppsala. The patients/participants provided their written informed consent to participate in this study.

## Author contributions

CJ contributed to the conception and design of the study, data collection, analysis of data, and the process of writing and revising the manuscript. DL contributed to the design of the study, analysis of data, and the process of writing and revising

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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# Effects of middle-aged and elderly people's self-efficacy on health promotion behaviors: Mediating effects of sports participation

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**Objective:** This study explores the relationship between self-efficacy, sports participation, and health promotion behavior for middle-aged and elderly people. Therefore, it provides a theoretical reference for improving the quality of life for middle-aged and elderly adults and promoting a healthy lifestyle for the elderly.

**Methods:** A total of 591 (men: 36.2%; women: 63.8%; age: above 50 years) middle-aged and elderly adults from five cities of Henan Province were selected as the research objects by convenient sampling. The self-efficacy, sports participation, and health promotion behavior scales were used for the questionnaire survey. Amos24.0 was used to test the structural equation model, intermediary function test, and bootstrap analysis. Results: The self-efficacy of middle-aged and elderly people positively impacted health promotion behavior. The path coefficient was 0.439. Sports participation played a partial intermediary role between self-efficacy and health promotion behavior ( $\chi^2/df = 1.785$ , root mean square error of approximation = 0.036, root mean square residual = 0.021, goodness-of-fit index = 0.967, comparative fit index = 0.976, Tucker–Lewis Index = 0.971) The proportion of intermediary effect was 26.34% (0.100, 0.225).

**Conclusion:** (1) Self-efficacy can significantly and positively affect health promotion behavior for middle-aged and elderly people; (2) sports participation plays a partial intermediary role between self-efficacy and health promotion behavior. From this point of view, we can enhance the self-efficacy of middle-aged and elderly people and improve their healthy life behavior by advancing sports participation. Thus, it provides theoretical support and practical guidance for promoting national health.

## KEYWORDS

self-efficacy, sports participation, health promotion behaviors, middle-aged, mediating effect

## Introduction

According to the demographic data released by the National Bureau of Statistics of China in 2020, people aged over 45 years account for about 42.6%, while those aged over 65 years account for about 13.5% of the total population (National Bureau of Statistics [NBS], 2021). By the end of 2050, it is predicted that over 480 million people in China will be over 65 years old (Yang, 2022). Regarding middle-aged people, the gradual decline in physiological function makes them more prone to cardiovascular and cerebrovascular diseases and various degenerative dysfunction diseases, and the heavy responsibilities from both family and society bring about severe mental conflicts, which makes their health conditions a tricky problem in social development (Zhang et al., 2011). In recent years, diseases caused by unhealthy lifestyles, such as cardiovascular diseases and malignant tumors, have become the leading factor in the death of humans (Feng, 2013). Studies have indicated that 60% of people's health and life span depend on their behaviors and lifestyles (Jiang and Wu, 2009). Consequently, we could effectively prevent chronic diseases and improve quality of life by improving lifestyles and health promotion behaviors (Chassaing et al., 2014; Burcelin, 2016; Jeong and Jang, 2016).

Health promotion behaviors refer to the health management activities for a healthier life that inspires people's potentiality of health and advances their physical and mental health (Hee, 2021). Baker (2007) developed six parts of daily health promotion behaviors, namely, self-actualization, health responsibility, physical exercise, nutritional diet, interpersonal support, and stress management. Health promotion behaviors might be influenced by care from family members, personal attitudes toward health, and physical exercise (Chu and Sang, 2019). According to Lee and Oh (2020), confidence in performing health behaviors, i.e., self-efficacy, plays a crucial role in influencing the decision-making of health promotion behaviors. Hence, people with a high level of self-efficacy would prefer healthy life behaviors.

Observed from the existing relative literature, self-efficacy might affect health promotion behaviors in four aspects: self-efficacy is an essential predictor of tobacco and alcohol withdrawal behavior (Keller et al., 2016); it has a positive effect on the behavior of chronic patients [e.g., control of blood sugar (Osborn et al., 2010), control of rheumatoid arthritis pain (Martinez et al., 2020)]; it can improve patient compliance with medication (Van Herpen-Meeuwissen et al., 2022); and it can promote adherence to physical exercise (Zhu et al., 2018). For patients with diabetes, self-efficacy is independent of exercise and diet (King et al., 2010). Studies on self-efficacy in health promotion have gradually become the research hotspot in the past few years with no prediction mechanism involved. There might be significant amounts of intervening variables in the influence of self-efficacy on the health promotion behaviors of middle-aged and elderly people. As an essential indicator, sports participation positively affects

health promotion behaviors. Wu and Liu (2013) held that self-efficacy is an essential predictor of sports participation. Lee and Oh (2020) found the full intermediate effect of sports participation when studying the effect of adolescent health literacy on health promotion behaviors.

In conclusion, studies have indicated that there is a positive correlation between self-efficacy and sports participation, and health promotion behaviors, but its internal mechanism remains unclear. The structural equation model (SEM) might be applied herein to analyze the intermediary role of sports participation in self-efficacy and health promotion behaviors to identify the internal mechanism of the influence of self-efficacy on health promotion behaviors based on the existing research results and practices and provide theoretical support and empirical data for comparison for the health management behaviors and disease prevention of middle-aged and elderly people to keep fit.

## Literature review and research hypotheses

### Influence of self-efficacy on health promotion behaviors

As proposed by the psychologist Bandura, self-efficacy refers to one's confidence in his/her abilities to achieve behavioral objectives in a particular field, which will directly affect one's behavioral motivation. Bandura (1997) suggested that self-efficacy plays an essential role in initiating and maintaining human behavior. First, people's lives are full of decisions on how to act and how long the action will last. Their judgment of self-efficacy determines their choice of social environment and behavior, i.e., individuals tend to choose what they feel they can handle but avert situations and tasks beyond their abilities (Erdem and Demirel, 2007). Second, self-efficacy judgment determines how hard and long a person will persist when he/she encounters an obstacle or unpleasant experience. If difficulties keep emerging, those who doubt their abilities will slacken off or even give up, whereas those with stronger self-efficacy will strive to tackle the daunting challenge (Panadero et al., 2017). These studies have demonstrated that self-efficacy is an essential factor in the completion of highly challenging tasks. A person with a high sense of self-efficacy tends to have more confidence in his/her abilities and more self-control in daily life.

The World Health Organization (WHO) defines health promotion as the process during which people can better control and improve their health (Lawrence and John, 1988). In 2009, the *American Journal of Health Promotion* identified health promotion as an art and science that helps people discover the synergistic effects between their core passion and optimal health, strengthens their motivation for optimum health and changes their lifestyles to approach the highest health level. Pender (1996) proposed a perspicuous and comprehensive definition based on the health promotion model, i.e., health-promoting

behaviors are individuals' long-term multidimensional activities to exhibit their optimal health conditions and realize self-fulfillment. Hence, the health-promoting model can improve people's quality of life (Kumar and Preetha, 2012).

Meanwhile, it is found that self-efficacy is a cognitive factor that affects people's health-promoting lifestyles, willingness, and motivation to perform healthy behaviors (Zhao, 2011). Luan et al. (2020) found that elderly people with a high level of self-efficacy are more confident in maintaining health and developing healthy living habits in their research on the elderly in urban and rural areas. The study of Jiang (2015) demonstrated that self-efficacy plays a positive role in sports participation, self-actualization, and pressure handling of patients with chronic cardiac failure. Based on the above analysis, this study puts forward the following hypothesis:

Hypothesis 1: The self-efficacy of middle-aged and elderly people exerts a significant positive impact on their health-promoting behaviors.

## Self-efficacy and sports participation

The initial definition of sports participation primarily reflects the state of an individual's external behavior in group activities manifested by the presence or absence of the body. With the development of the psychological perceptions of participants in sports participation, researchers have expanded the concept of sports participation to participants' cognitive and emotional states in group activities (Liu and Yu, 2005). The concept of participation emphasizes both external quantitative manifestation and internal qualitative requirements. In education, numerous scholars have proposed a new viewpoint about the definition and measurement dimensions of student participation, i.e., the degree of participation serves as an essential indicator of participation behavior. Westbrook and Oliver (1991) suggested that behavioral change is a three-stage process, i.e., "cognition-emotion-behavior." By summarizing previous research, Fredricks et al. (2004) classified learning participation into behavioral, emotional, and cognitive participation, each of which is not independent. Meanwhile, Chinese researchers have localized, generalized, and summarized the related theories. The research by Kong (2005) indicated that the definition of student participation primarily involves three dimensions, i.e., behavioral, cognitive, and emotional. The three-dimensional definition of student participation is comparatively recognized by academia and continues to be developed based on this. Given the above research on sports participation, the present study defines sports participation as the engagement level of middle-aged and elderly people in sports behavior, sports emotion, and sports cognition in sports activities.

Studies have indicated that self-efficacy and physical training behaviors are mutually beneficial (Zhang and Zha, 2017), i.e.,

self-efficacy maintains exercise intentions and behaviors, and regular exercise, in turn, helps improve self-efficacy. As related studies indicate, self-efficacy has influenced sports participation in the following aspects. First, self-efficacy affects people's behavioral intentions and attitudes toward sports participation (Wu and Li, 2016). Second, it influences the regularity and persistence of people's sports participation. The higher the level of self-efficacy, the more regular the exercise behaviors and the firmer the core belief that drives long-term physical exercise behaviors (Sheng et al., 2016; Dong et al., 2018). Notably, self-efficacy plays a remarkable role in people's sports participation. Based on the above analysis, this study puts forward the following hypothesis:

Hypothesis 2: Self-efficacy imposes a significant positive impact on sports participation.

## Sport participation and health-promoting behaviors

Regular exercise exerts a substantial impact on health promotion. The study by Eime et al. (2020) demonstrated that those in good health had regular exercise habits, whereas those with diseases did less exercise. Sports activities are planned and organized repetitive physical activities that aim at improving or maintaining people's physical fitness (Anang et al., 2019). Among the factors that affect the prevention of adult diseases, exercise, nutrition, and rest are essential. A previous study has demonstrated that regular sports participation will affect the perceived health status and the persistence of health-promoting behaviors (Morgan et al., 2016). Physical exercise is conducive to enhancing people's health awareness, forming a healthy lifestyle (Meng, 2013), and promoting the psychological and emotional regulation ability of sports participants (Wang et al., 2016; Brière et al., 2018). Moreover, the intervention of physical exercise exerts a significant impact on the health promotion behaviors of patients during treatment and recovery from chronic diseases (Dashtidehkordi et al., 2019). Based on the above analysis, this study puts forward the following hypothesis:

Hypothesis 3: Sports participation imposes a significant positive impact on health-promoting behaviors.

## The intermediary role of sports participation in the relationship between self-efficacy and health-promoting behaviors

As observed from previous studies, sports participation is an intermediary between individual cognitive ability and actionability. People with higher self-efficacy are likely to exhibit

a higher level of sports participation. [Lee et al. \(2020\)](#) found that sports participation imposes an intermediary impact on the relationship between health awareness and health-promoting behaviors. Therefore, the self-efficacy of middle-aged and elderly people might affect their health-promoting behaviors through the mediating effect of sports participation. Based on the above analysis, this study puts forward the following hypothesis:

Hypothesis 4: The sports participation of middle-aged and elderly people plays an intermediary role between their self-efficacy and health-promoting behaviors.

## Materials and methods

### Study design

Middle-aged and elderly people from five cities in the east, west, south, north, and middle of Henan Province (Shangqiu city, Jiaozuo city, Xinyang city, Anyang city, and Zhengzhou city) were selected as the research samples. The selected objects cover a wide range, and the sampling points are relatively scattered, which can better represent the overall situation of Henan Province. Inclusion criteria were (1) local permanent resident population  $\geq 45$  years old; (2) informed consent and voluntary participation in the study; and (3) have apparent language expression ability and reading ability and have no obstacle to communicating with investigators. Exclusion criteria were (1) serious language and hearing disorders, (2) serious mental illness patients, and (3) people with dementia who cannot precisely answer questions.

From September to November 2021, through the convenient sampling method, investigators conducted a questionnaire survey on middle-aged and elderly people who were engaged in leisure activities in the elderly activity centers, parks, and city squares of these five cities. In the research sample, the personal characteristics were extracted from four parts, namely, gender, age, education level, and economic status. Before the survey, they issued an "Informed Consent Form for the Survey." They observed that the informed and consent respondents returned the questionnaire immediately after filling it in the questionnaire.

According to the sampling standard developed by [Ghiselli et al. \(1982\)](#), if a survey is conducted on a scale, the sample size should be at least 10 times the total number of questions in the scale. The three scales applied in the present study consist of 59 questions. Hence, 590 valid data should be collected. There are 130 questionnaires distributed in each city and 650 in total. A total of 591 valid questionnaires, excluding 59 incomplete and dishonest ones, were retained. The effective rate is 90.9%.

The descriptive statistics of demographic information are shown in [Table 1](#). There are 214 male respondents, accounting

for 36.2%. There are 377 women, accounting for 63.8%. According to the WHO age classification standard, middle-aged people are defined as those over 45 years old, and elderly people are defined as those over 65 years old. All the samples in this study are over 50 years old. *Age grouping*: According to [Zhang \(2017\)](#), in his research, the standard that middle-aged and elderly people are divided into groups every 5 years old is adopted. The leading group is the educational level of high school/technical secondary school graduates. [Tan et al. \(2020\)](#) indicates that China has a large land, and the economic development between the east and the west needs to be balanced. The results of the economic status survey are as follows: 24 people are tough, accounting for 4.1%, and 12 people are complex, accounting for 2.0%, 482 people report general at most, accounting for 81.6%, and 73 people report wealthy, accounting for 12.4%.

### Research tools

The Self-Efficacy Scale was revised by [Wang \(2002\)](#). There are 10 questions in total, which features few questions and simple operation, referring to a one-dimensional scale adopting

TABLE 1 The basic situation of the respondents.

Variables	Category	Frequency	Proportion (%)
Gender	Men	214	36.2
	Women	377	63.8
Age	50–54 years old	110	18.6
	55–59 years old	122	20.6
	60–64 years old	231	39.1
	65–69 years old	76	12.9
	70–74 years old	16	2.7
	75–79 years old	26	4.4
	Over 80 years old	10	1.7
Education level	Primary school	26	4.4
	Junior middle school	99	16.8
	High school	250	42.3
	college	151	25.5
Economic conditions	Bachelor degree and above	65	11
	Very poor	24	4.1
	Poor	12	2.0
	General	482	81.6
	Rich	73	12.4

the 5-point scoring of the Likert scale with only the total scale score being calculated in the evaluation and a higher score representing a higher level of self-efficacy.

The Sports Participation Scale is based on the sports participation classification model developed by Snyder and Spritzer and refers to the sports participation scale formulated by Zou (2017). There are 13 questions which interpret the sports participation level from three dimensions—cognitive sports participation, emotional sports participation, and behavioral sports participation and adopt the 5-point scoring of Likert with higher scores representing a higher level of sports participation.

