Reviewer's report

Title: GAMSAT: A 10-year retrospective analysis

Version: 2

Date: 14 November 2014

Reviewer: Paul Garrud

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The paper gives a good overview of GAMSAT performance and how that performance is sensitive to a number of demographic and educational factors. In that respect it is a useful addition and will be helpful to medicine applicants as well as the medical education community.

Major Compulsory Revisions

1. The Method section would benefit from a clear statement about repeat takers. Were all candidates taking GAMSAT for a second or subsequent occasion excluded? That would be the optimal probably. If not, can the approximate proportion of repeat takers be identified and reported? It would also be useful to have analysis and/or a report of how performance on GAMSAT changes with repeat attempts – even the mean performance.

2. The analysis of 2014 performance and association with the five demographic and educational variables would benefit from a multivariate approach after the first, simple examinations of single variables. Though more complex, it would help to separate out the likely main independent factors and reporting (say) beta weights would allow readers to gauge the relative influence of these different factors. The Tiffin et al (2014) BMC Medical Education study sets out one approach to this.

Minor Essential Revisions

3. In a number of places trends or differences are reported without any statistical test to confirm their reliability or not. The particular places noted were:-

a) Demographics (lines 145-159): No inferential stats are reported, but it would be helpful to know if the trends stated (e.g. proportion of males (148), proportion with Honours degrees (157-8)) are statistically reliable.

b) 164: Is this decline in Section 3 scoring statistically significant?

c) 196: Performance of high-achieving candidates. This section would benefit from some simple inferential statistical analysis to support the descriptions provided and the summary in Table 3 (eg the Observed/expected ratios).

d) 220: better to provide the data to support this sentence about the male-female performance in sections 1&2
e) 228: Again, there’s no information in the results section about this. I think it would be better to present analysis and this information in the results section rather than just introduce it here with no detail.

f) 229-233: I think this calls for some multivariate analysis (eg regression) to tease out the different contributions of these demographic and educational factors (see 2. above).

g) 245: was this less pronounced difference statistically reliable?

4. 158: It would be helpful here (or in the Introduction) to make clear that in Australia a Bachelors is a 3-year, unclassified degree compared to an Honours which is usually a Bachelors + 1 year.

250-3: If not already in the Introduction, here would be the place to explain a bit more about the difference between a Bachelors and an Honours degree in Australia. Can you rule out the possibility that candidates are choosing to attempt GAMSAT in the final year of their Bachelors before carrying on to do their Honours year? This relates to the comment about how you have treated any repeat GAMSAT takers in the paper and analyses.

5. References

There’s a bit of subediting to be done on the references since they have inconsistent formats eg abbreviated or full journal titles. The following were noted in particular:-

294: Needs a place of publication

318: Part of the reference has got taken onto the following one

325 & 328: Internet references do have a full conventional format, including date accessed

Discretionary Revisions

6. Abstract

30-3: A bit unclear which cohorts’ data is being analysed. Basic demographic frequencies are in fact reported for 2005-14, but all analyses of performance data come from the 2014 cohort.

40: maybe insert “(i.e. Subject discipline” between “course” and “on…”

46: Males score significantly higher on Sections 1 & 3, and Overall, but NOT on section 2. Best to remove this last sentence. The alternative would be to briefly summarise all the differences by section (too lengthy probably).

7. Introduction

60-62: Could also reference UKCAT used in UK.

69: Remove “undertaken in 2014” – not needed.

82: I thought each piece was written in response to a single, chosen prompt – is that incorrect?
108: Insert “as” before “age”

8. Methods
126: Add “subject of first degree”
129: Was this the question candidates were asked – “What language do you speak at home?” Asking because often we speak of a first language (i.e. learned first).
138: No alpha reported – 5%?

9. Results
141: Obviously, Cronbach alpha and Person separation Index (from Rasch analysis) are different statistics, even if likely to be similar in value: if essentially the same (to 2 places), please state so, “was” on line 142 is confusing.
144: Could state the range of the Pearson correlations between sections over the decade.
146: Could insert “each year” after “GAMSAT”

10. Discussion and conclusions
208: Maybe say the first publically available comprehensive analysis – obviously annual, detailed analyses are carried out and published internally – and I’d state that just so no-one goes away with the impression that doesn’t happen.
217: Could also refer to the above UKCAT-12 study. References 11, 12 & 13 are either about interviews (not GAMSAT) or a consensus statement – not sure they actually provide much evidence on this.
227: The MCAT evidence comes from 1995 – almost 20 years ago. You could also refer to recent studies on UKCAT (e.g. Comparison of the sensitivity of the UKCAT and A Levels to sociodemographic characteristics: a national study BMC Medical Education 2014, 14:7 Paul A Tiffin, John C McLachlan, Lisa Webster and Sandra Nicholson http://www.biomedcentral.com/1472-6920/14/7/abstract) that shows males score better on that aptitude test.
244: Insert “in 2014” after “background”

Level of interest: An article of importance in its field

Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing financial interests.

I have used GAMSAT since 2003 for admissions to the graduate entry medicine programme in Nottingham. I chair the annual meetings of the UK GAMSAT Users Group and have cordial working relationships with the relevant ACER staff. I have collaborated on a study of GAMSAT as used in the UK that will be reported in December 2014.

I believe that notwithstanding the non-financial interests declared above I have reviewed this manuscript objectively and fairly.