Reviewer's report

Title: Item response analysis of the Geriatric Anxiety Inventory among the elderly in China: Dimensionality and differential item functioning test

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Reviewer: Philippe Landreville

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The topic of this manuscript is important. The factor structure of the GAI has been the subject of several studies and results are rather inconsistent. The dominant trend is a unidimensional structure although more complex structures have been identified. In this new study, the authors stand out from their predecessors by the use of a Mokken scale analysis. The results support the unidimensional structure of the GAI. In addition, the results of logistic regression analyses suggest measurement invariance of this inventory across individuals with different somatic diseases and sex.

In my opinion, the manuscript's contribution to current knowledge should be better demonstrated. Admittedly, several important studies are cited but not that of Molde et al. (2019). Using data from 3,731 older adults from 10 national samples, their results, based on bifactor modeling, also support the unidimensional structure of the GAI while acknowledging the presence of multidimensional factors. Moreover, the authors' argument in favor of their study is the superiority of a Mokken scale analysis compared to traditional methods such as exploratory factor analysis and principal component analysis. However, this superiority is not actually demonstrated by the authors whose conclusions are in fact identical to those of several other researchers. If the interest of their study lies in their analysis of the data, they should demonstrate how it sheds new light on the problem under study. It would be more convincing, for example, to apply a Mokken scale analysis to data from previous studies reporting multiple factors and to find a unidimensional structure. Finally, the authors do not elaborate on the relevance of examining the measurement invariance as a function of sex and health. This should be clarified.

An important weakness is that the text, in its' current form, does not provide a sufficiently clear and accessible explanation of the nature and interpretation of the analyses. In particular, I suspect that many readers interested in the GAI are not very familiar with Mokken scale analysis and will have difficulty judging the quality of the study and if conclusions are adequately supported by the data shown.

The discussion is adequate but does not sufficiently emphasize the importance of this new study. For example, it would be important to interpret the disparities between the results of the different studies and to explain why exactly Mokken scale analysis should be recommended in future studies. As a clinician, I would also appreciate that the authors discuss the implications of a unidimensional structure for our understanding of anxiety in older adults and what the GAI actually measures compared to other similar instruments.
Finally, in terms of form, several portions of the text are difficult to understand and I encourage the authors to revise grammar and verb tense. In addition, the style of citations in the text alternates between numbers in brackets (e.g., [17]) and the year of publication (e.g., Márquez-González et al. (2012)). It should be standardized according to the journal's requirements.

References

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

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