Institution: City, University of London		
Unit of Assessment: A4 (Psychology, Psychiatry & Neuroscience)		
Title of case study: Innovation in Assessment and Selection Practices within the Healthcare Professions.		
Period when the underpinning research was undertaken: 2001-2016		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Fiona Patterson Lara Zibarras	Professor/Visiting Professor Senior Lecturer	2003-2010. Visiting 2010-2020 2008-2020
Period when the claimed impact occurred: 2014 onwards.		
Is this case study continued from a case study submitted in 2014? Yes		

1. Summary of the impact (indicative maximum 100 words)

Applied psychology research by Professor Patterson and Dr Zibarras led to the introduction of new methodologies and assessment tools for the selection of doctors. Situational Judgement Tests (SJTs) assessing non-cognitive attributes (i.e. empathy, integrity) were adopted by the Medical Royal Colleges and Medical Schools Council in 2013. Since REF2014, around 180,000 UK and 20,000 international medical school applicants have completed SJTs and, as candidate performance is less impacted by socio-economic status, this has led to widening of access and diversity benefits. In the same period, 63,547 junior doctors entering UK Foundation Year Training have completed their own SJT saving the NHS around £30 million. Evidence shows this test is the strongest single predictor of post-graduation performance, positively impacting the quality of patient care. New impact since 2014 followed expert contributions to Health Education England's Values Based Recruitment Framework, used in selection for NHS healthcare roles and funded training, bringing care quality and cost benefits to this 1.2 million employee-strong organisation.

2. Underpinning research (indicative maximum 500 words)

The underpinning research for this case study was driven by Professor Fiona Patterson at City, University of London, between 2003 and 2010. This coincided with her joint founding of the 'Work Psychology Group', a research-led organisational psychology consulting practice, which became her main focus from 2010 onwards, and continues to develop the assessment and selection schemes described here. Prior to Professor Patterson's work, there had been little validated research investigating selection issues in medical education and training. Most selection entailed a panel interview focusing on academic and clinical competencies, with limited focus on non-cognitive attributes (i.e. communication, empathy, integrity, team-working). The REF2014 case study describes how Professor Patterson and Dr Zibarras (PhD Student 2005-2011; Senior Lecturer from 2008) worked with senior medical stakeholders on a series of publications in order to (a) identify selection criteria for success in medical specialty training; (b) design and validate selection methods to measure these criteria and (c) evaluate these selection processes.

(a) Identification of selection criteria via job analysis: Multi-source, multi-method job analysis methodologies were used to identify competency-based models of the knowledge, skills, abilities and other attributes required for competent performance as a clinician [3.1]. Uniquely, and including the patient perspective, these models identified important non-cognitive attributes required by healthcare professionals. The models have been validated through studies exploring the early- and long-term performance of doctors, demonstrating that these non-cognitive attributes are the best predictors of subsequent clinical practice.

(b) Design and validation of new selection methods: Patterson and her team led the field with extensive research to design and implement best practice methodologies for selecting healthcare professionals. This research provided evidence to introduce innovative methodologies into medical selection, such as SJTs, where candidates are confronted with authentic workplace scenarios (entailing complex interpersonal dilemmas with colleagues and patients) and are asked to evaluate the most effective course of action, indicating their capacity for professional judgement, dealing with ambiguity and patient care. Key examples include the first application of Situational Judgment

Tests (SJT) and assessment centres focusing on non-cognitive attributes for GP selection [3.2] which is now being used for all medical specialties [3.3].

(c) Validation and evaluation of selection processes: Extensive validation activities included predictive validation studies, a focus on candidate reactions and perceptions, and the development of the new concept of political validity (stakeholder acceptance) as, due to the high stakes nature of medical selection, selection processes must be seen to be fair by all stakeholders who hold potentially diverse views. The processes have been shown to be fair from the point of view of all stakeholders and to predict future performance [3.4, 3.5].
Given her expertise in the field, Professor Patterson was commissioned in 2014 to review evidence on the effectiveness of Values Based Recruitment and make recommendations on future practices for the NHS [3.6]. This followed the Mid Staffordshire NHS Public Inquiry (the Francis report, 2013) and a subsequent mandate from Government (*'Delivering High Quality, Effective, Compassionate Care: Developing the right people with the right skills and the right values'*, 2014) to Health Education England. The resulting framework – designed to ensure that individual's values and behaviours align with the NHS Constitution – was published by Health Education England (2016) and applies to selection for all healthcare roles in the NHS.

3. References to the research (indicative maximum of six references)

3.1 Patterson, F., Ferguson, E., & Thomas, S. (2008). Using job analysis to identify core and specific competencies: Implications for selection and recruitment. *Medical Education*, 42(12), 1195-1204. https://doi.org/10.1111/j.1365-2923.2008.03174.x

3.2 Patterson, F., Baron, H., Carr, V., Plint, S., & Lane, P. (2009). Evaluation of three short-listing methodologies for selection into postgraduate training in general practice. *Medical Education*, 43(1), 50-57. https://doi.org/10.1111/j.1365-2923.2008.03238.x

3.3 Patterson, F. & Ashworth, V. (2011). Situational judgment tests: the future of medical selection? *BMJ*, 343. https://doi.org/10.1136/bmj.d6876

3.4 Zibarras, L. & Patterson, F. (2015). The role of job relatedness and self-efficacy in applicant fairness perceptions in a high-stakes selection setting. *International Journal of Selection and Assessment*, 21(4). https://doi.org/10.1111/ijsa.12118

3.5 Patterson, F., Zibarras, L., Carr, V., Irish, B. & Gregory S. (2011). Evaluating candidate reactions to selection practices using organisational justice theory. *Medical Education*, 45(3), 289-297. https://doi.org/10.1111/j.1365-2923.2010.03808.x

3.6 Patterson, F., Prescott-Clements, L., Zibarras, L., Edwards, H., Kerrin, M., & Cousans, F. (2016). Recruiting for values in healthcare: A preliminary review of the evidence. *Advances in Health Sciences Education: Theory and Practice*, 21(4), 859–881. https://doi.org/10.1007/s10459-014-9579-4

Research Quality:
Medical Education [3.1, 3.2, 3.5] is a leading international journal for health professionals, consistently in the top 5% on a composite measure averaging SNIP and SJR. Reference [3.2] won the 'Silver Quill Award' for the most downloaded research article in *Medical Education* in 2012.

4. Details of the impact (indicative maximum 750 words)

This section describes (a) the continuing extension of impact reported in REF2014 on (a) improving assessment and selection practices (specifically relating to SJTs) within healthcare professions and (b) new impact relating to Values Based Recruitment.

a. Improving assessment and selection practices within the Healthcare professions (SJTs)

Selection process for UK Medical & Dental Schools
The University Clinical Aptitude Test (UCAT) is used by a consortium of 30 UK Universities as part of their selection process for medicine and dentistry. The SJT is an important component of this test [5.1] and was designed and piloted by Patterson and her team in 2012 and introduced in 2013. It assesses a broader range of constructs than just cognitive ability, helping universities to select between the many candidates who apply for degree programmes. A predictive validity study was published in 2015 and supported its implementation as a cost-effective method to screen out lower performing applicants.

Over the last eight years 180,000 applicants have completed the SJT as part of the UCAT test in the UK [5.2]. More recently, 14,000 applicants have completed the SJT as part of admissions in Australia and New Zealand [5.3]. Singapore, America, Canada, Europe and South Africa have also adopted this process. These new assessment and selection practices do not rely solely on prior academic attainment. According to Rachel Greatrix, COO of UCAT:

> "*We have evidence that candidate performance in the SJT is far less impacted by socio-economic status background (based on parental occupation) than the cognitive elements of the UCAT and indeed other academic measures used in selection*" [5.2].

This has led to a widening of access and related diversity benefits – and medical schools are now encouraged to pay particular attention to SJT results as part of their first screening process. The impact of this work was recognised by the Association for Business Psychology in their Excellence in Candidate Assessment Award 2016.

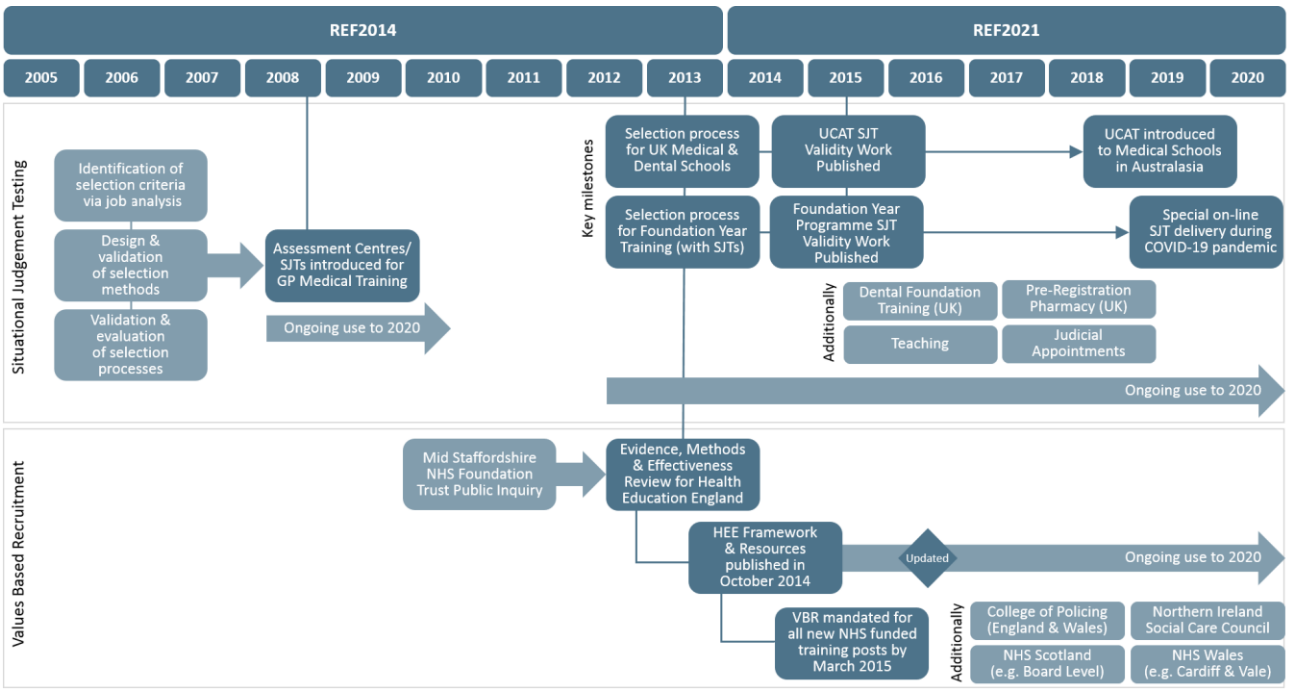

Figure 1 Continuing impact and new impact during REF2014 and REF2021

Selection process for Foundation Year Training

The new selection process for all UK junior doctors leaving medical school and entering a two-year period of Foundation Year Training was designed and piloted by Professor Patterson and her team in 2012 and introduced in 2013. In the 8 annual recruitment cycles since it was introduced, 63,547 applicants have completed the SJT for entry to Foundation Year Training [5.4]. The most recent round involved 7,914 applicants from December 2019 to January 2020, with annual numbers expected to increase in future, given medical school expansion. Learnings from the design and development of the Foundation Year Training SJT directly informed the introduction of the same methodology and selection processes in other UK postgraduate Medical & Dental Schools [5.5]:

- 7,700 applicants completed the SJT as part of 7 annual cycles of Dental Foundation Training
- 4,400 applicants completed the SJT as part of 4 annual cycles of Dental Core Training
- 6,600 applicants completed the SJT as part of 3 annual cycles of Pre-registration Pharmacy.

