Author's response to reviews

Title: Tutoring in problem-based learning medical curricula: the influence of tutor background and style on effectiveness

Authors:

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Author's response to reviews: see over
### Statistical review: Anthony Staines

#### Minor Revisions

**Abstract:**
Could give a little more detail; not sure that the conclusion is a fair summary of the paper

**Page 3:**

**Page 4:**
- Discuss findings in refs. 7-9 on staff vs student tutors – not enough to say they are inconclusive.
- Change “MBBS Program” to “medical program”

**Pages 6 and 7:**
- It’s hard to see exactly how many tutors and groups took part in the program........;
- I assume the quotations after each scale are items from the questionnaire

**Page 8:**
Analysis is not well-described............ unclear how structured design has been accommodated in the analysis.

**Page 9:**
Concern about the type of model used........

#### Authors’ Response

The paper has been revised since the version this reviewer was provided with and commented on. Some changes to the abstract have been made to the current version.

Added

The sentence now reads:
“Although findings from these studies are inconclusive, overall there is a slight preponderance in favour of content expertise over group facilitation skill with regard to both academic achievement and student satisfaction.”

Done

The paper has been revised since the version this reviewer was provided with and commented on. Clarification of these points has already been made in the subsequent/current version.

The text has been clarified and now reads:
“The various items for each outcome variable were described by Schmidt & Moust (1995), however principal components analysis was used to confirm the correct loading onto each of the items into the appropriate outcome variable (use of expertise, cognitive congruence, test orientation, authority, role congruence, cooperation orientation and overall effectiveness, as perceived by the students). These outcome variables formed the basis of all subsequent data analysis.”

The referee seems to have confused the terms general linear model and generalised linear model. The former specifically requires Normally distributed residuals and the latter allows a range of
distributional forms, such as binomial and Poisson. General linear models is specific to analysis of variance and linear regression and uses the principle of least squares for estimation. This is what we have used for model screening. Generalised linear models include logistic and Poisson regression as special cases and use maximum likelihood for estimation. This latter technique has not been used.

The reference to the book by Hosmer and Lemshow relates to logistic regression, which is not a technique that we have used. Backward elimination is an appropriate technique for model screening and selection of variables to include in the final model. We have been guided by common sense, stability of estimates of coefficients, goodness of fit and parsimony as well as p-values in our decision to report simple 1-way analysis of variance as the primary method of comparison. All other potential variables did not assist with interpretation of our results.

Clearly the correlations we have reported are linear correlations and, as such, represent the closeness of fit to a straight line. The same would be true for linear regression coefficients. The correlation does represent strength of association but not effect size or size of the relationship as the referee might intend. We agree that regression coefficients, standardised or not, would give an index of effect size but they would be equivalent to correlations in indicating strength of association. However, we believe that correlations will be readily understood by our readers and more useful that standardised regression coefficients. If required we can change the correlations to regression coefficients, but this is not our preference.

The paper has been revised since the version this reviewer was provided with and commented on. Clarification has been provided in subsequent/current version, and several points in the Discussion expanded upon.

Pages 10 & 11:

- Source of overall score
- Practical vs statistical significance
<table>
<thead>
<tr>
<th>Page 13</th>
<th>&quot;consistently higher score&quot; too strong</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>This sentence now reads:</td>
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<tr>
<td></td>
<td>“In summary, these findings suggest that, although clinicians and staff tutors consistently scored higher on each of the measured behaviours than did non-clinicians and non-staff, most of these differences are not statistically significant and do not have a substantial impact on students’ assessment of their effectiveness as PBL tutors.”</td>
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| Page 16: Use of correlation coefficients not suitable here… | | |
|-----------------------------------------------------------|---|
|                                                            | No reason is given for this statement. Since one of the principal aims of the study was to gain some idea of the correlation between student perceptions of their tutor’s effectiveness in his/her role and the tutor’s actual tutoring style, the authors feel it is important to retain this measure in the results. |