Reviewer’s report

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

**Version:** 0 **Date:** 04 Mar 2019

**Reviewer:** Helge Molde

**Reviewer's report:**

Reviewing manuscript entitled "Item response analysis of the Geriatric Anxiety Inventory among Chinese old adults: Dimensionality and differential item functioning test".

BGTC-D-19-00037

Thank you for inviting me to review this paper. I found it interesting and easy to follow. The study further enhances our knowledge regarding the dimensionality and psychometric properties of the Geriatric Anxiety Inventory (GAI). In this respect it does well.

I have, though, some comments:

Major:
1. Language and use of past tense / present tense throughout the manuscript. This the editor may clarify, but several sections of the paper is written in past tense, while I was expecting present tense. Like on line 20 in the introduction "Though anxiety disorders were highly common among older adults, screening instruments for the aged left much to be desired [3]." and "Though anxiety disorders were highly common among older adults, screening instruments for the aged left much to be desired [3]." (line 53-54: Examining factor structure). So I wonder, have the manuscript been language edited before submission? If not, this should be done.

2. In their tutorial paper ("A tutorial on how to do a Mokken scale analysis on your test and questionnaire data"), Sitsma and van der Ark (2017) warns about using automated item selection as a stand alone procedure, as AISP does not assess monotonicity. Gross violations will often be detected using AISP, but it is not always so (see page 147, section 2.4.2. in the tutorial). Also, local independence of the items should be evaluated separately (from AISP). Hence, this should also be reported.

3. Some supplementary material should be provided like, graphs of monotonicity and scalability and. item violations, like presented in Jan Stochl, Peter B Jones and Tim J Croudace. (2012) Mokken scale analysis of mental health and well-being questionnaire item responses: a non-parametric IRT method in empirical research for applied health researchers, BMC Medical Research Methodology. https://doi.org/10.1186/1471-2288-12-74

4. Explain the crit values as it is referred to in the Mokken evaluation.
5. A major update on the dimensionality of the GAI using 10 national samples has been recently published. The reference is: Molde et al. (2019). A cross-national analysis of the psychometric properties of the Geriatric Anxiety Inventory (GAI). The journals of gerontology. Series B, Psychological sciences and social sciences 2019. The findings here should be referred.

Minor:

In table 1, one should present percentages as well as proportions.

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

Yes

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.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

ANSWER: NO

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ANSWER: NO

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