Author’s response to reviews

Title: Psychometric properties and population norms of the Positive Mental Health instrument in a representative multi-ethnic Asian population

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To
The Editor
BMC Medical Research Methodology

Re: BMRM-D-17-00474- Psychometric properties and population norms of the Positive Mental Health instrument in a representative multi-ethnic Asian population

Dear Professor Yang,

We would like to thank you and the reviewers for your valuable suggestions on improvements in the manuscript. Our point-by-point responses to these are as below.

We hope these revisions are satisfactory, and we look forward to a favorable response.

Thank you.
Yours truly,

Janhavi Vaingankar

Response to the Associate Editor

We agree this paper addresses important issues, but have also raised a number of comments on the statistical analysis, result interpretation and generalizability, and missing references in this paper. The manuscript should be edited by a native speaker. These issues should be answered to improve the manuscript. Details please refer to the reviewers’ comments below.

We have revised the manuscript to address reviewers’ concerns and suggestions on the statistical analysis, result interpretation and generalizability. We have also added relevant references in the text. We have also sought help from a colleague who is a native English speaker to edit the manuscript. We hope these changes are acceptable.

Response to Dr. Xiangfei Meng (Reviewer 1)

This study aimed to establish psychometric properties and population norms of a positive mental health instrument (PMH-I), a measure of positive mental health developed in Singapore. A nationally representative survey of 1925 adults were included. A six-factor-higher-order structure of the PMH-I was confirmed.

There are several issues to be addressed.

1. Although the survey targets the general population, the response rate is 35%, the representativeness of the findings need to be carefully interpreted.

   We acknowledge the low response rate of the study and its impact on interpretation of the results. Unfortunately, such low response rates are currently common in Singapore including the National Health Survey (Dr. Derrick Heng, Ministry of Health, personal communication). The socio-demographic breakdown of the sample was, however, very close to the general population characteristics and therefore could be applied to the local population. We have highlighted these points under study limitations in Line 8, last paragraph in the Discussion section.

2. The generalizability of the study findings - the usage of PMH-I may be limited due to the fact of multi-ethnic nature. What if other populations have different proportions of multi-ethnic groups than this study population? Caution needs to be paid for this kind of explanatory study.

   This is an important point highlighted by the reviewer. While variations in ethnic compositions could influence some of the results, particularly the normative values in an overall population, we believe the psychometric properties of the tool would remain strong in populations
comprising the three main ethnic groups – Chinese, Malays and Indians, both in homogeneous and heterogeneous samples. We have investigated this by performing CFA in each ethnic group independently and found that the solutions fulfilled the set fit indices criteria. We therefore believe that the tool has relevant applications in these ethnic groups regardless of the proportion of ethnic groups in the overall population. However, we agree that this needs to be investigated in other populations and settings. Given that the study population resides in a high income, urban setting, it will be of value to evaluate its properties in other types of settings. We have included this in the revised manuscript in the Results section and highlighted it under study limitations in the Discussion section. We have also included Supplementary figures 1a-c to illustrate the factorial structure of the PMH-I among the Chinese, Malay and Indian participants. The sample size for the other ethnicities was however very low to investigate this.

3. There was no information on missing data. What is the missing rate for the study? What approach has been used in the analysis?

There were no missing data for variables used in this study. Data was collected by interviewers using computer tablets and algorithms were set in place whereby participants had to answer each question before moving on to the next one. If the participant had any difficulties in reading or filling out the questionnaire by themselves, an interviewer was present during self-administration to assist them. We have added this information under Methods-data quality control in the manuscript.

4. Statistical analyses: why structural equation modeling was not used to explore the relationships between PMH, distress, and other socio-demographic factors.

We agree that applying modeling could generate useful information regarding positive mental health and its association with other factors. The purpose of this work, however, was mainly psychometric investigation to establish the validity of the PMH instrument and obtain normative estimates for the population. The SH2 study has generated comprehensive data on a number of variables and risk factors. We need to carefully consider their associations with PMH to build and study models. Analysis of complex and multiple relationships between these variables will therefore be discussed in another paper as we feel it might be beyond the scope of the current work.

5. I have a major concern with the normative values based on this study cohort. As mentioned previously, this study cohort cannot represent their initial target population and even if it can represent their population, the results still cannot generalize to other populations without the comparison between the proportions of multi-ethnic groups.