Importantly, during the current REF cycle, Patterson provided early evidence that the SJTs are effective. In a sample of around 400 Foundation Year doctors recruited in 2013, higher SJT scores were associated with better supervisor ratings of performance. Critically, independent corroboration for the effectiveness of SJTs (distinct from academic indicators) has emerged from other groups, e.g. a much larger study covering two complete cohorts of foundation programme applicants [5.6]. This study used Annual Reviews of Competency Progression (ARCPs) to show that a one decile increase in SJT scores predicted an 8% increase in the odds of successfully completing the foundation programme.

More recent research confirms the SJT as a positive predictor of post-graduation performance [5.7]. Professor John C McLachlan – psychometrician, advisor to the UK Foundation Programme Office (UKFPO) and Professor of Medical Education – describes how the SJT has been found to be "*the strongest single predictor*" [5.8]. Clare Wright, National Specialty Recruitment Manager, Health Education England believes that "*the main benefits using the SJT has delivered include offering a standardised, fair and reliable method to recruit trainees, which is more efficient than previous approaches given that the SJT is computer-delivered, and more recently, proctored on-line*" [5.5].

An options appraisal study, including an independent cost benefit analysis of the SJT process was conducted by the Medical Schools Council. Compared with the original hand-scored method, use of this single SJT over five years (including administration, development and delivery costs) saved the NHS £19.3 million [5.9, p.15]. With activities now having run for 8 cycles during this REF period, this saving is estimated to be £30 million for entry to the Foundation Programme alone.

A greater focus on the non-technical skills required by healthcare professionals (i.e. empathy, integrity, teamwork, coping under pressure) means that the quality of patient care has been positively impacted by the introduction of the SJT – as Professor McLachlan observes:

> "*These non-technical skills strongly influence junior doctors' capacity for safe, independent clinical practice … Of particular importance is [the SJT's] role in predicting successful progression through training as a junior doctor, and also in predicting the subsequent likelihood of GMC sanctions against doctors due to poor performance or errors. This predictive power offers the possibility of targeted remediation* before *things go wrong, which is invaluable in a training setting"* [5.8].

The medical school curriculum has also evolved to adequately equip students to complete the Foundation Training SJT, including an increased focus on professional skills. According to Professor McLachlan: "*This is particularly true of the GMC's 'Good Medical Practice' and 'Duties of a Doctor' guidance, which, thanks to the existence of the SJT, are now embedded in medical school teaching practice and assessment in a manner not previously observed*" [5.8].
Unintended impact occurred during the Covid-19 pandemic. Work by Patterson on moving to an on-line proctored SJT was adopted earlier than planned. As Clare Wright, National Specialty Recruitment Manager, Health Education England (on behalf of the 4 UK Home Nations) explains:

> "*As part of HEE's Covid-19 contingency specialty recruitment plans, medical specialties (including General Practice and Psychiatry) and other healthcare professions (including Dental Core Training and Pre-registration Pharmacy) have used the same online remote proctored platform to carry out their SJT tests … As such, the supply of healthcare workforce into new posts was not interrupted when they will be most needed and has also prevented a blockage in the career progression of trainees throughout the system*" [5.5].

