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COMMENTARY

Admirable effort for an ambitious goal

This is a large-scale study involving 1754 participants, aged 60 or above, recruited from different counties representative of the rural parts of China. The authors have intended to "explore the internal mechanisms by which depression influences life satisfaction among the elderly, as well as the mediating and moderating effects of ostracism and economic income, respectively, in a sample of rural older adults" (Shao *et al.*, 2022). This is quite an ambitious goal, given that arguably depression is the outcome of a plethora of biopsychosocial factors and their complex interplay, while depression itself is known to further affect and influence its contributing factors – such as negative interactions and perceived well-being – in an ongoing manner.

The authors reported that their data had been derived from the Renmin University of China's "Thousands of People and Hundreds of Villages" project in 2019. It would be of interest to the readership to have some background information on this project. It is an innovative and collaborative project implemented by the Renmin University of China, which began since 2012. During the summer holidays, over a thousand students and staff members from the university would visit several hundred administrative units across dozens of counties all over the country in different geographical regions on a stratified and randomized basis. They would interview thousands of families and individuals in these rural areas and perform in-depth socioeconomic, demographic, and associated investigative field work and carry out social services. The comprehensive data collected, in the form of questionnaires, would become the basis for prolific reports, research and strategic interventions every year.

In this context, the reader can gain a better understanding of the need for the authors to utilize simple and short validated tools to assess their areas of interest. As the majority of older rural inhabitants may only have received a few years of education – as confirmed from the demographics of the recruited subjects in this study (Table 1, Shao *et al.*, 2022) – plus the fact that many populations in remote regions still use their provincial dialects which pose a language barrier in interviews, it would pose immense practical difficulties to the interviewers if they had to complete lengthy questionnaires with complex jargons over the limited time frame. Hence, in an attempt to tease out the factors associated with depression in this elderly population, the authors have chosen to focus on several key aspects, namely life satisfaction, ostracism, and economic income.

Readers may notice that, instead of enquiring about the subjects' monthly household incomes in staggered groups – for example, <RMB 500, RMB 500–750, etc. – in demographic data collection, the authors have asked the participants to subjectively rate their incomes by Likert scale. The authors have explained in the paper that "perceived" rather than "actual" economic income has been used because the sources of income for the elderly in rural China are limited and the objective economic gap is small (Shao *et al.*, 2022) and because Ball and Chernova (2008) described that changes in relative income have much larger effects on happiness than changes in absolute income. Therefore, readers should make a mental note that "economic income" refers to "perceived economic income" in the article, and like other self-rated attributes, may be affected by cognitive bias (e.g. negative cognition or delusion of poverty in the depressed).

With a clearer idea of the obstacles faced by the data collecting teams and their valiant efforts in managing to gather such useful information from a very well-represented rural elderly population notwithstanding, the reader may observe that the authors have made adaptations to the validated scales administered to the subjects. An example would be the Ostracism Experience Scale (OES) – where an "abbreviated version" was composed by selecting two items with the highest factor load from each dimension of the Chinese version of the scale (Shao *et al.*, 2020), totalling a "mini-OES" with four items. The psychometric properties of the "mini-OES" thus composed would still, in all likelihood, be valid, since the Chinese version of the OES had been validated by the same authors in their 2020 publication (Shao *et al.*) with high alpha coefficients in each dimension and in the total score. It might be more precise to consider quoting the factor load of the chosen items from the original paper, in addition to quoting the Cronbach's alpha for the total OES – which was not the tool used in this study.

