Author's response to reviews

Title: The Beijing Version of the Montreal Cognitive Assessment as a Brief Screening Tool for Mild Cognitive Impairment: A Community-based Study

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Author's response to reviews: see over
Dear editor,

We are resubmitting our paper entitled “The Beijing Version of the Montreal Cognitive Assessment as a Brief Screening Tool for Mild Cognitive Impairment: A Community-based Study” (MS: 1100918463663332) as invited.

Your comments and those of the reviewers were very helpful to further improve our manuscript in the second-round of revision.

In current version, we added adjusted MoCA-BJ and MMSE scores, and adjusted p-values in both Table1 and Table2. Also, we made some changes in the presenting order of results as well as in the logic and integrity of discussion. We also invited a fluent English speaking colleague to help with the language editing.

Details on the changes are provided below. For clarity, we numbered the reviewers’ comments in the order that they appeared in the review.

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Reviewing 1
1. In the Methods (p. 7), the authors note that “Arabic numbers” were used for the auditory vigilance task. Since presumably those numbers were heard, as opposed to read, but study participants, it would seem that the “Arabic” descriptor is unnecessary and confusing.

Thanks for pointing this out. We have deleted the word “Arabic” in this version.

2. In “Procedures and Participants,” reference is made to other (unspecified) neuropsychological instruments (p. 8). Did the results of these instruments affect group assignment? If so, which tests and how they affected group assignment should be included. If not, the reference to other neuropsychological testing could probably be eliminated. Additionally, the correct name for the GDS is the “Global Deterioration Scale,” not the “Global Degenerative Scale” (p. 8).

The other neuropsychological tests (e.g., paired-associate learning, Rey auditory verbal learning, verbal fluency, etc.) did not affect the group assignment, so we deleted the phrase “and others” in this version.

We corrected the name for the GDS. (p.8)

3. The word “District” is spelled incorrectly multiple times in the “Data Collection” section of the Methods (p. 7).

We apologize for the typos, and have corrected the spellings of “district” throughout the manuscript.

Discretionary Revisions:
1. In the first paragraph of the Background (p. 4), the authors assert that “diagnosis
and monitoring of MCI could be an effective way for early detection and decelerating the progress of dementia.” I am not sure that the case can be made yet that the identification of MCI leads to “deceleration” of progress to dementia at this point, especially in the absence of any proven therapeutic interventions.

We changed “monitoring” into “intervention”. It has been proved that MCIs have cognitive plasticity and certain kinds of interventions could improve MCIs’ cognitive ability which could somehow decelerate the progress of MCI converting to dementia (please refer to recently published meta-analysis and systematic review regarding cognitive interventions on MCI: Li et al., 2011; Simon, Yokomizo, & Bottino, 2012).

2. In the first paragraph of the Background (p. 4), the authors also state that the MMSE is “relatively insensitive to MCI.” The data presented in this manuscript suggests that the MoCA-BJ, in their hands, is essentially equivalent to the MMSE for distinguishing MCI from normal cognition. Therefore, it is arguable that that the statement in the Conclusion (p. 18), that the MoCA-BJ is an “acceptable” screening tool, still overstates it utility (even though the authors have already watered down this statement relative to the original version of the manuscript). Since the MMSE can be administered more quickly and easily than the MoCA, one view would be that, in this population, it might be the superior screening tool.

We changed the statement of MMSE “relatively insensitive to MCI” to “less sensitive”, and remain the general conclusion that the MoCA-BJ is an “acceptable” screening tool. The reasons for such revision are: firstly, MMSE is also an acceptable screening tool for MCI detection though it is not ideal; still it has been used as one of neuropsychological tests for MCI detection, especially in early practices. Secondly, although our results did not show the current version of MoCA-BJ had significant advantage over MMSE, with the potential modifications of those items addressed in this manuscript, MoCA-BJ will have more room for improvement. Therefore, we could not agree with the conclusion that MMSE is the superior screening tool in this population is suitable for the manuscript, whereas, in the end, we believe after future adaptations, MoCA-BJ would be the superior screening tool for MCI detection in Chinese population.

3. As stated in my comments on the original version of the manuscript, the MoCA was designed to distinguish cognitively impaired elderly (either MCI or dementia) from cognitively normal elderly- and the original test was never designed to discriminate MCI from dementia. The authors state in their response that the focus of the current manuscript is to detect MCI, and their inclusion of a small dementia group does not seem to add much additional insight. Given the small size of the dementia group, perhaps it could be eliminated from the manuscript altogether without affecting its overall impact.

We do agree that the sample size of dementia group is small and have acknowledged this as a limitation in last revised version, and also agree that our focus is to detect
MCI. However, we still think including dementia group has its own value. First, it is a community-based study. We would like to give the whole picture of the composition of the population. Second, as mentioned in our last response letter, we also analyzed seven cognitive domains of MoCA in differentiation of MCI/NC and Dem/MCI separately, from which we could discuss the disease progress as from normal aging to MCI & from MCI to dementia, that is episodic memory was found to be the earliest and main affected domain which is discerned from the differentiation of MCI/NC, whereas with the disease progression, more basic cognitive functions declined more aggressivly than memory which is observed from the differentiation of Dem/MCI.

4. The Results may read more logically if the global MoCA-BJ data, which are the primary results mentioned in the Abstract, are presented prior to subanalyses of individual cognitive domains of the MoCA-BJ.

We moved global MoCA-BJ data forward to be prior to regional difference results. But we think it would be appropriate to report the psychometric properties of the screening tool/ MoCA-BJ which include sub-analyses of individual cognitive domains as part of the internal consistency results, before presenting the global results derived from using this tool. Therefore we still keep “Sensitivity and Specificity of the MoCA-BJ for MCI detection and its comparison with the MMSE” section after the “Psychometric Properties and Item Analysis of the MoCA-BJ” section.

5. The “Applicability if the MoCA-BJ in Different Regions of Beijing” section in the Results (p. 12) could be shortened significantly by referring readers to the tables (i.e. not recapitulating the findings in the text) and simply reporting that after statistical adjustments for demographic differences, there were no regional effects. Furthermore, the inclusion of MoCA and MMSE differences between regions in Table 2 seems a little misleading given the very different demographic compositions of the regions. I appreciate that the authors explored the issue of using more demographically sensitive cut-points and found no improvement in the utility of the MoCA-BJ for predicting group identity. Given the strong demographic effects on MoCA scores however, explicitly mentioning this finding in the Discussion would help readers interpret the overall results of this manuscript.

We appreciated your suggestion and deleted large amount of repeated content in the text by simply referring readers to the table 2.

Moreover, following Reviwer 2’s suggestion, we have added age- and education-adjusted MMSE and MoCA-BJ in both Table 1 and Table2, which will give the readers a more unbiased picture and avoid the possible misleading in the last version. In addition, we did explicitly mention in the discussion section (at Page 15 highlighted in YELLOW) as such “After adjusting for the demographic confounding variables (i.e., age & education), the correlations between the regions and the MoCA-BJ performances disappeared, suggesting an equivalent applicability of the MoCA-BJ in both urban and rural populations”.

6. In the Discussion (p. 17), the authors distinguish their study from the Lu et al study by stating that they used more stringent criteria beyond just the CDR. How do the current study’s results change if the group assignments are based simply on CDR? Would the prevalence of MCI and/or discriminative abilities of the MoCA-BJ change?

In current study, if the group assignments are based solely on CDR, the prevalence of MCI becomes much higher (above 40%), and the AUC gets lower (0.63).

**Reviewing 2**

1. The authors did not added age- and education-adjusted MoCA and MMSE in Table1. The reason for this suggestion is because statistically significant between-group differences were found for age and education. The right approach is to use multivariate linear regression model with age and education as covariates in the model to obtain least-square means for MoCA or MMSE. Unadjusted MoCA and MMSE should be kept as it is in the table. Two additional rows of adjusted MoCA and MMSE should be added.

We highly appreciate the detailed instructions and apologize for the misunderstanding about this issue during last round revision. We added the age- and education-adjusted MoCA and MMSE in Table1, and we also reported p value obtained from non-parametric analysis of covariance with adjustment for age and education in the same table (p.23).

2. The authors did not added age- and education-adjusted MoCA and MMSE in Table2. The reason for this suggestion is because statistically significant between-group differences were found for age and education. The right approach is to use multivariate linear regression model with age and education as covariates in the model to obtain least-square means for MoCA and MMSE. Unadjusted MoCA and MMSE should be kept as it is in the table. Two additional rows of adjusted MoCA and MMSE should be added.

We have added the age- and education-adjusted MoCA and MMSE in Table2, and we also reported p value obtained from non-parametric analysis of covariance with adjustment for age and education in the same table (p.24).

Thank you very much for your time and efforts on our paper. We look forward to hearing from you soon.

Sincerely yours,

Juan Li