Reviewer's report

Title: Socio-economic predictors of performance in the Undergraduate Medicine and Health Sciences Admission Test (UMAT)

Version: 3 Date: 9 October 2013

Reviewer: Monica Cuddy

Reviewer's report:

This paper examines the relationship between socioeconomic status and performance on the UMAT using multiple regression techniques for a large sample of examinees (n=158,909) who took the exam for the first time over a twelve-year time period (2000-2012). In order to increase student diversity, many Australia and New Zealand medical schools use UMAT scores to make medical school admission decisions, claiming that a more general assessment of overall ability like the UMAT is less subject to variation due to factors such as socioeconomic status and therefore would allow for the selection of a more diverse study body. The current study is therefore important both theoretically and from a policy standpoint in that its findings may provide evidence that the use of UMAT scores to make admission decisions for the purpose of improving diversity may be based on an inaccurate premise. The study is well-designed, the analysis are appropriate, and the paper is well-written. I had a question early on in the manuscript about the potential interaction effect between ethnicity and socioeconomic status, so I was pleased to see the supplementary analysis referred to on page 15 related to the effect of the interaction between language (as a proxy for ethnicity) and socioeconomic status on UMAT scores.

That being said, I have only a few relatively small minor essential revisions. First, since the data analyzed span 12 years some discussion about potential changes in the UMAT (format, scores, etc.) and/or socioeconomic status over this time period seems warranted. Furthermore, it might make sense to dummy code test year and include it in the model to account for any year-to-year variation. Second, the use of the word 'bias' seems unnecessary and overstated. Even thought there is a significant, negative relationship between socioeconomic status and UMAT scores, it remains unclear from the present analysis if the test is actually biased or if students from disadvantaged areas are under-prepared or even poorly prepared for the exam. Third, I would have liked to have seen some measure of prior academic performance included in the model, although I understand that no such data were available. An explanation about why these data were no available might be useful. Also, it would be good to know the magnitude of the 'substantial attenuation' referenced to on page 15. Lastly, since it appears that there is state-to-state variation in the observed variables/relationships, it might make sense to use a multilevel modeling framework with examinees nested in states in a supplementary or follow-up analysis.
Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.