Other examples of minor imperfections in this study would be the choice of diagnostic tools. The research on the OES' psychometric properties

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(Carter-Sowell, 2010) was originally based on young adults (mean age around 19–20) and the way the young view ostracism may be quite different from an elderly population. The authors have managed to get around the age difference in the research populations as their previous study (Shao *et al.*, 2020), which validated the Chinese version of the OES, had also recruited over 1700 participants with a mean age of 18–85. However, the implications and significance of ostracism in the depressed elderly go beyond the elderly's subjective perception of "isolation and exclusion" as it reflects on the possible lack of physical care and leaves the individual at risk of negligence. The picture is much more complex when one factors in the care issue – which of course is also linked to the other two factors being studied in this paper, i.e. "perceived" economic income and life satisfaction. As for the use of the Chinese version of the 21-item Depression Anxiety Stress Scales (DASS-21), the authors are aware of its limitations since it has been validated in a young Chinese population (Gong *et al.*, 2010) and is not a specific tool for the elderly. Once again, although Antony *et al.* (1998) have proved that the internal consistency and concurrent validity of the 42-item Depression Anxiety Stress Scales (DASS) and DASS-21 were in the acceptable to excellent ranges, fastidious readers may find it easier if it was stated that DASS-21 was the scale used in this study.

Due to the complex stratified multi-stage sampling structure inherent to the data collection during the "Thousands of People and Hundreds of Villages" project, the authors have mentioned the possible bias in the results from performing moderation and mediation analyses based on Hayes' (2013) regression-based approach. In spite of all the aforementioned points, I think it is an admirable endeavor on the part of the authors to gather such massive information from 1754 well-represented rural subjects over China's vast landscape in an extremely large study, the likes of which are fast becoming ultra-difficult, if not impossible, in the COVID-19 pandemic era. Besides, the authors and their data gathering teams have tried to do their best under the circumstances; while the time rationed for each interview precludes a formal cognitive assessment, the interviewers attempted to screen the subjects for cognitive impairment by conducting face-to-face sessions to fill up the questionnaires and excluding subjects with suspected neurocognitive impairment to minimize the cognitive bias in the results.

The findings of this study are quite interesting, though one needs to be careful in applying hypotheses to them as no causality or etiological relationship could be derived from a cross-sectional study. The authors found that ostracism played a partially mediating role between depression and life satisfaction, which was not surprising. From the observation that (perceived) economic income had significant moderating effect on the paths from depression to life satisfaction and from ostracism to life satisfaction for low (− 1 standard deviation) and high (+ 1 standard deviation) levels of (perceived) economic income, the authors drew the conclusion that (perceived) economic income might alleviate the negative effect of depression on life satisfaction among those with lower incomes; however, for the elderly with reduced life satisfaction due to ostracism, their perceived economic income was not observed to have any moderating effect on the negative effect on life satisfaction.

Therefore, it seems that for the elderly who see themselves as more well-off and financially comfortable, non-monetary factors such as social needs appear to have a stronger association with mood symptoms and life satisfaction. This would echo Ball and Chernova (2008) in their paper stating that the effects of both absolute and relative income on happiness were small when compared to the effects of several non-pecuniary factors. The authors then proposed that one of the underlying theories might be that "for the elderly who have reduced life satisfaction due to ostracism, economic income no longer compensates for the damaged interpersonal relationships and the negative effect on life satisfaction." Attractive as this may sound, this theory runs the risk of assuming that all factors and mechanisms underlying elderly depression are already known, observed and accounted for. This may also oversimplify matters as life satisfaction, economic income, and ostracism are hardly "independent variables" but are interrelated in intricate ways. The authors are also aware of this, and later in the discussion stated that perhaps "there are many other factors on life satisfaction besides economic income", that "more factors should be considered in the future" and concluded that "future studies should consider building a more complete theoretical model on the relationship between depression and life satisfaction among the elderly" (Shao *et al.*, 2022) – which I wholly agree.

To conclude, this is a large study aiming to explore and identify the factors associated with elderly depression in rural China. Although the exact underlying mechanisms are yet to be determined, the authors have come up with several hypotheses of interest and have supplied new ideas on strategic interventions and treatment. I would like to congratulate the team on the enormous effort and a very good start for working toward their final goal.

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Conflict of interest

None.

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