The Health-Promoting Lifestyle Profile-II, revised by Pullen et al. (2001) following HPLP, covers 52 items and six dimensions, namely, health responsibility, nutrition, physical activities, interpersonal relationships, stress management, and self-actualization, and adopts the 5-point scoring of Likert scale with higher scores representing better health-promoting behaviors, which was translated into Chinese by Shi and Li (2003). According to the study of Kim (2013), exercise and nutrition both belong to personal management behaviors; referring to the research of Kwon and Kang (2018), this study classifies exercise and nutrition as one factor.

Cronbach's  $\alpha$  coefficient of the Self-Efficacy Scale is 0.885, more significant than the benchmark of 0.7, and the composite reliability (CR) is 0.899, more significant than the benchmark of 0.6, implying good internal consistency. The average variance extracted (AVE) value is 0.531, which is more significant than the benchmark of 0.5. The above values conform to the research standards that Bagozzi and Yi (2011) and Joseph et al. (2012) proposed. According to the viewpoint proposed by Hu and Bentler (1999), the value of  $\chi^2/df$  should be less than 3 in a fit index of a good model, the value of the goodness-of-fit index (GFI), comparative fit index (CFI), Tucker–Lewis index (TLI) should be greater than 0.9, and the value of root mean square error of approximation (RMSEA) and root mean square residual (RMR) should be less than the standard of 0.08. The analysis results of confirmatory factor are  $\chi^2/df = 2.042$ , GFI = 0.987, CFI = 0.992, TLI = 0.998, RMSEA = 0.042, and RMR = 0.018.

As indicated by the confirmatory factor analysis results in Tables 2, 3, the scale has a good fitting, and the grading results have high reliability and validity. The Cronbach's  $\alpha$  coefficient of the sports participation scale is 0.832, and the three dimensions are 0.826, 0.779, and 0.846, respectively, which are greater than the benchmark of 0.7, implying good

TABLE 3 Reliability and convergent validity of the study constructs.

Construct	Item	Standard loading	CR	Cronbach's $\alpha$	AVE
Self-efficacy (SE)	SE1	0.619	0.899	0.885	0.531
	SE2	0.749			
	SE3	0.738			
	SE4	0.754			
	SE5	0.768			
	SE6	0.696			
Cognitive sports participation (CSP)	SE10	0.748			
	CSP1	0.790	0.842	0.826	0.641
	CSP2	0.775			
Emotional sports participation (ESP)	CSP4	0.784			
	ESP6	0.731	0.753	0.779	0.580
	ESP7	0.703			
	ESP8	0.773			
Behavioral sports participation (BSP)	BSP9	0.773	0.867	0.846	0.568
	BSP10	0.696			
	BSP11	0.729			
	BSP12	0.683			
	BSP13	0.739			
Self-actualization (SA)	SA1	0.794	0.848	0.786	0.529
	SA2	0.823			
	SA3	0.654			
	SA4	0.703			
	SA5	0.658			
	SA6	0.694			
Health responsibility (HR)	HR7	0.788	0.910	0.885	0.650
	HR8	0.724			
	HR9	0.658			
	HR10	0.850			
	HR11	0.829			
Sports nutrition (SN)	HR12	0.673			
	SN14	0.603	0.911	0.756	0.632
	SN15	0.717			

(Continued)

TABLE 2 Fitting indexes of confirmatory factor analysis.

Variables	$\chi^2/df$	GFI	CFI	TLI	RMR	RMSEA
Self-efficacy	2.042	0.987	0.992	0.998	0.042	0.018
Sports participation	1.994	0.975	0.983	0.977	0.041	0.023
Health promotion	1.650	0.940	0.974	0.970	0.033	0.025

TABLE 3 (Continued)

Construct	Item	Standard loading	CR	Cronbach's $\alpha$	AVE
	SN16	0.735			
	SN17	0.838			
	SN21	0.687			
	SN24	0.801			
Interpersonal relationship (IR)	IR25	0.842	0.912	0.861	0.675
	IR26	0.803			
	IR27	0.745			
	IR28	0.740			
	IR30	0.685			
Stress management (SM)	SM32	0.758	0.883	0.792	0.650
	SM33	0.827			
	SM34	0.725			
	SM36	0.693			

internal consistency. CRs are 0.842, 0.753, and 0.846, which are greater than the benchmark of 0.6, implying good internal consistency. The values of AVE are 0.641, 0.580, and 0.568. The confirmatory factor analysis results are  $\chi^2/df = 1.994$ , GFI = 0.975, CFI = 0.983, TLI = 0.977, RMSEA = 0.041, and RMR = 0.023.

The confirmatory factor analysis in **Tables 2, 3** indicates that the scale fits well. The Cronbach's  $\alpha$  coefficient was 0.9. Some items in this scale that might cause difficulties in language comprehension due to cultural differences or non-conformance to the focus of this study were deleted, and 36 items were applied to measure health-promoting lifestyles. There are four dimensions for the scale in this study, with Cronbach's  $\alpha$  coefficient being 0.813 and  $\alpha$  for dimensions being 0.861 (interpersonal relationship), 0.786 (self-actualization), 0.792 (stress management), 0.885 (health responsibility), and 0.756 (sports nutrition), which are all greater than the benchmark of 0.7. CRs are 0.848, 0.910, 0.911, 0.912, and 0.883, respectively, which are all greater than 0.7, implying good internal consistency. The AVE values are 0.529, 0.650, 0.632, 0.675, and 0.650, which are all greater than the benchmark of 0.5. The confirmatory factor analysis results are  $\chi^2/df = 1.650$ , GFI = 0.940, CFI = 0.974, TLI = 0.970, RMSEA = 0.033, and RMR = 0.025. As indicated by the confirmatory factor analysis of the scale in **Tables 2, 3**, all fitting indexes could meet the requirements.

## Data processing

The data into SPSS 24.0 and AMOS 24.0 analysis software were imported, the invalid questionnaires were removed, the

valid data were processed, and the score was calculated. The measurement tool's reliability, content validity, and construct validity were tested through reliability analysis, exploratory factor analysis, and confirmatory factor analysis. The standard distribution and parameter tests of relevant variables were conducted using descriptive statistics. After the standardized data processing, the direct influence of self-efficacy and sports participation on health promotion behaviors was investigated through correlation analysis, regression analysis, and other methods. The bootstrap method was used to repeatedly sample 5,000 times to obtain a 95% confidence interval of the coefficient and the mediating effect, and the indirect influence of self-efficacy on the health promotion behavior of middle-aged and elderly people was analyzed, i.e., the mediating effect of sports participation was investigated.

## Results

### Common method bias test

To test the possible standard method bias, Harman single-factor test was conducted on the data (Podsakoff et al., 2003). The principal component analysis results for rotation indicated that there were nine factors with an eigenvalue greater than 1, of which the first one had a variance of 27.70%, lower than the critical value of 40%, implying that there was no apparent standard method bias in this study. The hypotheses in this study might be tested following the latest test procedures for intermediate effect proposed by Wen and Ye (2014).

### Correlation analysis of self-efficacy, sports participation, and health promotion behaviors of middle-aged and elderly people

The results of Pearson product-moment correlation analysis applied herein indicate that the average score of self-efficacy is  $3.57 \pm 0.717$ , and scores for three dimensions of sports participation, including cognitive participation, emotional participation, and behavioral participation, are  $3.62 \pm 0.792$ ,  $3.62 \pm 0.771$ , and  $3.65 \pm 0.721$ , respectively. Those for the five dimensions of health promotion behaviors, including self-actualization, health responsibility, sports nutrition, interpersonal relationships, and stress management, are  $3.68 \pm 0.697$ ,  $3.79 \pm 0.672$ ,  $3.81 \pm 0.643$ ,  $3.81 \pm 0.665$ , and  $3.82 \pm 0.673$ , respectively. **Table 4** shows a positive correlation among all dimensions with correlation values between 0.161 and 0.468, implying that self-efficacy, sports participation, and health promotion behaviors of middle-aged and elderly people are highly related.

## SEM model building of self-efficacy and health promotion behaviors of middle-aged and elderly people

To verify the hypotheses, self-efficacy was applied as an independent variable, health promotion behaviors as a dependent variable, and sports participation as an intermediary variable in the SEM model in this study to build an equation model *via* Amos24.0. **Figure 1** shows the path coefficient between the estimated parameters of the SEM and variables. The model's goodness of fit was  $\chi^2/df = 1.785$ , RMSEA = 0.036, RMR = 0.021, GFI = 0.967, CFI = 0.976, and TLI = 0.971, respectively, implying that the model has a good fitting.

The percentile bootstrap method for deviation correction was applied herein to test the intermediate effect. The hypotheses were tested by calculating a 95% confidence interval after repeated resampling 5,000 times. According to **Table 5** and **Figure 1**, the coefficient of self-efficacy to health promotion behaviors in the model is 0.439 ( $p < 0.001$ , 95% confidence interval [0.179, 0.358], 0 excluded), hence, Hypothesis 1 is verified. The path coefficient of self-efficacy to sports participation is 0.609 ( $p < 0.001$ , 95% confidence interval [0.277, 0.441], 0 excluded); the path coefficient of sports participation to health promotion behaviors is 0.430 ( $p < 0.001$ , 95% confidence interval [0.286, 0.640], 0 excluded); and the intermediate effect value of self-efficacy on health promotion behaviors through

TABLE 4 Correlation results.

