Author's response to reviews

Title: A psychometric appraisal of the DREEM

Authors:

Sean Hammond (s.hammond@ucc.ie)
Margaret O'Rourke (m.orourke@ucc.ie)
Martina Kelly (m.kelly@ucc.ie)
Deirdre Bennett (d.bennett@ucc.ie)
Siun O'Flynn (siun.oflynn@ucc.ie)

Version: 3 Date: 22 September 2011

Author's response to reviews: see over
Dear Dr Galeng,

MS: 1139105605471241 - A psychometric appraisal of the DREEM

Thank you for the second review of our paper. We note that the first reviewer has read our response to his review and has approved our position. Here we will address the comments of the second reviewer. Again we would like to thank the reviewers for their thoughtful and constructive reviews. We have made changes to the text in light of their comments that we detail here:

“Much of the language in the results section would traditionally be used in the discussion. There are sentences which, while based on the results of the study, are more judgmental in nature, and hence, should be included in the discussion section of the paper. For example. On page 5, “However, the internal consistency of the scales as evinced by Cronbach’s alpha do not instill great confidence in these findings” is not necessary. The following sentence reporting ‘Only two of the subscales manifest an alpha exceeding 0.7’ is sufficient.”

We understand this concern although our original intent was to convey a consistent evaluative tenor to the document. However, the point is well taken and we have made changes in accordance with the reviewer’s comments:

- Page 5 – Removal of the sentence “However, the internal consistency of the scales as evinced by Cronbach’s alpha do not instill great confidence in these findings”
- Page 5 – Removal of the phrase “while two (Perceptions of Atmosphere and Social Self-perception) are clearly sub-optimal.”
- Page 6 – the sentence following the marker for Table 2 has been changed to read – “It is found that 17 of the 50 items manifest fit indices less than 0.70.”

“While the structure of the subscales was not confirmed in the factor analysis, the ‘rule of thumb’ that reliability should be 0.7 or above is just that – a general guideline.”

We concur with this statement. The ‘rule of thumb’ is predicated on the understanding that coefficients such as Cronbach’s alpha offer a lower bound estimate of the ‘true’ reliability of a test, which is likely always to be higher than the estimate. However, 0.7 does represent an error in the region of 30% so it would be risky to accept values lower than this. In the case of the fit indices, a similar argument applies, although, due to the procrustean nature of the confirmatory factor analysis it could be argued that a more rigorous criterion than 0.7 should be applied. Either way, our central point that the putative 5-factor model does not fit the data well still stands.
We have left in the reference to Nunnally who is generally held to be the originator of the 0.7 guideline, but concur with the reviewer that the word criterion may be too strict here so we add the phrase 'rule of thumb'.

“The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.”

- We have added the Label ‘Total Score’ to table 1.
- We have added the label ‘Item’ and ‘Factor’ to table 2 and have labelled the factors using Roman Numerals as is the convention in the factor analytic literature.
- We have continued the Roman numeral convention in table 3.

We were not able to identify any spelling or terminology mistakes.

“An additional article was published on the psychometric characteristics of the DREEM in 2011(1) that should be included (along with the Greek and Portuguese references). This should be useful because the authors of that paper found a different DREEM structure as well”.

- We are grateful to the reviewer for bringing the Jakobsson et al study to our attention. It is certainly relevant to our paper and we have included it in our references on page 3 and page 7.

“I wondered whether the authors would like to speculate on possible reasons for the difference in the results they obtained, since, as they already pointed out, the survey was not translated to another language and the underlying factor structure was based on ‘theoretical reasoning’. Are there differences between the graduate entry students and those in their final year? Are there specific areas for additional research that the researchers recommend (beyond the ‘basic psychometric appraisal’)?”

The reviewer rightly notes that we are being perhaps a little tentative here. Baldly, we believe that the putative factor structure of the DREEM is fallacious. The original theorising that led to the 5 factor prescription is clearly under empirical attack from, not only our analysis, but also other factor analyses carried out by independent researchers. The relatively unique aspect of our study was that it focussed entirely on replicating (or confirming) this putative structure. This is unlike other factor analytic studies where more exploratory approaches were undertaken that did not seek to directly test the implied latent model of the DREEM. Ultimately, our belief is that, if the DREEM is to survive as a viable measure of educational climate, the entire latent model will need to be radically revised. This may be best achieved by a full integration of the existing exploratory analyses of the DREEM to inform a new latent model followed by a large scale international sample being subjected to a full Structural Equation Modelling analysis.
• We have added a sentence to the end of paragraph 1 of page 7 to make this point.
• We have added 3 sentences to the last paragraph of the conclusion to expand our recommendations.

The reviewer also wonders whether there are differences between Graduate entry and final year students. We certainly found no significant differences in scale scores between the two groups and this led to us integrating this group with the other students. Of course, it is still possible that there is lack of equivalence in the structural parameters between the two groups but, as there were only 37 GE students, no multivariate analysis along these lines would have been robust enough to provide a convincing answer to this question. One might make the same argument for other natural groupings like gender and age group but we do feel that this is beyond the remit of the current paper.

“There is an additional reference regarding use of the DREEM(2), and the authors can add the references if they like.”

We thank the reviewer for bringing this reference to our attention, it is an interesting paper and is relevant to further work we are conducting although slightly tangential to the central thesis of this paper. We have included it as another example of the international use of the DREEM.

• Reference numbers from 21 upwards have been adjusted to accommodate the two new references.

We thank you for this positive review process and hope that the amendments made will now satisfy your requirements for publication.

Yours sincerely,

Sean Hammond