Reviewer’s report

Title: Interactions between Social/behavioral Factors and ADRB2 Genotypes May be Associated with Health at Advanced Ages in China

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Reviewer: Alexander Kulminski

Reviewer’s report:

This is nicely written paper showing that synonymous coding polymorphisms in the ADRB2 gene may be associated with health outcomes and interact with social factors in older Chinese population.

Minor comments:

1) Introduction, page 5, last paragraph. The statement that the effect of genes at advanced ages becomes more pronounced is not entirely correct. Many other studies (e.g., papers by Ewbank about APOE) show also that the effect of genes at advanced ages diminishes.

2) Sensitivity to cut-offs in definition of cognitive function should be tested because cutoffs in the MMSE are age and education sensitive. For example, people with fewer years of education (that is the case in this study) typically perform more poorly than individuals with higher education and, therefore, cutoff for them is smaller.

3) It would be helpful you describe why you started with the dominant model rather than with the additive one.

4) Page 10, last line. It looks that parentheses are excessive there.

5) To my opinion Section 3.3 does not add too much because Tables 3a and 3b show no substantial correlation between polymorphisms and negative emotions. Accordingly, the models for each outcome are pretty independent based on the results in Tables 3a and 3b. This is seen as no difference in the effects for interactions in Table 5 and 2.

6) Analysis in Section 3.4 is very useful.

7) Table 5: please correct “6association” as “association”.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests