Reviewer's report

Title: Big Fish in a Big Pond for Medical Students; a multimethod study.

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Reviewer: Gillian Maudsley

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“Big Fish in a Big Pond for Medical Students; a multimethod study”
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General comments:

This is a very interesting application to medical education of the ‘Big-fish-little-pond effect’ (BFLPE). The explanation of the effect (and related evidence-base) is clear.

1. Is the question posed by the authors well defined? Yes, the questions and hypothesis are clear.

2. Are the methods appropriate and well described? What was done [the methods] is reasonably clear but, in certain sections, combining mentions of what was done/what was found/what it means confuses some points. It would be better if the Methods just outlined ‘what was done’, and the Results ‘what was found’, leaving the Discussion to outline ‘what it means’ in relation to the evidence- [and theory-] base and everyday undergraduate medical education practice.

3. Are the data sound? Further detail is required in the Methods, and further caveats should be highlighted in Discussion.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? As above, further detail is required in reporting these data.

5. Are the discussion and conclusions well balanced and adequately supported by the data? The Discussion/Conclusions are coherent and balanced. A few assertions should be checked, and the concluding sentences should be clearer about the practical implications (should the hypotheses/research questions be corroborated further).

6. Are limitations of the work clearly stated? The caveats highlighted in the Discussion should be reinforced and supplemented. There should be much more justification about why a study with such a low response rate for the survey (only ~20 responders, and no information about non-responders) should be heeded.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? The original premise for the study (and its
origins in the literature) is clear.

8. Do the title and abstract accurately convey what has been found? Consider using the term 'mixed methods' if that is what you consider this to be (and consider using an appropriate reference to the 'mixing' approach used). The variation on the BFLPE terminology might be confusing in the title.

9. Is the writing acceptable? The writing is clear, despite there being a few glitches to clarify or amend.

Specific comments/suggestions/requirements:

• Major Compulsory Revisions

1. Abstract: “The qualitative study suggested that the attributions that students used when discussing performance could negatively affect self-concept.” It suggested that the attributions used were those for which there is evidence that they might undermine self-concept (but that was not shown in this study).

2. p4: “Thus, according to the BFLPE, it is better for academic self-concept to be a big fish in a little pond [to be a good student in a group of average ability students] than to be a small fish in a big pond [to be a good student in a group of high ability students].” It would help to note why (or at least acknowledge that) the effect is named after the desirable situation rather than the situation that should presumably be avoided, especially when the next sentence refers to ways “proposed to overcome” the effect.

3. p5: “The present investigation consisted of two studies.” The nature of the ‘mixed methods’ design should be inserted here, the paradigm used, and how the data in one study are meant to relate to the other, e.g. ...complementary studies rather than one informing the design of the next? ...mixing at the level of analysis and/or interpretation, etc.?

4. p5: As per abstract, clarify that the participants of each study are separate. It is also unclear whether that separation was unintentional, given that all first years were invited for both studies. It is also unclear when those invitations were made in relation to each other.

5. p5: Clarify the ethics approval and study permissions process.

6. p6: There should be a brief description of educational context for the medical students in this curriculum (ahead of the Methods). Without this, it is difficult to interpret the findings and implications, such issues often being rather context-specific.

7. p6: “were invited to participate”: How (considering the low response rate)? Re: “during tutorials”: ...using their educational time? What sort of tutorials were involved, how were students asked, and with what assurances?

8. p6: “were moderately correlated”: ...how about with each other?

9. p6: “Twenty students completed both Time 1 and Time 2 surveys...”: How
many completed just one? How was data linkage between the two time-periods achieved – unique identifier, names, etc.? Would students in the tutorials know who was/was not participating?

10. p7: Expand a little on the concept of ‘assimilation effect’.

11. p8: Give more detail about the focus group procedure, e.g. whether a schedule/prompt were used, the setting/timings, number in each group, etc., and in the Discussion acknowledge that purposive sampling was not used and any implications of this.

12. p9-10: “…found that students who attributed success and failure to external causes had slightly lower self-concepts” versus “Using the internal attribution of lack of effort…”: Clarify, as it seems as though, whether the attribution is external or internal, the relationship is inverse with self-concept? That is confusing.

13. p10: “When asked… students overwhelmingly stated… (8 responses)”- Clarify how this relates to Table 2, and why 8 is ‘overwhelmingly’.

14. p10: While the possibility of Type II statistical error is suggested, more should be highlighted about potential selection bias, for which a comparison between responders and non-responders to the survey has not been made. A further caveat includes the lack of linking between data in the ‘mixed methods’ design, i.e. between the two studies.

15. p10: The missed potential of such linked data on individuals is not acknowledged. No paradigmatic assumptions have been outlined as a prelude to the Methods, and the Discussion lacks mention of the implications of the approach taken and the assumptions made.

16. p10: It is unclear why focus groups were chosen over semi-structured interviews, and why students needed to disclose these ideas in a group setting if the interplay between responders and their comments was not crucial to the interpretation.

17. p10: The Discussion would benefit from a few concluding sentences about the ‘so what?’ of the findings. What are the educational and practical implications if these findings were corroborated?

• Minor Essential Revisions

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18. p3: “important for good mental health29”: This reference-number seems out of sequence and format.

19. p3: “and then spilt into” to “and then split into”

20. p5: “ability compared to” to “ability compared with”; “Time 2 compared to Time 1.” to “Time 2 compared with Time 1.”… and throughout, as appropriate.

21. p6: “Twenty students volunteered (13 female). Ages ranged from 17 to 38 years, with a mean age of 20.65 years (SD = 4.92).” This should be in Results.

22. p6: “have been show” to “have been shown” “Cronbach’s alpha for the current sample…”: This should be in the Results.
23. p6: “Self-evaluation at Time 1 and 2 and...”: This should be in the Results.
24. p6: “(the same). Means for Times 1 and 2 are shown in Table 1.” to “(the same) (Table 1).”
25. p7 & p11: “The results suggest that medical students...”: The rest of this section should be under a separate Discussion, as should from “To be accepted into medical school in Australia...” to the end of that paragraph.
26. p8: Analysis: Clarify that this was manual (rather than electronic) ‘processing’.
27. p8: The first sentences of the Results 1 and 2 are repetition, and the rest of each first paragraph is about context-setting that should be placed earlier (with further detail of the educational setting of the students).
29. Ensure that the titles of the tables stand alone in conveying who, where, when, etc. Currently, the titles are not sufficiently informative without reading them together with the main text. Show the sample sizes (n=20?; n=19? and n=24? responders - a table footnote in Tables 2 and 3 about the missing two and seven would help, if that is the case). In Table 2, presumably the number of ‘responses’ results from one answer per responder, rather than some responders giving answers in more than one theme. How were answers in a focus group kept to one aspect per participant? This would not be how a focus group would usually function?
30. Table 2 & Table 3: Show 100% total.

Minor points re: terminology, spelling, grammar, etc.:

• Discretionary Revisions

31. p4: “However, as demonstrated by BFLPE research, when students are segregated on the basis of their academic ability their academic self-concepts suffer, and according to the REM, their academic performance may also decline.” to “As demonstrated by BFLPE research, however, when students are segregated on the basis of their academic ability, their academic self-concepts suffer and, according to the REM, their academic performance may also decline.”
33. p5: “aimed to quantitatively investigate” to “aimed to investigate quantitatively”
34. p5, p9: “exam” to “examination”, and throughout, as appropriate
35. p7: “using a two-tailed approach was used” to “with a two-tailed approach was used”
36. p9: “However, the two main themes...” to “The two main themes...”
37. p11: “However, the majority of responses” to “Most responses”
38. p13: “investigation. However, most of this research has” to “investigation, but most of this research has”

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests