SITUATIONAL JUDGEMENT TESTS

A guide for applicants to the UK Foundation Programme

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1. INTRODUCTION

Selection to the UK Foundation Programme is based on a Situational Judgement Test (SJT) and an Educational Performance Measure (EPM).

For any selection process, it is important that the process is transparent so that applicants can understand why they are being asked to undertake the assessments and how they relate to the role they are applying for. This booklet has been designed to inform applicants to the UK Foundation Programme about the SJT which is undertaken as part of the selection process.

The purpose of this booklet is to provide an overview of the information relating to SJTs and how they are currently used in selection for many occupational groups. We provide information on the evidence to support the use of SJTs with an overview of how SJTs are developed. We review the issues surrounding the structure and format of SJTs in general, and we describe the specific professional attributes and behaviours that the UK Foundation Year 1 (FY1) SJT is designed to measure. We also provide practical hints and tips to assist applicants in how best to approach sitting an SJT.

This booklet is structured under eight topics as follows:

- What are SJTs?
- How and where are SJTs used?
- What is the research evidence for using SJTs in selection?
- How are SJTs developed?
- What is the FY1 SJT designed to measure?
- The structure, format and scoring of the FY1 SJT
- How best to approach sitting the FY1 SJT
- Frequently Asked Questions

2. WHAT ARE SITUATIONAL JUDGEMENT TESTS?

In an SJT applicants are presented with a set of hypothetical work-relevant scenarios and asked to make judgements about possible responses. Following best practice, SJT scenarios should be based on a thorough analysis of the job role to determine the key attributes and behaviours associated with successful

performance in the job. This is to ensure that the test content directly reflects work-related situations that an applicant will face once in the job. A key output from a job analysis is a test specification which describes in detail the attributes to be assessed in an SJT. The design of the SJT for selection to the UK Foundation Programme followed best practice – please see sections 5, 7 and 8 for more information.

SJTs require applicants to use their judgement about what is effective behaviour in a work-relevant situation rather than focusing on clinical knowledge or skills. SJTs are often used in combination with knowledge-based tests or related educational performance indicators to give a better overall picture of an applicant's aptitude for a particular job. In this way, SJTs focus more on professional attributes, compared with clinical knowledge exams, for example.

It is important to note that SJTs are a measurement methodology rather than a single type of test, and so their content and format can be altered to fit the job and test specification. A variety of response formats, such as ranking possible actions, rating options, or picking the best and/or worst options, can be used depending on the context or level in the education and training pathway that the SJT is targeting.

Applicants' responses are evaluated against a scoring key (correct answers) which is predetermined by subject matter experts (SMEs) including clinicians so that the scoring of the test is standardised. Each applicant's responses are assessed in exactly the same way, and it is therefore possible to compare applicants. Please see section 8.6 on the scoring methods for the SJT for selection to the UK Foundation Programme.

SJTs are usually well accepted and received positively by applicants as they are recognised as being relevant to the role applied for.[1,2] SJTs also offer the benefit of presenting a realistic job preview,[2] as SJTs provide the applicant with further information relating to typical or challenging situations that they may encounter in the target job role. The SJT developed for selection to the UK Foundation Programme was well received by 8,000 participants in pilots in the development stages. Please see www.isfp.org.uk for more information.

SJTs have been used for several decades in selection for many different occupational groups. One of the earliest examples is the US civil service in 1873, in which applicants were presented with a job-related situation and asked to write down how they would respond.[3] The British Army also used tests of

judgement for officer recruitment in World War II.[4] These SJTs aimed to measure specific attributes and experience more efficiently – and on a larger scale – than would be possible through interviews, for example.

In addition, SJTs set in managerial situations grew in popularity over the second half of the 20th century in Europe and the USA. These aimed to assess job applicants' potential to perform well in supervisory roles and were used in US government recruitment and by large corporations such as the Standard Oil Company.[5]

3. HOW AND WHERE ARE SJTS USED?

3.1. How are SJTs used?

SJTs are used for many purposes within selection, assessment and development. As a measurement methodology, rather than a single type of test or tool, SJTs can be tailored to fit the specific needs of the organisation or selection process.

Often SJTs are used as a shortlisting tool or 'sift' where large numbers of applicants take an SJT and those who are successful are shortlisted to the next stage of the selection process; for example, to a selection centre. Usually, SJTs form part of a selection process if combined with other exercises or assessment methodologies. SJTs can also be used for development purposes, where the aim is to identify areas of development and training needs.

Whatever purpose the SJT is being used for, it is important to note that the design should be based on a job analysis to ensure that it is targeting the attributes required; that the test specification is developed in collaboration with key stakeholders and role incumbents; and that a thorough design and evaluation process is undertaken to confirm the psychometric quality of the test.

3.2. SJTs in other contexts

SJTs are increasingly employed in large-scale selection processes; for example they are used by the police in the UK as part of the assessments for recruitment and promotion and by the Federal Bureau of Investigation (FBI) in the USA, as well as in many public and private sector graduate recruitment processes and training schemes. Some examples of the SJTs in other occupational groups are outlined overleaf.

The National Policing Improvement Agency (NPIA) in the UK has developed bespoke SJTs for police roles such as one used in recruiting Special Constables nationally. Special Constables are part-time volunteers who work as officers with full police powers. The SJT forms part of the national Specials Recruit Assessment Process which also includes a written test and competency-based structured interview. During the SJT, candidates are asked to use their judgement to choose the option they think is the best option (most effective) and/or the one they think is the worst option (least effective). The SJTs are based in a police setting but do not require the candidate to have any prior knowledge of policing procedure or law.

Example 1: SJT for the role of Special Constable

A main road has been closed because of a serious road traffic collision. Access to the road is only available for the emergency services. A diversion has been put in place, and your supervisor has asked you to stand at one of the road closure starting points to make sure that no one gets through. The accident is blocking one side of the road but both sides of the road are closed to allow access to emergency vehicles. A line of traffic is filing past you; one driver winds down his window and says he is very late for an important meeting, and needs to get through.

Please pick the best option (most effective option) and the worst option (least effective option) in terms of what you should do.

Response Options

A. Don't enter into a conversation with the man and wave him on to continue towards the diversion because you don't want to cause further traffic delays

B. Apologise for the inconvenience, explaining that there has been a road traffic incident and no one can pass

C. Say to the man that he should not have stopped and continue to direct the rest of the traffic

D. Ask the man to pull over and then radio your supervisor to see if he'll allow the man through on this occasion

The NPIA has also developed an SJT used for shortlisting as part of the selection process for the High Potential Development Scheme (HPDS). The HPDS is a development programme aimed at student officers, constables and sergeants

who display exceptional potential. This SJT requires candidates to demonstrate their judgement and ability to make effective decisions in a series of policing based managerial situations. Candidates are asked to use their judgement to rate each of the options in terms of effectiveness on a scale of 0 to 5.