Variables	M $\pm$ SD	SE	CSP	ESP	BSP	SA	HR	SN	IR	SM
SE	3.57 $\pm$ 0.717	1								
CSP	3.62 $\pm$ 0.792	0.305**	1							
ESP	3.62 $\pm$ 0.771	0.400**	0.310**	1						
BSP	3.65 $\pm$ 0.721	0.246**	0.302**	0.341**	1					
SA	3.68 $\pm$ 0.697	0.368**	0.398**	0.399**	0.376**	1				
HR	3.79 $\pm$ 0.672	0.457**	0.347**	0.468**	0.427**	0.478**	1			
SN	3.81 $\pm$ 0.643	0.437**	0.397**	0.408**	0.422**	0.317**	0.320**	1		
IR	3.81 $\pm$ 0.665	0.406**	0.340**	0.379**	0.352**	0.324**	0.315**	0.361**	1	
SM	3.82 $\pm$ 0.673	0.353**	0.259**	0.348**	0.264**	0.183**	0.225**	0.316**	0.161**	1

\*\* $p < 0.01$ .

SE, self-efficacy; CSP, cognitive sports participation; ESP, emotional sports participation; BSP, behavioral sports participation; SA, self-actualization; HR, health responsibility; SN, sports nutrition; IR, interpersonal relationship; SM, stress management.

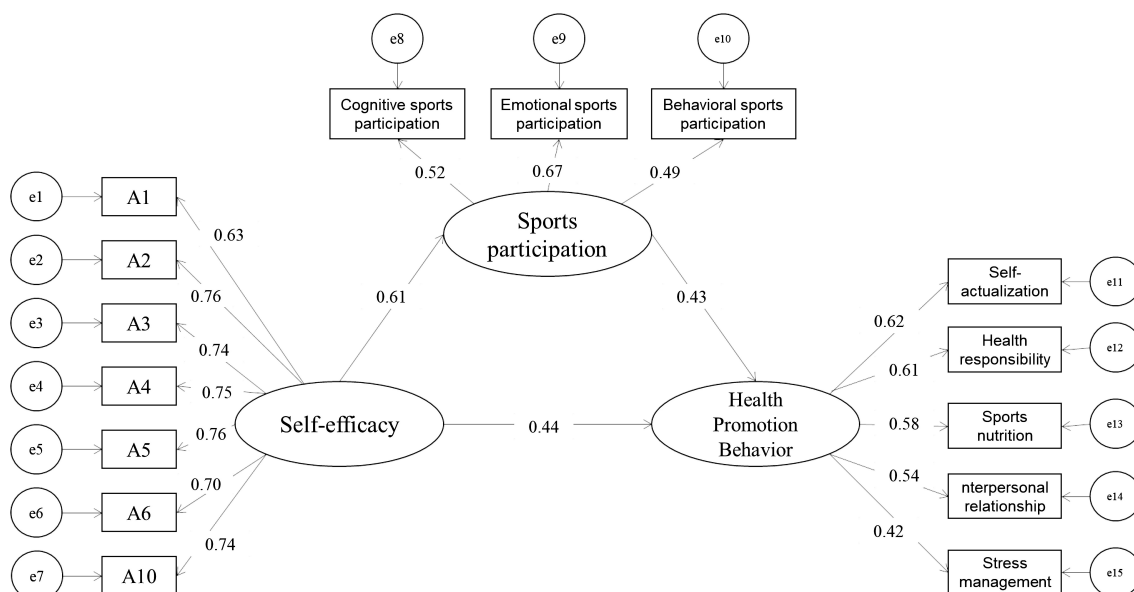


FIGURE 1  
Path analysis.

TABLE 5 Hypotheses model path and effect decomposition.

Classes	Path	B	S.E.	C.R.	95% confidence interval	Effect ratio
Direct effect	Self-efficacy → Health promotion behaviors	0.439***	0.043	6.059	0.179, 0.358	73.66%
	Self-efficacy → Sports participation	0.609***	0.043	8.316	0.277, 0.441	
	Sports participation → Health promotion behaviors	0.430***	0.091	4.873	0.286, 0.640	
Intermediary effect	Self-efficacy → Sports participation → Health promotion behaviors	0.157***	0.031		0.100, 0.225	26.34%

\*\*\* $p < 0.001$ .

sports participation is 0.157 ( $p < 0.001$ , 95% confidence interval [0.100, 0.225], 0 excluded). Given the above, Hypotheses 2–4 are supported, i.e., sports participation plays an intermediary role in the effect of self-efficacy on health promotion behaviors, which accounts for 26.34% in the total effect, i.e., 26.34% of the total effect of self-efficacy on health promotion behaviors are realized through sports participation, implying that sports participation plays a partial intermediary role in the effect of self-efficacy on health promotion behaviors.

