Reviewer's report

Title: Validation of the 5-item Doctor-Patient Communication Competency instrument for Medical Students (DPCC-MS) using two years of assessment data

Version: 0 Date: 19 Dec 2016

Reviewer: Thomas Kropmans

Reviewer's report:

It was a pleasure and an honour to be involved as a peer reviewer for this interesting paper. I have a few suggestions for improvement related to the method of statistical analysis used and I can't write it up in a better way than Steven E. Stemler of Yale University (find publication attached) but will try and summarise my feedback. Classical psychometric analysis used in Medical Education refer most of the time to classical psychometric analysis in terms of Cronbach's Alpha, Cohen's Kappa etc. However, observed score and most certainly is sensitive measure like 'Communication Skills'. Observed scores of students, those score that are provide by one or more 'judges' contain of a 'true score' and an 'error score'. Classical psychometric analysis provide not sufficient insight in the error around the 'observed score'. Even if we are very please with an internal consistancy or inter-rater reliability of 0.7 or higher. The error around the observer score is still (1-r) which in the latter case would be 30%. Decisions on pass or fail are still very much contaminated by the 'error around' the observer score. Stemler therefore suggested three 'advance methods’ of analysis (see paper) 1. principle components analysis 2. G-theory analysis and 3. many facets Rasch model analysis. All three methods provide insight in the 'error analysis' where classical psychometric analysis do not! As such these measures are qualified as obsolete but still very much used by educationalist because they are probably 'easy to interprete' (which they are not.

I was hopeful when I read about the 'Standard Error of Measurement (SEM)' being included in the methods (and presumably the result section). However, as far as I could investigate no evidence regarding the SEM is provided in your paper. The SEM would be SD * sqrt(1-r) and needs to be incorporated in the decision whether somebody is a good, moderate or poor communicator. You will see, incorporating these values in your table would provide a different perspective of the results. The bad reviewer in me would think that that might be the reason that SEM is addressed in the text but not calculated in the tables (please correct me if I am wrong).

Nevertheless, this is an important paper because as we outlined as one of your references, comparison between modules, years and institutions comparison of CS is important, as is the measurement of progress during training. I hope therefore that your team will consider embedding the SEM (either calculated based on the used classical psychometric analysis) or by using the G-theory analysis (using EDU-G as a suggestion for software). The most simple and straight forward approach would be to use the existing data and calculate the SEM as outlined above (verify formula and associated the references accordingly).
I am looking forward to the next draft being sure that the instrument will be suggested for implementation within our own school of medicine.

Kind regards TK

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.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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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