Example 2: SJT for the Police High Potential Development Scheme

You are a Superintendent giving a live interview to the press about the effect of recent budget cuts on policing. The Chief Executive of the Council and Chair of the Community Safety Partnership has recently taken a £15,000 pay increase whilst at the same time announcing redundancies; this has not gone down well with staff or the local media. The Chief Executive is a highly effective and well regarded colleague and the Community Safety Partnership has achieved good results. The interviewer asks you your views on the matter.

Please rate the effectiveness of the following options in responding to the situation outlined above.

Response Options

A. Tell the interviewer that you do not think that senior public servants should accept pay increases in these difficult times, but that you do not have all the facts on which to judge this case

B. Politely inform the interviewer that the issue of the Chief Executive's pay is a matter for him and his employer and that you do not wish to comment

C. Say that you understand the difficult decisions that are being taken in all public sector organisations and that the Chief Executive's acceptance of the pay rise sends out a negative message in these difficult times

D. Say that the Chief Executive is an effective performer but that you understand there has been significant ill feeling in the community over this matter and you are sure that the Council will want to give an explanation

E. Tell the interviewer that you are here to speak about police matters so you do not wish to comment on this issue and tell them they will need to speak to the Council

Example 1 is a simple format of SJT and is suited to the level of recruitment to the Special Constabulary where candidates are applying for a voluntary role at an entry level. It is important to note that this is a very different job role from that of an FY1 doctor and this is reflected in the content and response format of the SJT. Example 2 is more complex in terms of the scenario given and the judgement applicants are required to make, which reflects the level of seniority and judgement required in the target job role. Similarly, the response format used (rating effectiveness of each response) is also more complex than a choose best/worst response format used for the Special Constables.

As another illustration, the FBI also uses an SJT to select applicants for the role of special agents and an example question is outlined below.

Example 3: SJT for FBI selection

You are shopping when you notice a man robbing the store. What should you do?

Choose most likely and least likely response.

A. Leave the store as quickly as possible and call the police

B. Try to apprehend the robber yourself

C. Follow the man and call the police as soon as he appears settled somewhere

D. Nothing, as you do not wish to get involved in the matter

The FBI example is similar to the SJT for Special Constables and shows a relatively simple SJT response format where the applicant has to make a judgement about the most likely action and least likely action they should take.

To explain the issues further, we now turn to exploring the design specification for SJTs in medicine, which use a very different response format, reflecting the needs of the target job role.

3.3. SJTs in medical selection

In selection for UK medicine, SJTs have been used successfully for several years for selection into postgraduate training, including General Practice and Public Health. SJTs have been piloted for a variety of other specialties including:

Surgery, Radiology, Histopathology, Core Medical Training, Anaesthesia and Acute Specialities. SJTs are also being used for selection in Australia to select trainees for entry to training in General Practice, for example.

SJTs are seen as a valuable addition to the selection processes within the medical education and training pathway. It is widely acknowledged that non-cognitive or professional attributes (eg communication, integrity, empathy, teamworking) are essential requirements for a doctor.[6] SJTs are able to target these important professional attributes that are difficult to assess through traditional examinations.

Example 4 is from the SJT for selection to UK GP specialty training. In comparison to the FBI and Police Specials recruitment examples, the GP item is more complex and requires the applicant to rank five possible actions in order of appropriateness. It deals with more subtleties and requires the applicant to consider challenging interpersonal relationships (such as how best to deal with the patient, the nurses, and the consultant) and issues around professionalism. The response format used is directly relevant to the challenging judgements that doctors must make in the job role every day.

Example 4: SJT for selection to UK GP training

You are reviewing a routine drug chart for a patient with rheumatoid arthritis during an overnight shift. You notice that your consultant has inappropriately prescribed methotrexate 7.5mg daily instead of weekly.

Rank in order the appropriateness of the following actions in response to this situation.

A. Ask the nurses if the consultant has made any other drug errors recently

B. Correct the prescription to 7.5mg weekly

C. Leave the prescription unchanged until the consultant ward round the following morning

D. Phone the consultant at home to ask about changing the prescription

E. Inform the patient of the error

4. WHAT IS THE RESEARCH EVIDENCE FOR USING SJTS IN SELECTION?

For any selection tool in any context, it is important that there is appropriate evidence that the tool works; that is, is it selecting the right people for a role in a consistent way? As SJTs have been used for many years in many contexts, there is a great deal of evidence to support their use as part of selection processes.[7] This evidence is reviewed in this section.

4.1. Do SJTs work?

Research evidence has consistently shown that, as a selection tool, when designed appropriately, SJTs show good *reliability* (ie measure the criteria consistently) and *validity* (ie measure what they are intended to measure).[8,9] The research literature indicates that SJTs are able to predict job performance and training criteria across a range of occupations,[8,10,11] that is, the way an individual responds to an SJT question has been found to predict actual behaviour and performance once in a role. Several validity studies have also shown that SJTs are better predictors of subsequent job performance beyond structured interviews, tests of IQ and personality questionnaires.[12-14]

In selection for postgraduate training in UK General Practice, ongoing evaluation consistently shows that the SJT is reliable and effectively predicts performance in the subsequent assessment centre and receives positive reactions from applicants.[9,15] Long-term predictive validity studies have also shown the SJT to predict performance in training, in terms of supervisors' ratings[16] and subsequent performance in licensing exams.[17] Similar studies and long-term evaluation are planned for the SJT for selection to the Foundation Programme.

4.2. Are SJTs fair?

Applicants often perceive SJTs to be fairer than interviews as applicants are asked the same questions in the same way, therefore increasing standardisation. SJTs are marked using a standardised scoring key and so eliminating any bias that can be present in interviews.[18] Applicants' perceptions relating to SJTs are generally positive, perhaps because of the relevance of the scenarios to the target role – more so than, for example, IQ tests.[1,15]

In dealing with issues of fairness, researchers generally examine sub-group differences – that is, the extent to which different groups (such as ethnic groups) perform differently from other groups in a particular selection method. In relation to analysis of fairness, research shows that differences in mean scores on SJTs between ethnic groups tend to be smaller than for tests of IQ, for example.[19]

4.3. What do SJTs measure?

SJTs can assess a range of attributes (constructs) depending on the specific content of the test. This often makes it challenging for researchers to describe specifically what SJTs are measuring. This is not surprising as SJTs are used to measure a variety of skills and attributes. Some researchers claim that SJTs measure elements of practical intelligence, which has been defined as the ability to adapt to real-world environments.[20] SJTs have also been found to correlate significantly with cognitive ability (correlation of 0.46)[8,21] and also with some elements of personality, including agreeableness, conscientiousness and emotional stability.
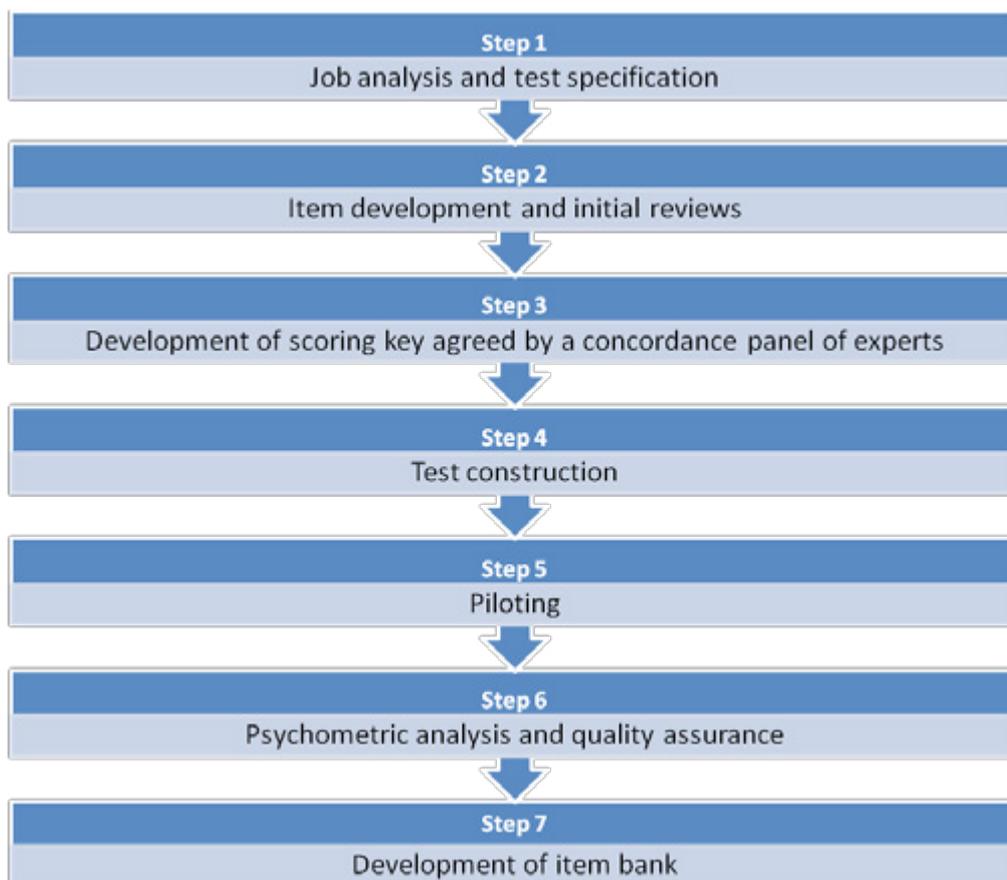
The best way to summarise the research literature is to note that SJTs measure an individual's awareness and judgement about what is effective behaviour in particular contexts. In the FY1 SJT, various professional attributes are targeted such as coping with pressure, teamwork and effective communication. Please see section 7 for more information.

SJTs are also designed to draw on an applicant's knowledge of how they should respond in a given situation, rather than how they would respond. This is proven to reduce the effects of coaching or 'test-wise' applicants, and is in line with the GMC's emphasis on probity. Please see section 8.4 for more information.

5. HOW ARE SJTS DEVELOPED?

The design of any SJT should undergo a thorough test development process. Each step is undertaken to ensure that the SJT is relevant to the role it has been developed for and is fair to all applicants. There are a variety of ways that SJTs can be developed, but typically, the design process should follow best practice. The key steps to best practice design of an SJT are shown in figure 1. This process was followed for the SJT for selection to the Foundation Programme (a full report on the design and pilot of the FY1 SJT is available from www.isfp. org.uk).

Figure 1. Steps to design and validate an SJT

Step 1
Job analysis and test specification

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Step 2
Item development and initial reviews

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Step 3
Development of scoring key agreed by a concordance panel of experts

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Step 4
Test construction

↓

Step 5
Piloting

↓

Step 6
Psychometric analysis and quality assurance

↓

Step 7
Development of item bank

The first step in designing an SJT is to determine the test specification. A test specification includes a description of the test content, the item types and response formats used (eg multiple choice, rank order, rating, best and worst, etc). Also included in the specification should be a description of the length of the test, the scoring convention to be used and how the test will be administered.

Having documented a test specification, items are developed in collaboration with those individuals who are familiar with the role (step 2). These Subject Matter Experts (SMEs) may include supervisors or role incumbents. A thorough and systematic review of these items is also undertaken by SMEs to ensure each item is fair, relevant to the role and realistic. Agreement is required on the scoring key for each item and this is typically done through a concordance panel with SMEs (step 3).

Step 4 requires construction of the test; it may be in a written paper and pencil format, presented electronically or for some SJTs, the scenario may be presented in a video or an interactive format.

It is then important that the constructed test is piloted to ensure that the test is fair and measuring what it is intended to measure (step 5). Piloting is also a great opportunity to seek applicant reactions to ascertain the acceptability of the test and gain feedback as to whether applicants are satisfied that the test is fair and relevant to the role applied for.

Following piloting, psychometric analysis is required to look at the reliability and validity of the test, as well as to ensure that each item is performing as expected (step 6). An analysis of fairness is carried out to check if there are any performance differences in the test based on applicant demographics such as gender or ethnicity. Finally, there will be further development of the item bank through ongoing writing and review of the items (step 7).

6. WHY USE AN SJT FOR SELECTION TO THE UK FOUNDATION PROGRAMME?

The research evidence has shown that SJTs are effective tools for use in selection; but why are they used for selection to the Foundation Programme?

Before FP 2013, the selection process to the Foundation Programme consisted of a 'white space' application form and academic quartiles. In 2009, 'The Next Stage Review: A High Quality Workforce' stated that 'new work needs to be undertaken to develop more reliable and valid selection tools for recruitment' to the Foundation Programme. This was in response to a number of concerns from students, medical schools, employers and senior clinicians involved in the selection process about the longevity of the 'white space' questions and the risk of plagiarism.

In response to this, an Options Appraisal was carried out to review the use of potential selection tools (www.isfp.org.uk). This extensive Options Appraisal showed an SJT to be the most effective and efficient way to select applicants, alongside a measure of educational performance.

As well as SJTs being able to select applicants according to the attributes required of the role and set out in the national person specification, the SJT is also able to address the issue of fairness. As the SJT items are standardised, and the scoring criteria are defined in advance, this means that all applicants have the same opportunity to demonstrate their competence and aptitude in relation

to attributes assessed in the SJT. In addition, the SJT is invigilated, meaning that applicants will have a fair chance to do well without the possibility that some are receiving outside help.

