

Work:	Assessment psychometric analysis and report
Reporting to:	PSA Executive Board
Functional responsibility to:	British Pharmacological Society CEO; Medical Schools Council Assessment CEO; Co-Chairs of the PSA Executive Board
Contract:	Part time. Three-year term subject to completion of annual outputs.
Location:	Remote working

Main tasks

Purpose of the role

The psychometrician will work with the PSA Assessment Board and Standard Setting team to support the assessment build. They will advise during post assessment review and produce an interim and end of cycle psychometric report to the PSA Executive. The report will address all areas of validity, reliability and fairness of the assessment using the most appropriate modern statistical methods.

Work is time sensitive and the psychometrician will be expected to respond promptly to requests for information or advice.

The detailed scope and outputs of the psychometric analysis:

1. Advice on how psychometrics should be used to determine the passing standard for the assessments

In advance of the first test date, the team will give the psychometrician the calendar showing when each school will deliver the PSA and the number of students in each slot. The psychometrician will advise on the allocation of papers to schools to allow test equating to take place.

The psychometrician will also be given the standard setting scores and will use this to assist with calculating the pass marks for the papers in advance of the first test date. They will also provide advice as requested if the interim psychometric analysis suggests that a change in the pass mark may be required.

2. Data from the online assessment system

Data sets are extracted from the online system and are provided via an Excel file for each test paper containing:

- Students' scores on each item and total score
- Medical School identifier
- Time spent on assessment

The following data (linked to each student's responses) has also been provided to enable enhanced analysis:

- Reasonable adjustments identifier
- Student identifier (for concurrent validity assessment).

Access to the actual papers can be provided via the online system.

3. Interim analysis of performance data

As schools plan for socially distanced exams in 2021, they will be allowed to choose whether they will deliver the PSA remotely or in person with standard invigilation. Test papers will be constructed with this mixed model in mind and advice will be sought from the psychometrician on how to anchor items so that test equating can be carried out, whilst limiting the risk of exposing anchor items through remote delivery.

The psychometrician will undertake early analysis after the first sitting for test equating and will provide an interim report on this to the post assessment review team so that any changes can be considered before the second sitting. Results from the first sitting are released within a three week window and so a prompt turnaround of the interim analysis will be needed to allow for any discussion and adjustments.

4. Definitive analysis from all schools after final sitting

Currently the use of Classical Test Theory (CTT) for the analysis is completed. A further supplementary Rasch model on the full dataset is also completed.

The suggested evaluation criteria to be applied, at item, section and by paper are:

- (1) Validity
- (2) Reliability
- (3) Fairness – evaluating student performance at item level and overall by Medical School and by Reasonable Adjustments marker
- (4) Evaluation of Angoff pass mark.

Cost/feasibility, educational impact and acceptability are not currently expected to be part of this analysis although could be considered in the future, if appropriate.

Outputs

The psychometrician will support the PSA throughout build and delivery. A draft analysis report will be produced and circulated to the PSA Assessment Board at the end of August and a final draft presented to the PSA Executive Board in the September meeting (comprising leads from MSC Assessment and the British Pharmacological Society). The exact detail of the report will be based on the analysis completed. Previous psychometric reports will be shared for context but additional analysis will be discussed as part of this commission.

Intellectual property rights / research outputs

It is expected that all outputs of the psychometric analysis, including any intellectual property and / or copyright, will reside with MSC Assessment and British Pharmacological Society, and that all outputs, conclusions and recommendations will remain confidential until or unless agreed by all parties in advance.

Person specification

The ideal candidate would have experience in the field of UK medical education and assessment psychometrics. The candidate must appreciate the need and challenges of improving prescribing competency for newly qualified junior doctors in the UK NHS.

The successful applicant will meet the following competencies:

Requirements	Essential	Desirable
<p>Experience</p> <ul style="list-style-type: none"> • Previous experience of completing psychometric analysis and/or reports on (medical) assessments • Familiarity of the UK medical education curriculum and training in a wider healthcare setting • Knowledge of prescribing • Strong track record of research in education and assessment • Experience of working with computer-based assessment and familiarity with the advantages and limitations of the approach • Experience of multiple methods for standard setting for (medical) undergraduate assessments • An understanding of analysis for reviewing assessment validity, reliability and fairness • A leader in the field of evaluation of assessment strategies for medical education • Experience with Item Response Theory • Experience with the stat package R 	<p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p>	<p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p>