Reviewer's report

Title: Characteristic distribution of the total and individual item scores on the Kessler Screening Scale for Psychological Distress (K6) in US adults

Version: 0 Date: 29 Apr 2017

Reviewer: Mirko Manchia

Reviewer's report:

RE: BPSY-D-17-00157

The present study investigates the distributional properties of the Kessler Screening Scale for Psychological Distress (K6) among individuals recruited in the National Survey of Midlife Development in the United States (MIDUS), a collaborative, interdisciplinary investigation of patterns, predictors, and consequences of midlife development in the areas of physical health, psychological well-being, and social responsibility. Specifically, they aimed to confirm that the sum of K6 item scores approximate an exponential pattern, except at the lower end of the distribution, to investigate the relationship between the number of chosen items and the estimated rate parameters of the exponential model, and to examine how the ratio of "a little" to "none" in item responses contributes to the non-exponential pattern of the sum of item scores at the lower end of the distribution. The authors found that the sum of scores well fitted an exponential distribution except for the lower end of the distribution.

Major concerns

* The study appears to have an impeccable methodology and the authors are to be commended for their accurate approach in handling the data. However, this manuscript misses to translate these results in clinical terms. In other words, the authors should make an effort to highlight the clinical importance of these findings, and importantly this should reflect in the conclusions of the Abstract as well. Why should we care about a specific distribution (normal, exponential, log-normal) of severity of depressive symptom in the general population? Have these findings any relevance on predicting clinically relevant depressive symptoms? This is marginally discussed by the authors in lines 14-31 page 16. However, the exponential distribution of unidimensional latent trait of depression might not necessarily translate into a clinically relevant measure.

* Another major point is whether this instrument is appropriate to measure the distribution of depressive symptoms in the general population. Are these data truly generalizable?

* A related point concerns the validity of K6 in measuring depressive symptoms. K6 is a self-rated instrument. It would be of importance to know if there is concordance with clinician-rated
measures of depression (Hamilton?) and if these objective measures have distributional properties similar to those found by the authors in K6 (if such data do exist).

* The following statement is convoluted: "We assume that the latent trait of depressive symptoms follows an exponential distribution, because this assumption enables us to explain the mathematical patterns of the sum of item scores and item responses." An assumption cannot be consequential to findings of an experiment.

Minor concerns

* There are typos in the title as well as in the text (please see line 26 page 14). Please make a careful check of the manuscript.

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

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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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