Reviewer’s report

Title: A revised short version of the Compassionate Love Scale for Humanity (CLS-H-SF): Evidence from Item Response Theory Analyses and Validity Testing

Version: 1 Date: 06 Nov 2019

Reviewer: Yue Zhao

Reviewer's report:

This study aims to evaluate the psychometric properties of a revised short version of the Compassionate Love Scale for Humanity (CLS-H-SF) using item response theory (IRT). The manuscript generally reads well. My major concerns and questions are described below.

According to "Standards for Educational and Psychological Testing" (AERA, APA & NCME, 2014), reliability and validity are not properties of an instrument, and validation is an ongoing process that involves accumulating all relevant evidence to support validity. Strictly speaking, it is less appropriate to express reliability and validity in the sentences like "the reliability and validity of a psychometrically sound short version of the CLS-H" and "validity of both the original and shortened form of the CLS-H". Additionally, the authors indicated "to confirm the short scale internal and external validity in comparison to the original form". Clarifications are needed in terms of what particular internal and external validity evidence this study sought to focus on.

Under the "Methods" section, the participants are reported as "undergraduate students (N=790; 65.8% females)” with ages "ranged from 16 to 36 years (M = 18.93, SD =1.86).” What were the sample distribution and sample characteristics? Was the sample skewed? Would the sample skewness affect the generalizability of the findings of this study?

In the dimensionality check for the IRT analysis (p.8), the NNFI and CFI criteria should be $\geq .95$, rather than "$\leq .95$".

In the IRT analysis, given the very low values of b1 for some items as reported in Table 1, it would be helpful to check the frequency of each response category (how many participants endorsed each response category ranging from 1 to 7). This would provide an indication about whether some of the response categories need to be collapsed/combined.

In the short form construction, the authors claimed to select "the items that offered higher information." Since item information varies at different levels of the latent trait (theta), more technical details are needed about this item selection process. Further, elaborations are also needed to explain how "the shape of the item information function was also considered when selecting items that had high discrimination parameters." Was there any particular range of theta that had to be considered? In addition to psychometric criteria, how about the content/construct considerations? Does the short form have a good converge of all key conceptual elements of the compassion construct?
In the "reliability" subsection under "Results" (p.12), the term "reliability" is better phrased as "measurement precision" in the IRT context so as to avoid potential ambiguity and distinguish from the reliability coefficient under the CTT framework.

In the "validity" subsection under "Results" (Table 3, p.14), were the correlations performed on the basis of theta or observed scores? Clarification is needed here.

Under the "Discussion" section, in addition to the discussions about the psychometric contributions of the present study, it is crucial to discuss/elaborate in-depth on the conceptual/theoretical contributions of this study as well as the values and practical implications of the findings in compassion research and practice.

The manuscript would potentially benefit from language editing.

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

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**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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