A further concern with the previous application form was the resource required to mark the white space questions. SJTs provide an efficient and flexible method of selection for large-scale recruitment as they can be administered to large groups and marking them is less resource-intensive than the previous 'white space' application forms, as they can be scanned and are machine markable. Consultants and other SMEs working closely with FY1s continue to be involved in the process – but they contribute their expertise in the development of the content of the SJT papers, which are machine marked, rather than in the hand marking of all answer sheets. Thus the clinical contribution to the SJT is significantly more efficient and effective than with the previous application process.

As SJTs are also used in a number of specialty selection processes, having an SJT as part of the selection to the Foundation Programme will assist applicants in familiarising themselves with this type of tool that they may encounter in future selection processes.

7. WHAT IS THE UK FY1 SJT DESIGNED TO MEASURE?

The person specification for the UK Foundation Programme sets out the expectations of the foundation doctor. The SJT provides a measure of the professional attributes associated with being an FY1 doctor. The SJT is not designed to assess clinical knowledge and skills or academic ability; these are assessed through the Educational Performance Measure, and eligibility for the Foundation Programme is contingent on successful qualification from the undergraduate programme. Attributes such as professionalism and inter-personal skills are central to the role of a doctor and it is important that these attributes are measured as part of the selection process to the Foundation Programme, alongside a measure of academic performance. Just as a job requires skills in many areas, the SJT is able to cover a wide range of scenarios covering the complex and varied work role of an FY1 doctor.

To define the professional attributes that are expected in the FY1 role, and as such, those to be assessed as part of the SJT, a multi-method job analysis was conducted (www.isfp.org.uk) in line with best practice as a first step in designing any selection system. A job analysis is a systematic process for collecting and analysing information about jobs. A properly conducted job analysis provides

objective evidence of the skills and abilities needed for effective job performance and thus provides support for the use of selection procedures measuring those skills and abilities.

The FY1 job analysis was undertaken in a range of clinical settings ranging from inner-city Manchester, rural Cambridgeshire and the more remote Scottish islands, and included interviews with those familiar with the FY1 role, observations of FY1 doctors and a validation survey that asked participants to rate the importance of the professional attributes identified. A total of 294 individuals participated in the job analysis, providing a wide range of perspectives. The results from this analysis showed that the SJTs should target five professional attributes and these are outlined below (further details can be found in Appendix A):

• Commitment to Professionalism
• Coping with Pressure
• Effective Communication
• Patient Focus
• Working Effectively as Part of a Team

A matrix which outlines the SJT target attribute domains and examples of possible SJT scenarios associated with them is provided in Table 1. The FY1 job analyis undertaken is available from www.isfp.org.uk.

Table 1: Matrix of SJT Target Attribute Domains

Commitment to Professionalism	• Dealing with issues of confidentiality, eg hearing a colleague talking about a patient outside of work • Challenging inappropriate behaviour, eg consultant speaking to a colleague/patient in an inappropriate way • Commitment to learning, eg need to go to teaching while also being needed on the ward
Coping with Pressure	• Knowing how to respond when you make a mistake, eg providing wrong medication to patient • Dealing with confrontation, eg with an angry relative • Seeking help when not sure of the correct procedure / best way of doing things
Effective Communication	• Gathering information and communicating your intentions to nursing staff or other colleagues • Negotiating, eg for a scan from radiology • Listening and effectively communicating, eg with an unhappy patient or relative

Patient Focus	• Identifying that a patient's views and concerns are important and they should have input into their care • Considering that a patient may have different needs from others around them • Spending time trying to understand a patient's concerns and empathising with them
Working Effectively as Part of a Team	• Recognising and valuing the skills and knowledge of nursing staff, when faced with a disagreement about a patient's care • Consulting with colleagues about how to share workload fairly • Offering assistance and support to colleagues when they are not able to handle their workload

8. STRUCTURE AND FORMAT OF THE FY1 SJT

8.1. How was the FY1 SJT developed?

All items developed for the SJT for selection to the Foundation Programme have been through the extensive development process outlined in section 5. New SJT items are developed each year to ensure that the scenarios presented to applicants are relevant and reflect current practice.

To ensure the SJT content is relevant to the role of a FY1 and is fair to all applicants, working with SMEs is essential for item development. FY1 SJT scenarios are therefore written in collaboration with SMEs from a wide range of specialties. This ensures that the scenario content covers the breadth of the role of a FY1. SMEs include educational and clinical supervisors, clinical tutors and foundation doctors themselves.

Scenarios developed are based on critical incidents involving FY1 doctors' or SMEs' own or others' experience of situations faced by FY1 doctors. As such, all items are relevant to the role of an FY1 and reflect scenarios or incidents that a FY1 may encounter. Each SJT scenario will target one of the five professional attribute domains outlined in section 7. Scenarios are relevant to FY1 clinical work but they do not assess the applicant's clinical knowledge.

All SJT items undergo a thorough review process that includes a review by experts in SJT design and development, and a review by a team of SMEs which include foundation doctors. At each stage, items are reviewed for fairness and relevance. Reviews also take place to ensure that each item is appropriate for all applicants in terms of the language used and that locality-specific knowledge is avoided. This ensures that the SJT is fair to all applicants.

8.2. Context of the FY1 SJT

As the SJT is a measure of aptitude for entry to foundation training, it is designed to be set within the context of the Foundation Programme, with the applicant assuming the role of an FY1 doctor. Although the applicant is asked to assume the role of a FY1 doctor, each scenario is reviewed to ensure that a final-year medical student is able to respond to the scenario and that the scenario does not contain any knowledge of procedures or policies that would only be learned once in the role.

8.3. Format

Most SJTs are written and delivered as a paper and pencil test.[2] Whilst video-based testing is possible, written tests offer wider participation and more cost-effective delivery.[22] Written SJTs, in comparison to video-based SJTs, have also been found to have a higher correlation with cognitive ability[22] and so can be more appropriate in job roles that require advanced cognitive processing skills, as in medicine. The FY1 SJT is presented in written format.

There are a variety of different response formats that can be used in SJTs; for example, pick best, pick best/worst, pick best three, rate effectiveness and rank options. In the SJT for selection to the Foundation Programme, applicants are asked to rank the responses as in example 5, or choose the three most appropriate actions from a list of eight possible options as seen in example 6. The choice of response format reflects the scenario content and the appropriate format to both provide and elicit the information needed. For example, the nature of some scenarios and the possible responses to them lend themselves to ranking items (requiring the ability to differentiate between singular responses to a scenario), whereas some scenarios lend themselves to multiple choice items (where it is necessary to do more than one thing or tackle more than one aspect in response to a scenario).

Two typical examples of items that employ these types of response format are presented next, along with the typical answer response format.

Example 5: SJT for FY1

You are looking after Mr Kucera who has previously been treated for prostate carcinoma. Preliminary investigations are strongly suggestive of a recurrence. As you finish taking blood from a neighbouring patient, Mr Kucera leans across and says "tell me honestly, is my cancer back?"

Rank in order the appropriateness of the following actions in reponse to this situation

A. Explain to Mr Kucera that it is likely that his cancer has come back
B. Reassure Mr Kucera that he will be fine
C. Explain to Mr Kucera that you do not have all the test results, but you will speak to him as soon as you do
D. Inform Mr Kucera that you will chase up the results of his tests and ask one of your senior colleagues to discuss them with him
E. Invite Mr Kucera to join you and a senior nurse in a quiet room, get a colleague to hold your 'bleep' then explore his fears

Mark your chosen ranking for each option by filling the lozenge of the appropriate number on the answer sheet. If you thought D was the most appropriate option in response to question 1, A the second most appropriate, B the third, E the fourth and C the least appropriate option, you would complete the answer sheet as follows:

(Please note that you may not give 2 options the same rank):

The correct answer for this item is DCEAB. How the ranking items are scored is outlined further in section 8.6.

Example 6: SJT for GP speciality training

You are looking after Sandra Jones, who is being investigated in hospital. You are asked by her family not to inform Mrs Jones if the results confirm cancer.

Choose the THREE most appropriate actions to take in this situation.

A. Ignore the family's wishes

B. Agree not to tell Mrs Jones

C. Explain to the family that it is Mrs Jones's decision

D. Ask Mrs Jones whether she wishes to know the test results

E. Ask Mrs Jones whether she wishes you to inform the family

F. Inform Mrs Jones that her family do not wish her to have the results

G. Give the results to the family first

H. Give the results to the next of kin first.

Fill in the lozenges on the answer sheet for the three options you have chosen. For example, if you thought the three most appropriate options in response to an item were B, F and H, you would complete the answer sheet as follows:

The correct answer for this item is CDE. How the multiple choice items are scored is outlined further in section 8.6.

Using both response formats enables a fuller range of item scenarios to be used, rather than forcing scenarios into a less appropriate item type and potentially reducing item effectiveness (eg asking applicants to rank three equally correct options). Approximately two thirds of the items used in the FY1 SJT will have the ranking answer format, and one third will have the multiple choice format. This will allow a good balance of scenarios and attributes to be tested.

8.4. Response instructions

8.4.1. 'Should' versus 'would'

The general response instructions for all the items in the test have a knowledge-based format (how *should* you respond) as opposed to a behavioural-based format (how *would* you respond). Knowledge-based instructions are deemed more appropriate for high-stakes selection as they measure maximal performance (how respondents perform when doing their best), whereas behavioural-based instructions measure typical performance (how one typically behaves).[14] It is therefore not possible to fake the answer by trying to give the answer that an applicant thinks the employer wants, as can be done in a typical performance test using a behavioural-based format. Knowledge-based instructions have also been found to be less susceptible to coaching than behavioural response formats[14] due to some of the aspects outlined above. In this way, the FY1 SJT is designed to minimise susceptibility to coaching effects.

In the context of professional behaviour, and with the General Medical Council (GMC) putting a high premium on probity, it is also more appropriate to frame the response instruction as how you 'should' respond rather than how you 'would' respond. For example, the correct answer, as determined by a panel of SMEs, will be in accordance with GMC guidelines including *Good Medical Practice* (2013) and policy documents such as *Tomorrow's Doctors* (2009); hence the answer will always be how an FY1 'should' respond. Although it is appreciated that asking an applicant how they 'should' respond may not reflect their behaviour in the role, it does provide evidence that the applicant is aware, or not, of what defines appropriate behaviour in the role.

8.4.2. Different types of response instructions

Responses to scenarios are usually *actions* taken to address the situation. For the majority of the scenarios the applicant is asked to judge the appropriateness of independent actions, ie '*Rank in order the appropriateness of the following actions in response to this situation (1= Most appropriate; 5= Least appropriate)*', as shown in example 5. These scenarios require the applicant to think about the appropriateness of each of the different options presented. For these scenarios the actions are discrete actions, and should not be thought of as chronological. In contrast, other scenarios ask the applicant to '*Rank the order*

in which the following tasks should be undertaken (1= Do first; 5= Do last)'. These scenarios require the applicant to think about which actions should be completed first and which should be left until later.

Other scenarios may have different response instructions and the nature of the response options can change. For example, some scenarios ask applicants to '*Rank in order the importance of the following considerations in the management of this situation (1= Most important; 5= Least important)*'. In this case the response options, rather than being actions, will instead be considerations which could be taken into account in the management of the situation, eg '*How the patient feels about the procedure*'.

The relevant response instruction is highlighted for each item so it is important that each item is read carefully.

8.5. Response options

Response options will be realistic and the 'best response' will always be included. For scenarios where the applicant is asked to consider the appropriateness of actions (whether ranking or multiple choice), there will be a mixture of good, acceptable and poor responses to the situation. However, completely implausible responses are not included as an option, as judged by SMEs.

8.6. Scoring of the test

In contrast with clinical knowledge items, with SJT items there is often no definitive correct answer, as the scenarios implicitly assess judgement. Following best practice, the SJT scoring key is determined through:

• Consensus at the item review stage of item writers and initial SMEs
• Expert judgement in a concordance panel review
• Review and analysis of the pilot data (NB in addition to items developed in piloting, all new items are trialled alongside live items before they 'count'). Consideration is given to how applicants keyed the items and the consensus between this and the key derived from the first two stages.

Concordance panels involve SMEs, in this case clinicians, completing an SJT consisting of trial items. Following best practice in SJT design, the aim of a concordance stage is to identify a high level of consensus between experts on the scoring key (correct answer). Those items that exhibit high levels of consensus go forward to piloting. Those items exhibiting low levels of consensus are put to one side for further review with changes made if necessary. The criteria for

SME involvement in the concordance panel is that the individuals work closely with FY1 doctors and are very familiar with the responsibilities and tasks, as well as the necessary skills and abilities required for the role.

The final key is determined using data from several pilot studies. For example, if high-performing applicants consistently provided a different key from the established key from the concordance panel review, then the key would be reviewed with the assistance of SMEs.

Despite this predetermined scoring key, the scoring is not 'all or nothing'. It is based on how close the response is to the key. For ranking items, up to 20 marks are available for each item. For each of the five response options up to four marks are available. For ranking items, applicants get points for 'near misses'; therefore an applicant does not need to get every option in exactly the correct order to obtain a good score on the SJT. Figure 2 provides an example of how the ranking scoring system works.

Figure 2: Ranking scoring system

Keyed Rank	Candidate Rank				
	1	2	3	4	5
1	**4**	3	2	1	0
2	3	**4**	3	2	1
3	2	3	**4**	3	2
4	1	2	3	**4**	3
5	0	1	2	3	**4**

Example ranking scoring

Using example 5 we can demonstrate how the scoring convention works for a ranking item.

> **You are looking after Mr Kucera who has previously been treated for prostate carcinoma. Preliminary investigations are strongly suggestive of a recurrence. As you finish taking blood from a neighbouring patient, Mr Kucera leans across and says "tell me honestly, is my cancer back?"**
>
> *Rank in order the appropriateness of the following actions in response to this situation (1= Most appropriate; 5= Least appropriate).*
>
> A. Explain to Mr Kucera that it is likely that his cancer has come back
> B. Reassure Mr Kucera that he will be fine
> C. Explain to Mr Kucera that you do not have all the test results, but you will speak to him as soon as you do
> D. Inform Mr Kucera that you will chase up the results of his tests and ask one of your senior colleagues to discuss them with him
> E. Invite Mr Kucera to join you and a senior nurse in a quiet room, get a colleague to hold your 'bleep' then explore his fears

Mark your chosen ranking for each option by filling the lozenges on the answer sheet. If you thought D was the most appropriate option in response to Question 1, A the second most appropriate, B the third, E the fourth and C the least appropriate option, you would complete the answer sheet as follows:

(Please note that you must not tie your answers):

The correct answer is DCEAB. For this example response, the applicant would receive the following marks:

- 4 points for option D as it is in the correct position
- 1 point for option C as the correct position is 2, but it was ranked 5th
- 3 points for option E as the correct position is 3, but it was ranked 4th
- 2 points for option A as the correct position is 4, but it was ranked 2nd
- 2 points for option B as the correct position is 5, but it was ranked 3rd

The total marks the applicant would therefore receive for this item is 12 out of a possible score of 20.

For multiple response items, points are received for each correct answer provided; no negative marking is used. Four points are available for each option identified correctly, making a total of 12 points available for each item. If an applicant provides more than three answers then they will receive no marks for that item.

Example multiple choice scoring

The example below demonstrates how the scoring convention works for a multiple choice item.

You review a patient on the surgical ward who has had an appendicectomy done earlier on the day. You write a prescription for strong painkillers. The staff nurse challenges your decision and refuses to give the medication to the patient.

Choose the THREE most appropriate actions to take in this situation.

A. Instruct the nurse to give the medication to the patient
B. Discuss with the nurse why she disagrees with the prescription
C. Ask a senior colleague for advice
D. Complete a clinical incident form
E. Cancel the prescription on the nurse's advice
F. Arrange to speak to the nurse later to discuss your working relationship
G. Write in the medical notes that the nurse has declined to give the medication
H. Review the case again

Circle the letters for the three options you have chosen on the answer sheet. For example, if you thought the three most appropriate options in response to an question item were B, F and H, you would complete the answer sheet as follows:

The correct answer is BCH. In this case the applicant would receive:

- 4 points for option B
- 0 points for choosing option F
- 4 points for choosing option H

The applicant would therefore receive a total of 8 marks for this item out of a possible score of 12.

8.7. Time allowed for the test

The SJT for selection to the Foundation Programme will last for two hours and 20 minutes and will consist of 70 items (60 'live' items and 10 'pilot' items). It is recommended that you allow yourself two minutes to answer each item, which is consistent with previous applicant experience and feedback during the SJT.[12] Although applicants find the SJT challenging, the vast majority complete the test well within the allocated time. For FP 2013, 98% of applicants attempted all items on the paper.

Sixty 'live' items allows sufficient distribution of scores considering the large number of applicants who will be taking the test. This length of test was shown to be sufficient to cover the five target attribute domains in a reliable and broad way without giving applicants undue time pressures. It is a slightly greater number than similar tests used in other areas of medical selection, and this is planned to ensure a sufficient level of test reliability in the context of selection to the Foundation Programme.

Ten items are 'pilot' items that are embedded within the test in order to validate them for future use. This method of validating trial items is consistent with psychometric test use throughout selection practice in all contexts. Your response to the trial items will not be included in your final score.

9. HOW SHOULD I BEST APPROACH SITTING THE FY1 SJT?

9.1 Useful resources

- UKFPO website for application information, practice SJT paper, Applicant's Handbook, person specification – www.foundationprogramme.nhs.uk

- ISFP website, for project background, design and development of the SJT and the FY1 Job Analysis – www.isfp.org.uk/pages/default.aspx

- GMC, for *Good Medical Practice* (2013) and *Tomorrow's Doctors* (2009) – www.gmc-uk.org

- Foundation Programme Curriculum – www.foundationprogramme.nhs.uk/pages/home/training-and-assessment

9.2 Familiarity with professional attributes

The SJT measures aptitude against the person specification, which is underpinned by the GMC's *Good Medical Practice* (2013). The SJT measures the professional attributes identified as important for an FY1, as defined by the job analysis and the person specification, and it is important for applicants to be familiar with these (outlined in section 7 of this booklet and explored in detail in Appendix A).

The SJT assumes that applicants have knowledge and insight into the job role of an FY1 doctor and applicants will be asked to respond as they should as an FY1 doctor. The scenarios are set in a clinical setting but there is no requirement for specific clinical knowledge as the test is targeting professional attributes, such as effective communication and coping with pressure.

9.3 Practical tips

- Look closely at the detail of the scenario, the options and the instructions. Ensure you understand how the responses relate to the scenario, eg whether you are being asked to rank the appropriateness of discrete actions, place actions in the order you would carry them out, or rank the importance of considerations.

- Read each scenario thoroughly, and each possible response, before beginning to rank or choose the responses. Familiarise yourself with the different item types and how to answer each type on the answer sheet.

- You are expected to use only the information provided; do not make assumptions about the situation or scenario. It may be that you would like more information within the scenario, however you should respond using only the information available in the scenario. Reviews have ensured that the scenarios contain sufficient information to be able to respond.

- Remember you are being asked how you 'should' respond and not necessarily how you 'would' respond.

- Remember that you can only choose from the available options and that you are being asked to evaluate these, not any other possible options. When being asked to rank those options, they may not represent all possible responses but your task is to put them in order as per the response instruction.

- Answer ranking items in full. You can score up to four marks for each of the responses you rank – but if you leave an answer blank, you won't receive any marks for your thinking. There is no negative marking.

- For multiple choice items, select only three answers. If you select four or more answers, you will score zero marks for the whole item. There is no negative marking for incorrect answers – you receive four marks for each of the three correct answers you give.

- Do not spend too much time on one item. There are approximately two minutes allowed for each item. If you are struggling with an item then move on to the next.