This provides evidence of the significance of the SJT and the degree to which it underpins critical NHS recruitment processes. Patterson and her team have also used SJTs in selection practices for other 'high stakes' environments which garner significant levels of public interest, such as the Judicial Appointments Commission (England & Wales); Veterinary Medicine (UK) and the UK Banking sector. These examples further extend the reach of this work.

b. Values Based Recruitment across NHS England

Since March 2015, selection processes for all healthcare roles across 300 NHS organisations in England and all NHS funded training courses have been required to use Health Education England's Values Based Recruitment (VBR) Framework, which was designed based on evidence from Patterson and Zibarras [3.6]. Approaches to VBR are localised and the NHS Employers organisation provides case studies and resources to show the benefits of the approach.

As an example of VBR's reach in England, the nursing population is the largest occupational group in the NHS at 332,352 employees (October 2019). Since March 2015 133,678 new nurses have joined the Nursing and Midwifery Council Register meaning that over 40% of the population have been selected using VBR. *Nursing Management*, a professional nursing publication, has predicted "a positive effect on the quality of the nursing, midwifery and allied health professional workforce,

and therefore on patient care" (2016, 23:4, pp. 26-33). In 2014, *Personnel Today*, a people management publication, suggested that recruiting for values could "turn around" the NHS. Values Based Recruitment has been adopted in NHS organisations across the UK [5.10] as well as in the public sector; by local government, by the College of Policing (England & Wales) and the Fire Service (England). It is used on an increasing basis within the private sector.

Independent evaluations include a study into the impact of a values based approach to recruitment and retention, published by Skills for Care in 2016, which confirms benefits as "stronger social care values linked to quality of care and lower rates of staff turnover which can contribute to substantial cost savings" [5.11, p.4]. Findings from a large-scale research project by the National Institute for Health Research entitled Values Based Recruitment: What works, for whom, why, and in what circumstances?" (2015-19) are due to be published later this year.

5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 UCAT Technical Reports: https://www.ucat.ac.uk/research/technical-reports/

5.2 Testimonial from Chief Operating Officer of UCAT evidencing numbers of universities involved; number of applicants; impact on diversity and widening of access.

5.3 UCAT ANZ Official Guide Video: https://www.ucat.edu.au/ and https://vimeo.com/officialucat verifies candidate numbers for Australasia

5.4 Improving Selection to the Foundation Programme (ISFP) Project annual Technical Reports verifies Foundation Year Training candidate numbers: https://isfp.org.uk/fp-technical-reports

5.5 Testimonial from Health Education England (on behalf of the 4 UK Home Nations and UK Foundation Programme Office) evidencing impact – including during the Covid-19 pandemic.

5.6 Smith D.T. & Tiffin P.A. (2018). Evaluating the validity of the selection measures used for the UK's foundation medical training programme: A national cohort study. *BMJ Open*. pp.1-10. https://doi.org/10.1136/bmjopen-2018-021918

5.7 McManus, I. C., Harborne, A. C., Horsfall, H. L., Joseph, T., Smith, D. T. *et al* (2020). Exploring UK medical school differences: the MedDifs study of selection, teaching, student and F1 perceptions, postgraduate outcomes and fitness to practise. *BMC Medicine*, 18(1), 136. https://doi.org/10.1186/s12916-020-01572-3

5.8 Testimonial from Professor of Medical Education, Head of School of Medicine, UCLan Medical School and advisor to the UK Foundation Programme Office (UKFPO) evidencing impact on the UK Foundation Programme including safety; patient outcomes; medical curriculum changes.

5.9 Medical Schools Council (2010) *Improving Selection into the Foundation Programme: An Option Appraisal.* Cost benefit analysis for Foundation Year Training SJT. Available from https://isfp.org.uk/option-appraisal-2010/

5.10 Values Based Recruitment has been adopted in NHS organisations across the UK:
(a) By NHS Scotland, e.g. at Board Executive Level
(b) By NHS Wales, e.g. the Cardiff & Vale University Health Board
(c) By Health & Social Care in Northern Ireland, e.g. the Social Care Council.

5.11 Skills for Care (2016) Study into the impact of a values based approach to recruitment and retention.