We agree with the reviewer that normative values will vary based on the proportions of multi-ethnic groups within the population and limit the generalizability of these values. We have included these points under limitations of the study (last paragraph in the Discussion section) and highlighted its importance while interpreting the results. We have also included percentile values
for ethnic groups in the revised manuscript (Table 5) which could be used to compare estimates in other populations.

6. One of strengths discussed in the text was the representative sample. I think it provides misleading information for the potential usage and interpretation of study findings. The sample is not representative. The findings of this study cannot simply apply to other populations.

Although the study yielded a low response, as mentioned in the response to comment 1, the sample characteristics are similar to the general population in terms of age, gender and ethnic breakdown. However, we agree that the findings cannot readily be applied to other populations and we have highlighted this in the Discussion section (last paragraph).

7. There are typos in the text, for instance, p9 line 57 "…using known known group…", figure 1 subscale of PGA, apg 1~10?, page 15 line 4 "…belonging to Other ethnic groups…",

We apologize for the errors. We have corrected these and also carefully checked through the revision.

8. Authors need to provide the PMH-I in the appendix. I assume the subscales of PMH-I include each items. Figure 1 needs to provide notes for it.

We have added the PMH-I tool as supplementary information and also provided notes for Fig 1.

Response to Dr. Teresa Lluch-Canut (Reviewer 2)

1. The article is interesting. Provides knowledge about a positive mental health assessment instrument. And it helps to increase the psychometric properties of that instrument.

The background is well written. But it is missing some current references in relation to positive mental health. In the European population there is the Positive Mental Health Questionnaire of Lluch (1999) and some very relevant studies that are not mentioned and that should be introduced. This is important because it seems that the positive mental health questionnaire presented in the study is the only one that exists in the world. Is not true. It is necessary to add other bibliographic references of articles published in journals indexed in JCR and Scopus in English language (easy to locate). The same thing happens in the discussion (page 14 line 44). Other relevant studies of reference are missing.


We thank the reviewer for highlighting the recent work on PMH arising from Europe. We have added the relevant information from these articles to the revised Introduction section.

Regarding the other two articles highlighted by the reviewer, Dreger et al, 2014 have used WHO-5 instrument while Lehtinen et al, 2005 have used the energy and vitality (EVI) scale of the SF-36. We have referenced a study that used these measures in our background, albeit with a different and older reference. WHO-5 is included under current reference#15. The same study [15] had also used SF-36. We have now included SF-36 in the revised Background section and retained reference #15.

We would also like to highlight that although Dreger et al, 2014 and Lehtinen et al, 2005 use the term positive mental health in their titles, WHO-5 is an established measure of subjective mental well-being (Topp et al, 2015), while SF-36 is a measure of overall health status comprising both physical and mental well-being (McHorney et al, 1993). Both are components of mental well-being, but they do not comprehensively measure PMH. The EVI used in the Eurobarometer by Lehtinen et al, 2005 is based on the study by Bijl et al, 2000 who have shown associations between mood disorders (psychiatric morbidity) and EVI. Conceptually, PMH is believed to be more than just the absence of mental illness and vice versa. Hence it is important to have scales that measure PMH components regardless of the mental illness status of an individual which was essentially the impetus and conceptual framework for developing the PMH-I in Singapore.


2. On page 5, enter the aims within the method section. I believe that the aims should be at the end of the background section.

The aims were mentioned under the Method section as per submission guidelines which state “The methods section should include: the aim, design and setting of the study.” However, we agree that ideally aims should be at the end of the background. We have therefore moved the paragraph to the background section.

3. It is not clear on what date the SH-2 study was conducted

The study was conducted between April 2014 and March 2015. This was mentioned in the Methods section under the heading ‘study design’.

4. There is talk of a study with a "large representative sample". I believe that 1925 subjects is an acceptable sample to elaborate psychometric tests but very reduced to draw conclusions about a population. Therefore, I recommend removing the term "large" and replacing it with a less ambitious one (In the title and in the different sections of the article where that expression is used).

We have removed the term “large” from the title and manuscript text as recommended.

5. The tables are clear. But the normative values that are provided have very simple measures (mean and deviation). It would be interesting to provide normative values from percentiles, to have a greater ease of comparison with future studies.

Thank you for the suggestion. We have added Table 5 that presents the 10th, 25th, 50th, 75th, and 90th percentiles of total PMH and its subscales in the Results section.