- Make sure you fully understand how to complete the answer sheet correctly, and that you allow enough time to fill in the answer sheet as you go – you don't want to risk losing marks because you run out of time to transcribe your answers at the end. No extra time can be permitted. An example answer sheet can be found on the UKFPO website to accompany the practice paper (www.foundationprogramme.nhs.uk/pages/home/how-to-apply/SJT/EPM).

9.4. Coaching

No coaching is required to take the SJT, and you do not need to revise. However, practising with the example questions can assist with familiarisation with the format of the SJT and completing the answer sheet, as well as knowledge and understanding of the attributes expected of an FY1 doctor (see section 7) and the policies and procedures within which FY1s work.

There is limited evidence to suggest that coaching will significantly improve an applicant's score on an SJT.[23,24] One study found that participants who received coaching for two different SJTs performed better on one of the SJTs but worse on the other in comparison to a control group. After further investigation, the authors concluded that SJTs typically constructed in collaboration with SMEs

rather than from defined rules are less coachable. As explained in section 3, the SMEs are fundamental to the construction of the FY1 SJT and the items have been designed to reduce the ability for coaching. Applicants should be wary about paying independent coaching firms as the advice given may not be factually correct.

We are aware that there are commercial guides and courses on the SJT, however these are not endorsed by the UKFPO. The only preparation material endorsed by the UKFPO, and created by those involved in developing the SJT for the Foundation Programme, is available free of charge from this website, and includes the practice paper with worked answer rationales (www.foundationprogramme. nhs.uk/pages/home/how-to-apply/SJT/EPM).

10. FREQUENTLY ASKED QUESTIONS

1. How are my marks on the SJT used?

Your marks on the SJT will be used to award you a number of SJT points, which will be combined with your points achieved for the Educational Performance Measure (EPM). Your combined number of points will be your application score, and this will be used to give you a ranking alongside all other applicants for that year and thus to determine your foundation school allocation. Please refer to the Applicant's Handbook for more information.

2. How will you ensure that the SJT is still fair and relevant?

Every year new items will be developed to refresh the item bank. In addition, every year there will be a review of existing items to ensure that they align with the current Foundation Programme curriculum and don't go out of date. In line with best practice, each year a quality assurance evaluation of the SJT will be undertaken which will include analysis of reliability and tests of group differences. Applicant feedback will also be sought and monitored. Studies of predictive validity (ie does the SJT predict performance in the role?) are planned and results of these will be disseminated when available.

3. I am not an FY1, how will I know how I should respond in these scenarios?

The SJT has been developed specifically to be appropriate for final-year medical students. Although the SJT is set in the context of the Foundation Programme, all items have been reviewed to ensure they are fair and able to be answered by medical students. All items also avoid specific knowledge

about procedures or policies that may not be experienced until the Foundation Programme. We suggest that you familiarise yourself with the person specification and the professional attributes, and also use your own experience to help you answer the questions.

4. Will I get specific feedback on how I did on the SJT?

You will be provided with the number of points you achieve on the SJT. Specific feedback about how you do on each item cannot be provided as this would require providing information about the correct answers. Some of these items may be used in future years and thus cannot be shared.

5. What if I don't finish on time?

The test is designed so that there is sufficient time for applicants to complete the test. You will not receive marks for any items that you do not answer, but you will not be negatively marked (ie your score on other items won't be reduced). It is important that you try and plan your time carefully.

6. Can the answers be faked?

By using knowledge-based instructions that assesses maximal performance, applicants are asked to make judgements about 'how you should respond'. Therefore, there is less likelihood of being able to 'fake' the test.

APPENDIX A – SJT DOMAINS

Professional Attribute	Behavioural Descriptors
1. Commitment to Professionalism *Displays honesty, integrity and awareness of confidentiality and ethical issues. Is trustworthy and reliable. Demonstrates commitment and enthusiasm for role. Willing to challenge unacceptable behaviour or behaviour that threatens patient safety, when appropriate. Takes responsibility for own actions.*	1. Is punctual 2. Takes responsibility for own actions/work 3. Owns up to mistakes 4. Takes responsibility for own health and well-being 5. Demonstrates commitment to and enthusiasm/motivation for role 6. Understands/is aware of the responsibility of the role of being a doctor 7. Is reliable 8. Displays honesty towards others (colleagues and patients) 9. Trustworthy 10. Identifies/challenges unacceptable/unsafe behaviour/situations when appropriate (colleague/organisational issues) 11. Challenges others' knowledge where appropriate 12. Understands/demonstrates awareness of ethical issues, including confidentiality
2. Coping with Pressure *Capability to work under pressure and remain resilient. Demonstrates ability to adapt to changing circumstances and manage uncertainty. Remains calm when faced with confrontation. Develops and employs appropriate coping strategies and demonstrates judgement under pressure.*	1. Remains calm and in control of situations 2. Manages uncertainty/ambiguity 3. Effectively deals with outcomes of mistakes/decisions 4. Exhibits flexibility/adaptability when dealing with changing circumstance or issues 5. Employs effective coping mechanisms for dealing with stress/emotions 6. Demonstrates good judgement under pressure 7. Does not give up easily 8. Deals appropriately with confrontational/difficult situations (colleagues/patients) 9. Seeks support when faced with stress/pressure

Professional Attribute	Behavioural Descriptors
3. Effective Communication *Actively and clearly engages patients and colleagues in equal/open dialogue. Demonstrates active listening. Communicates verbal and written information concisely and with clarity. Adapts style of communication according to individual needs and context. Able to negotiate with colleagues and patients effectively.*	**General** 1. Listens effectively 2. Ensures surroundings are appropriate when communicating 3. Understands/responds to non-verbal cues 4. Uses non-verbal communication effectively **With patients** 1. Uses language that is understood by patients/relatives and free from medical jargon 2. Demonstrates sensitive use of language 3. Communicates information to patients clearly and concisely 4. Adjusts style of communication according to patient's/relative's needs 5. Adjusts how much information to provide according to patient's/relative's needs 6. Provides information to patients and keeps them updated 7. Readily answers patient's and relative's questions 8. Ensures he/she has all the relevant information before communicating to patients/colleagues 9. Asks questions/seeks clarification to gain more information/understanding about the patient 10. Finds out patient's/relative's level of knowledge/understanding 11. Allows patients/relatives to ask questions and uses silence effectively 12. Checks patient's/relative's understanding 13. Summarises information / reflects back to patients to clarify their own understanding **With colleagues** 1. Asks questions of colleagues to gain more information 2. Provides/summarises information accurately and concisely to colleagues 3. Provides only relevant information to colleagues 4. Keeps colleagues informed/updated (about patients and about where they will be) 5. Is able to negotiate/ use diplomacy 6. Knows exactly what colleagues are asking for and why 7. Is assertive where necessary 8. Adapts style of communication according to need and situation 9. Clarifies information to check their own understanding **Written** 1. Displays high standards of written communication 2. Uses concise and clear written communication 3. Has legible handwriting

