Reviewer's report

Title: Construct-level predictive validity of educational attainment and intellectual aptitude tests in medical student selection: Meta-regression of six UK longitudinal studies

Version: 1 Date: 30 July 2013

Reviewer: Ed Peile

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REPORT on Construct-level predictive validity of educational attainment and intellectual aptitude tests in medical student selection: Meta-regression of six UK longitudinal studies

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What I like most about this study is that the starting point is the conceptualisation of what matters to those responsible for selecting those applicants to medical school who are most likely to succeed as doctors. The constructs are laid out clearly, and all the thought processes of this experienced team are expounded with rare clarity so that readers can follow the logic steps. Few will emerge without a better understanding of our current ability to predict performance based on past performance and aptitude tests. The exploration of the residual ‘dark variance’ becomes an exciting future venture.

The statistical approaches used here are important and there is demonstration of rigour. Statistical review is important to critique approaches which are beyond my expertise. However, the statistics, and the methodological approaches are never allowed to dominate this complex research: instead, formidable expertise is applied to maintaining conceptual threads and drawing the strands together in a masterly exercise to improve understanding.

I have read both other papers which are mentioned in the note to Editors and Reviewers, and have fully reviewed the ‘Academic Backbone’ Paper. I consider that the three papers are distinct and mutually supportive in increasing our understanding of constructs important to selection.

Major Compulsory Revisions

none

The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation.

Minor Essential Revisions

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

Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

The statement is made in the results section, under Construct-level predictive validity of A-levels, GCSEs/O-levels and Aptitude tests for first year Basic Medical Science performance, “Because predicting first-year performance is particularly important...” That particular importance is not self-evident to me. Please explain why this year is prioritised for performance prediction. Predicting the first year results at medical school matters least to me. If students fail to perform at that early stage, their personal investment and the state/institutional investment is relatively low in comparison to the investment by the time they complete undergraduate or postgraduate studies.

Despite the authors' explanatory note, the statement under ‘Comparing predictors’ regarding SQAs' having “higher reliabilities and higher selection ratios (see table 1), which results in relatively lower construct-level predictive validities” is still difficult to comprehend, I found. It would help me to truly absorb the concept, and thereby assure my grasp of construct level predictive validity, if the authors constructed a very simple worked example, perhaps within a box, like a mini-version of Box 1.

I would like to have seen mention of graduate entry selection. The authors could perhaps clarify the situation in respect of performance predictors informing medical course selectors if A level (and possibly GCSE) results are to be disregarded (as is the practice for a lot of GE selection, working on the premise that disadvantaged students may underperform in secondary education).

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I have no competing interests