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Evidence-based appraisal of the role of SJTs in selection

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ABSTRACT

A recent opinion article in *Clinical Medicine* promoted a new preference-based algorithm to allocate training places for the UK Foundation Programme Office (UKFPO). This replaced the previous process, which ranked candidates based on medical school academic achievement (the educational performance measure; EPM) and the score on a situational judgement test (SJT). Although not without risks, we believe that the new system has positive potential. In presenting their case, Sam *et al* summarised evidence relating to the UKFPO in an unbalanced way, leading to what we believe are erroneous inferences, particularly with regard to differential attainment. Here, we provide an example of how the general evidence base and conceptual understanding of the validity of SJTs for medical selection is poorly understood. We highlight important research findings that were not cited by Sam *et al* and provide what we believe is a more balanced and accurate interpretation of the evidence base relating the UKFPO SJT, and SJTs used in medical selection in general. We do this with particular reference to the validity of such tools in this context, as well as their potential impact on under-represented groups in medicine, compared with other selection assessments.

KEYWORDS: selection, education, assessment, situational judgement test

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A recent opinion article in *Clinical Medicine*¹ promoted a new preference-based algorithm to allocate training places for the UK Foundation Programme Office (UKFPO). This replaces the allocation process that combined a measure based on medical school academic achievement, the educational performance measure (EPM), with a situational judgement test (SJT). The algorithm allocation process has now been adopted by UKFPO.² Although not without risks, we believe that the new system has positive potential. However, in presenting their case, Sam *et al*¹

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provided an oversimplified and misleading analysis of the UKFPO SJT. Their article is a good example of how the evidence base and concept of SJTs are poorly understood. Here, we address several inaccuracies in the article by Sam *et al*,¹ emphasising the latest research evidence in relation to the validity and fairness of SJTs in this context.

The SJT approach has been used in personnel selection, internationally, for over 60 years. There is a large body of research evidencing its predictive validity,³ including for medical selection.⁴ Indeed, we were surprised that Sam *et al*¹ failed to reference a recently published meta-analysis that concluded 'the use of SJTs in medical selection is supported by the evidence' (p. 888⁴). There is also literature demonstrating that the adverse impact of SJTs on under-represented groups is generally less than that observed for cognitive or academic tests.⁵

Sam *et al*'s¹ assertion that the UKFPO SJT is not a 'valid and acceptable assessment tool' is incorrect. Previous research demonstrated that the UKFPO SJT is reliable and offers validity over and above the EPM in predicting successful completion of the Foundation Programme.⁶ Sam *et al*⁷ stated that the F1 SJT score is not predictive of later disciplinary actions. In their abstract,⁷ Sam *et al* state: 'There was not a statistically significant association between the SJT score and the hazard of disciplinary action'. However, this statement is misleading. It should have been made clear that this statement referred to the independent effect. In fact, this study demonstrated a statistically significant univariable effect ($p < 0.001$). In addition, this study only had data on 65 disciplinary processes, and was almost certainly underpowered to show such an independent effect of the SJT scores on future fitness to practise, should it exist. Indeed, the authors themselves state this in the paper. Conversely, a similar study of the University Clinical Aptitude Test (UCAT) SJT scores of the ability to predict 210 fitness-to-practise events in medical undergraduates observed a statistically significant, independent effect.⁸ Given that SJTs have significant predictive validity, in the UKFPO and many other contexts,⁹ it is much better than 'a random test'.¹⁰ Moreover, objective markers of conscientiousness in medical students predict future UKFPO SJT scores.¹¹

Sam *et al* suggested that '5 random guesses...in the SJT assessment becomes equivalent to five years of undergraduate educational achievement (9 points)'.¹ This is misleading. Only ranking questions obtain the stated score for random guessing and, because the test is not speeded, this means that all candidates obtain at least this value on average; discrimination comes from the subsequent value candidates add by choosing the appropriate options. Other question styles have lower or no impact from guessing. Neither is the EPM only worth nine points

compared with a putative 50 points for the SJT. The EPM and the SJT are scaled to have similar ranges and distributions.

Sam *et al* described the UKFPO SJT as biased and significantly disadvantaging minority students.¹ We share concerns among key stakeholders and students regarding the 'systemic problem'¹² of unexplained significant group differences across ethnic subgroups for many assessment outcomes. The reasons underlying these differences are complex and in need of far more sophisticated research. Regarding the UKFPO SJT specifically, the differential attainment gap is relatively small and is similar to that for the EPM. Implications of racism¹⁰ in the accompanying Commentary are both emotive and misleading. It does not acknowledge the complex issues regarding subgroup differences, test 'bias' and the wider context of differential attainment for any assessment. Although undesirable, differential performance on SJTs, in general, is relatively modest compared with many other selection tools.¹³

The causes of differential attainment are undoubtedly multifactorial and partly driven by chronic societal inequalities.¹² In any case, the proposition that differential attainment be somehow 'tolerated' for certain high-stakes assessments (such as licensing exams) and not others is unacceptable, especially if there is a call for 'zero tolerance'.¹⁰

The pertinent question here should be why there are observed subgroup differences. Identifying causal mechanisms for differential attainment is the fundamental issue, and answers are multifactorial.¹² Do we have an issue in test design, or in how some students view the examination or how they prepare for it? These are important questions because this learning can be used to help shape future assessments; how do we know the same issues will not be repeated in future high-stakes assessments, such as the new Medical Licensing Assessment?^{10,14}

As with all assessments, SJTs have recognised weaknesses.¹⁵ However, promoting a preference-based allocation approach to UK Foundation Training by discrediting the use of SJTs was both unnecessary and inaccurate. SJTs have shown utility as both a selection and learning tool in a variety of medical education contexts, including significant associations with undergraduate professionalism concerns.^{4,16} Instead, any algorithm-based system should have been promoted based on other potential benefits (some of which the authors stated). These include fewer stressful assessments for students, to improve well-being, freeing up valuable resources and enhanced placement satisfaction levels.

In terms of future research, there are certainly opportunities to enhance SJT approaches to assessment. Moreover, the use of causal inference-based research designs to explore observed group differences is also recommended. This will lead to a more sophisticated and informed discussion about the sensitive and important issue of differential attainment. ■

Declaration of interests

FP is a director at Work Psychology Group Ltd, a consulting practice that provides advice and design services on selection methodologies such as SJTs (including the UKFPO F1 SJT), interviews, aptitude tests, knowledge tests and selection centres. The other authors declare no potential conflicts of interest.

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