Professional Attribute	Behavioural Descriptors
4. Patient Focus *Ensures patient is the focus of care. Demonstrates understanding and appreciation of the needs of all patients, showing respect at all times. Takes time to build relationships with patients, demonstrating courtesy, empathy and compassion. Works in partnership with patients about their care.*	1. Is able to gain trust from patients / instil confidence 2. Is empathetic towards patients 3. Is able to maintain appropriate distance from patients/relatives 4. Is willing to make self available to patients (for support / provide continuity / get to know them) 5. Understands/considers the differing needs of patients 6. Recognises that patients have different backgrounds/values/beliefs 7. Shows respect for patients 8. Works jointly with the patient about their care 9. Recognises the patient as the centre of care 10. Shows a genuine interest in patients 11. Shows compassion towards patients/relatives 12. Is willing to spend time with relatives 13. Builds rapport with patients 14. Is polite, courteous and presents an open manner when dealing with patients 15. Provides reassurance to patients 16. Considers patients' safety at all times
5. Working Effectively as Part of a Team *Capability and willingness to work effectively in partnership with others and in multi-disciplinary teams. Demonstrates a facilitative, collaborative approach, respecting others' views. Offers support and advice, sharing tasks appropriately. Demonstrates an understanding of own and others' roles within the team and consults with others where appropriate.*	1. Demonstrates an understanding of others' roles within the team, including a recognition of others' knowledge/skills/abilities/roles/responsibilities 2. Is able to identify and utilise the most appropriate person for a task/situation 3. Is aware of own role/responsibilities within a team 4. Builds rapport and establishes relationships with other team members 5. Supports others (in a non-task-related way) 6. Is willing to offer assistance with tasks/workload 7. Is willing to offer/provide advice 8. Values other people's opinions and contributions 9. Shows respect for colleagues 10. Delegates and shares tasks effectively 11. Maintains harmony within the team 12. Identifies when others are are struggling/ in difficulty 13. Is able to take on board team members' perspectives 14. Is able to adapt role within team where necessary, ie take on role of leader 15. Shares knowledge and expertise with colleagues 16. Is willing to take direction from others 17. Consults with others and asks for advice 18. Makes others aware of own workload

REFERENCES

1. Lievens F, Sackett PR. Situational judgement tests in high-stakes settings: Issues and strategies with generating alternate forms. *Journal of Applied Psychology* 2007;92:1043-1055.

2. Weekley JA, Ployhart RE. Situational judgment: Antecedents and relationships with performance. *Human Performance* 2005;18:81-104.

3. Dubois PH. *A history of psychological testing.* Boston: Allyn and Bacon, 1970.

4. Northrop LC. *The psychometric history of selected ability constructs.* Washington, DC: U.S. Office of Personnel Management; 1989.

5. Whetzel DL, McDaniel MA. Situational judgment tests: An overview of current research. *Human Resource Management Review* 2009;19:188–202.

6. Patterson F, Ferguson E, Lane PW, Farrell K, Martlew J, Wells AA. Competency model for general practice: implications for selection, training and development. *British Journal of General Practice* 2000;50:188-93.

7. Patterson F, Ashworth V, Zibarras L, Coan P, Kerrin M, O'Neill P. Evaluating the effectiveness of situational judgement tests to assess non-academic attributes in selection. *Medical Education* 2012 (in press).

8. McDaniel MA, Morgeson FP, Finnegan, EB, Campion MA, Braverman EP. Use of situational judgment tests to predict job performance: A clarification of the literature. *Journal of Applied Psychology* 2001;86:730-740.

9. Patterson F, Baron H, Carr V, Plint S, Lane P. Evaluation of three short-listing methodologies for selection into postgraduate training in general practice. *Medical Education* 2009a 43:50-57.

10. Chan D, Schmitt N. Situational judgment and job performance. *Human Performance* 2002;15:233-254.

11. Borman WC, Hanson MA, Oppler SH, Pulakos ED, White LA. Role of early supervisory experience in supervisor performance. *Journal of Applied Psychology* 1993;78:443-449.

12. Lievens F, Buyse T, Sackett PR. Retest effects in operational selection settings: Development and test of a framework. *Personnel Psychology* 2005a;58:981-2007.

13. O'Connell MS, Hartman NS, McDaniel MA, Grubb WL, Lawrence A. Incremental validity of situational judgement tests for task and contextual job performemance. *International Journal of Selection and Assessment* 2007;15:19-29.

14. McDaniel MA, Hartman NS, Whetzel DL, Grubb WL. Situational judgement tests, response instructions and validity: A meta-analysis. *Personnel Psychology* 2007;60:63-91.

15. Koczwara A, Patterson F, Zibarras L, Kerrin M, Irish B, Wilkinson M. Evaluating cognitive ability, knowledge tests and situational judgement tests for postgraduate selection. *Medical Education* 2012;46(4):399-408.

16. Lievens F, Patterson F. The validity and incremental validity of knowledge tests, low-fidelity simulations, and high-fidelity simulations for predicting job performance in advanced high level high-stakes selection. *Journal of Applied Psychology* 2011;96(5);927-940.

17. Patterson F, Zibarras L, Carr V, Irish B, Gregory S. Evaluating candidate reactions to selection practices using organizational justice theory. *Medical Education* 2011;45:289-297.

18. Banki S, Latham GP. The Criterion-Related Validities and Perceived Fairness of the Situational Interview and the Situational Judgment Test in an Iranian Organisation. *Applied Psychology: An International Review* 2010;59:w4–142.

19. Motowidlo SJ, Tippins N. Further studies of the low-fidelity simulation in the form of a situational inventory. *Journal of Occupational and Organizational Psychology* 1993;66:337-344.

20. Sternberg RJ. Creating a vision of creativity: The first 25 years. *Psychology of Aesthetics, Creativity, and the Arts* 2006;1:2-12.

21. Nguyen NT, McDaniel MA. Constructs assessed in situational judgment tests: A meta-analysis. Paper presented at the 16th Annual Convention of the Society for Industrial and Organizational Psychology, 2001 April; San Diego, CA.

22. Lievens F, Sackett PR. Video-based vs. written situational judgment tests: A comparison in terms of predictive validity. *Journal of Applied Psychology* 2006;91:1181–1188.

23. Oswald FL, Schmitt N, Kim BH, Ramsay LJ, Gillespie, MA. Developing a biodata measure and situational judgment inventory as predictors of college student performance. *Journal of Applied Psychology* 2004;89:187-207.

24. Lievens F, Buyse T, Sackett PR. Retest effects in operational selection settings: Development and test of a framework. *Personnel Psychology* 2005b;58:981-2007.