## Discussion

### Effect of self-efficacy on health promotion behaviors of middle-aged and elderly people

According to the research results, self-efficacy had a significant positive effect on health promotion behaviors for middle-aged and elderly people, i.e., the higher the self-efficacy of middle-aged and elderly people, the higher level of their health promotion behaviors, which verifies Hypothesis 1 and is consistent with the conclusion of Fisher and Kridli (2014) and Luan et al. (2020), who found in their research on the elderly with osteoporosis in the community that the elderly with a high level of self-efficacy have a more balanced diet and more regular sports performance (Li and Chen, 2005). As indicated by the survey of 4,040 villagers aged 40–69 years in Wanxi, Anhui province, by Liang et al. (2016), self-efficacy could predict health behaviors, i.e., villagers with higher self-efficacy are more confident in keeping healthy and more persistent in healthy behaviors. Studies on the effect of self-efficacy on healthy lifestyles have indicated that self-efficacy is the essential influencing factor in health promotion lifestyles and health self-management (Feng et al., 2014; Zheng et al., 2020). Self-efficacy refers to people's confidence in judging whether they can complete a specific task. Hence, it is an important influencing factor on personal behaviors, i.e., a higher level of self-efficacy leads to higher self-esteem and confidence, rational cognitive behavior and self-assessment, and increased success rate (Zhao et al., 2014). Therefore, people with higher self-efficacy are more likely to overcome difficulties in daily life, control their behaviors, and develop healthy life behaviors.

### Mediating effect of sports participation between self-efficacy and health promotion behaviors of middle-aged and elderly people

Structural equation model analysis has indicated that self-efficacy directly affects health promotion behaviors and indirectly affects them through sports participation. Meanwhile, bootstrap results show that the intermediate effect of sports participation in the effect of self-efficacy on health promotion behaviors accounts for 26.34% in a 95% confidence interval with  $p < 0.001$ , which verifies its significant indirect effect, hence, Hypotheses 2–4 are true. Yang (2019) and Arribas et al. (2020) found that self-efficacy has a significant positive effect on sports participation, and Wu and Liu (2013) held that self-efficacy is an essential predictor of people's attitudes toward exercise, which are consistent with the results of this study. Self-efficacy is generally regarded as a subjective judgment of an individual about whether he or she could successfully engage in a particular behavior and about his or her confidence in getting things done. Therefore, positive self-efficacy is decisive in promoting exercise and improving exercise persistence. Middle-aged and elderly people with high self-efficacy might be more confident in keeping exercise and bravely face the difficulties in sports participation.

Furthermore, studies have indicated that sports participation could predict several variables of living conditions, including positive life attitudes (Baldwin et al., 2013), living habits (Kostecka et al., 2017), and health promotion behaviors (Lee and Oh, 2020). Su et al. (2018) held that exercise with a resistance band could improve the health promotion lifestyle and health-related physical fitness of the elderly. Exercising for an hour and a half to 2 h daily is conducive to advancing self-actualization, dietary habits, and stress management in health promotion behaviors (Oh, 2011). Based on the research of Fu (2017), the longer the years spent on tennis participation, the higher the level of nutrition and health responsibility in health promotion behaviors, implying that the lifestyle of the elderly is healthier and more reasonable when they do exercises for more years. The study conducted by Kim (2010) on the difference between the exercise frequency of adult females in commercial fitness centers and their health promotion behaviors indicated that those who exercised more than three times a week showed

a significantly higher level of health promotion behaviors on the dietary habits, exercise, personal hygiene, disease prevention, interpersonal relationships, and stress management than those who exercised less than three times a week, which is consistent with this study. The research on the effect of physical activity level on chronic diseases of some Chongqing residents carried out by Ding (2016) indicated that physical activity level has a significant positive correlation with the morbidity rate of diabetes, dyslipidemia, and metabolic syndrome.

The habit of sports participation is developed through long-term physical exercise. Middle-aged and elderly people often participate in leisure activities because they have experienced self-actualization, developed their potential, and obtained a sense of accomplishment and emotional satisfaction through physical exercise (Zheng et al., 2020). Such improved self-actualization will affect the improvement of health promotion behaviors. Therefore, sports participation is closely related to health promotion behaviors. Specifically, sports participation could positively influence the healthy living habits of middle-aged and elderly people. Given the results of previous studies and this study, the author believes that we should organize and plan some popular sports experience activities while vigorously promoting and advocating physical exercises for middle-aged and elderly people to get more of them to participate in physical exercise and develop healthier behaviors. However, other studies have pointed out that the greater the intensity of exercise and the longer the exercise time will reduce people's happiness and bring psychological burden to exercise participants. Therefore, for middle-aged and elderly people, proper exercise can promote a healthy lifestyle (Hu, 2019).

This study has verified that self-efficacy could directly or indirectly predict health promotion behaviors with sports participation as an intermediary variable. Sports participation plays an intermediary role as an essential bridge between self-efficacy and health promotion behavior. Self-efficacy might affect the level of sports participation of middle-aged and elderly people and acts as a positive predictor of health promotion behaviors. According to the self-efficacy theory, improving self-efficacy will improve the sense of self-worth, self-confidence, and sports motivation to meet their own psychological needs to adhere to physical exercise more (Yang et al., 2020). Sports participation might improve the health promotion behaviors of middle-aged and elderly people with a high level of self-efficacy who had a positive emotional experience of physical exercise in the past and are satisfied with the pleasure they gained and more active in participating in sports activities.

As one of the health promotion behaviors, physical exercise makes the participants enjoy physical and mental happiness and helps them promote physical and mental health, build harmonious interpersonal relationships, and realize self-fulfillment, thereby comprehensively improving their health promotion behaviors through implicit and explicit behaviors. Hence, comprehensively enhancing the health promotion

behaviors of middle-aged and elderly people could improve their self-efficacy and sports participation, which is also an effective way to improve their health promotion behaviors. More importantly, the impact of self-efficacy on health promotion behaviors might be complicated due to various internal and external factors. For example, the presence of chronic diseases and the awareness of health knowledge (Holden et al., 2022) and the surrounding built environment (Wang et al., 2020). Therefore, it is suggested that future studies emphasize moderating and intervening variables to lay a practical foundation for a comprehensive interpretation of the influence of health promotion behaviors of middle-aged and elderly people.

## Theoretical and practical implications

### Theoretical contribution

It enriched and extended the application fields of the theoretical model of health behavior promotion. Although self-efficacy was initially used to explain health promotion behaviors in people with chronic diseases (Keller et al., 2016), it has been gradually expanded and applied in areas such as medication adherence and health behavior control (Martinez et al., 2020). However, the impact of self-efficacy on health promotion behaviors has yet to be explored from the perspective of the level of sport participation in healthy groups. Besides, the mediating effects of sport participation have yet to be examined. The study constructs a model of factors affecting health promotion behaviors, elucidates the mechanisms by which self-efficacy influences health promotion behaviors, and provides new empirical evidence on the critical role of self-efficacy in middle-aged and elderly populations. Furthermore, it enriches the existing research literature on self-efficacy.

China is currently encountering the grave challenge of accelerating the aging process. It is urgent to promote healthy aging. Based on this reality, the study empirically verifies the mediating role of sport participation in enhancing health promotion behaviors among middle-aged and elderly adults. It also explores the impact of middle-aged and elderly adults' sport participation on their health promotion intentions, making a theoretical contribution to improving the health status of elderly adults.

### Practical implications

It is clear from the results that self-efficacy significantly affects health promotion behaviors. Therefore, we should enhance the self-efficacy of middle-aged and elderly adults,

which is mainly influenced by four factors. They are direct experience, alternative experience, verbal persuasion, and other psycho-social factors, respectively (Fan et al., 2014), for example, setting up behavioral shaping, alternative experience, motivational evaluation, social and family support, etc., to form an integrated “cognitive-motivational-emotional-behavioral” as an integrated intervention program to positively influence the self-efficacy of middle-aged and elderly people from different entry points. The government, community organizations, and elderly care institutions can help the elderly form a scientific awareness of health, change their poor lifestyles, and reduce the pressure of medical expenses through publicity and education.

This study also constructs the mediating role of middle-aged and elderly people's sports participation in self-efficacy and health-promoting behavior. Government management organizations can continue to promote fitness for all, use sports participation as an essential means to enhance people's healthy lifestyles, and use public places such as communities, city squares, and parks to create dedicated spaces and fixed places for sports participation. Besides, they also organize sports events to enhance residents' sports participation enthusiasm. The act of sport should be made a part of life to enhance people's health-promoting behaviors and promote healthy aging.

## Limitations of the study and future research directions

There are also some limitations to this study. First, due to the limitations of actual conditions, this study adopts the convenience sampling method and collects 591 samples in five cities in Henan Province. Therefore, this study lacks a sample in the age range of 45–49 years. Moreover, it only focuses on people who have physical training in parks, leisure centers, etc., who are generally healthy, with a high level of sports participation and exercise motivation. In future research, the differences in survey samples should be considered, the number of samples should be further increased, and the scope of research should also be expanded to improve the value of related research. Second, this study uses self-reported questionnaires to collect data. The limitations of a cross-sectional study make the causal relationship between variables unreliable. Therefore, a chase experiment or experimental study paradigm can be employed in future studies to verify the research results further. Finally, this study verifies the effect of self-efficacy on the health promotion behavior of middle-aged and elderly people, in which sports participation plays a mediating role. The health promotion behavior of middle-aged and elderly people is complex, and the influencing factors are diversified. For example, people's health level (Vella et al., 2019) and health literacy (Lee and Oh, 2020) significantly influence health promotion behavior. In terms of the external environment, the surrounding environment (Yan et al., 2018)

can also influence health promotion behavior. Therefore, it is suggested that future studies can further explore other variables that affect the health promotion behavior of middle-aged and elderly people.

## Conclusion

(1) As indicated by the empirical tests, self-efficacy could significantly and positively predict health promotion behaviors of middle-aged and elderly people. Improving the level of self-efficacy could advance the level of health promotion behaviors of middle-aged and elderly people.

(2) Self-efficacy could positively predict the level of sports participation; sports participation could positively predict health promotion behaviors. The SEM built in this study has verified the partial intermediary role of sports participation, i.e., self-efficacy affects health promotion behaviors in the following two ways: directly affecting health promotion behaviors and indirectly affecting them through sports participation.

## Data availability statement

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

## Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of Anyang City Third People's Hospital in China. The patients/participants provided their written informed consent to participate in this study.

## Author contributions

NC was the leader of the research group that conducted the study and organized the database. JZ assisted in analyzing and interpreting the data and participated in the revision of the manuscript. ZW oversaw the study. All the authors read and approved the final version of the manuscript.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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