The Perception and Impact of Changes in the Recruitment and Assessment of Orthodontic Specialty Registrars (StR)

Thesis submitted in accordance with the requirements of the University of Liverpool for the Degree of Doctor of Dental Science (Orthodontics)

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ABSTRACT

Aims: 1) To assess interviewers' and interviewees' perceptions and experiences of Multi-Station Interview (MSI) for selection of Orthodontic Specialty Registrars (StRs) to UK regional Orthodontic training programmes; 2) To assess Trainers' and Trainees' perceptions and experiences of National Recruitment (NR); 3) To explore trainers' and trainees' perceptions and experiences of Workplace-Based Assessments (WBAs) in Orthodontic StR training in England.

Design: Cross-sectional questionnaire based qualitative survey.

Methods: The study was conducted in three phases. **Phase I** involved interviewers and interviewees attending National Recruitment for Orthodontic StRs in May 2012. **Phase II** was conducted in August 2013 and, involved the trainees who had been recruited through the first National Recruitment and their trainers. **Phase III** was conducted in August 2013 and involved trainees who had started their training in 2011 or 2012 under the new curriculum. Two questionnaires were designed for each phase, one for trainers and one for trainees. Statistical analysis included descriptive statistics and frequency distributions.

Results: **Phase 1:** 88% (36/41) of interviewers and all interviewees (83/83) completed the questionnaires. Of the **interviewers**, 56% were male; their mean age was 45.5 years (95%CI 43.0, 48.0) and the mean time that they had been a consultant was 11.4 years (95%CI 8.7, 13.1). The interviewers thought that the interviews were fair, tested an appropriate range of competences, selected the best candidates to be appointed and would appoint the same people if repeated. Of the **interviewees**, 61% were female; their mean age was 28.9 years (95%CI 28.2, 29.6) and their mean time since they qualified as dentist was 5.6 years (95%CI 4.9, 6.3) with 78% qualifying from a UK university. The interviewees preferred MSI format, considered the questions easy to understand and thought that the MSI was fairer than traditional interviews.

Phase II: 53% (96/180) of trainers and 73% (19/26) of the trainees completed the questionnaires. For these **trainers**, 53% were male and the mean time that they had been a consultant was 13.6 years (95%CI 11.97, 15.20). Of the trainers who answered the questionnaire, 76% had not been involved in the NR interview process, 81% of them agreed that trainers need some choice as to who is appointed to their unit; 73% agreed that the previous recruitment system gave them more ownership and responsibility for their trainees; 66% would rather have the post empty for a year, than accept a weak trainee. For the **trainees**, the majority of them (81%) agreed that the NR meant that they did not have to miss out on other job possibilities whilst waiting for the one they wanted; all the trainees agreed that the NR reduced the time-off work they needed for interviews and visits. Of the trainees who completed the questionnaire, 58% agreed that NR increased their choice about where they applied to train; however, 8 (42%) felt pressurised to preference more units than they would have applied to previously; 13 (68%) would like to have been interviewed by their prospective trainer(s) but 12 (63%) would not have preferred to apply through the previous regional recruitment process. The vast majority (83%) of the trainees were allocated to one of their top three preferences and 67% of them would rank the units in the same order again. Only about half (52.6%) of the trainees visited units that they preferenced although 90% of the trainees agreed that visiting the units helped them rank their preferences. Almost all of them, (95%), were happy with their allocated unit(s).

Phase III: 42% (76/180) of trainers and 62% (46/74) of the trainees completed the questionnaires. Of the **trainers**, the mean time that they had been a consultant was 12.8 years (95%CI 10.98, 14.66). The gender of the trainers was equally distributed. About half of the trainers spent 0.25 PA per month undertaking WBAs for their trainee(s) although 88% of the trainers did not have any PAs in their job plan for WBAs. 55% of them used less than 25% of their SPAs sessions for WBAs. However, 17% of the trainers had to use more than 75% of their SPAs session to conduct WBAs. Of the 74 **trainees**

who answered the questionnaire, 74% were female. In District General Hospitals, 91% of the trainees arranged their own WBAs. On average, trainees spent an hour per month undertaking WBAs. The mean number of completed WBAs per year was 12 (SD 4.2; 95%CI 10.7, 13.7) with the mode being 10 WBAs. Almost all trainees, (33/34) had more than 80% of their WBAs undertaken by consultants. Most of the trainees, 41% (14/34) had 3 trainers to undertake their WBAs.

Conclusions: 1) Interviewers were positive about the selection of candidates, fairness and conduct of the multi-station interview format. Interviewees were very positive about the organisation and fairness of the multi-station interview format. 2) Overall there was a statistically significant difference in trainers' and trainees' perception of the NR. 3) Overall there was no statistically significant difference in trainers' and trainees' perception of the WBAs, which were acceptable to the trainers and trainees.

Research Communication

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List of abbreviations

AoMRC	Academy of Medical Royal College
ARCP	Annual Review of Competence Progression
BOS	British Orthodontic Society
CbD	Case based discussion
COG	Consultant Orthodontists Group
COPDEND	Committee of Postgraduate Dental Deans and Directors
COPMed	Conference of Postgraduate Medical Education Deans of the UK
CPD	Continuing Professional Development
DCC	Direct Clinical Care
DDSc	Doctor of Dental Science
DOPS	Direct Observation of Procedural Skills
DPB	Dental Programme Board
FTTA	Fixed Term Training Appointment (from July 2010 these are known as Post-CCST)
GDC	General Dental Council
GMC	General Medical Council
GPA	Grade Point Average
IMOrth	Intercollegiate Membership in Orthodontics
ISCP	Intercollegiate Surgical Curriculum Programme
JCPTGP	Joint Committee for the Postgraduate Training of General Practitioners
LATs	Locum Appointments for Training
MClintDent	Master of Clinical Dentistry
MEE	Medical Education England
mini-CEX	Mini-Clinical Evaluation Exercise
MMC	Modernising Medical Career
MOrth	Membership in Orthodontics
MSc	Master of Science
MSF	Multi-source feedback
MSI	Multi-station interview
NHS	National Health Service
NR	National Recruitment
PA	Programmed activities
PMETB	Postgraduate Medical Training and Education Board
post-CSST	post Certificate of Completion of Specialty Training
RCS	Royal College(s) of Surgeons
SAC	Specialist Advisory Committee
SPAs	Supportive Professional Activities
ST	Specialty training
StR	Specialty Trainee Registrar
TGG	Training Grades Group
TPD	Training Programme Director
UTG	University Teachers Group
WBAs	Workplace-based assessments

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Chapter 1: Introduction

The Specialty Registrar (StR) is a new training grade introduced in 2007 into the UK medical training as part of the Modernising Medical Careers (MMC).[1] The training programme for orthodontic StRs is designed to equip trainees to master the appropriate technical skills and to develop sufficient level of diagnostic skill and understanding to obtain a qualification (Membership in Orthodontics) which leads to the award of a Certificate of Completion of Specialty Training (CCST) and registration on the list of Specialist List in Orthodontics of the General Dental Council (GDC).[2]

1.1   Recruitment

Entry into the training programme in orthodontics is understood to be highly competitive. In the past, applications for the programmes were carried out using an application form often supplemented by a curriculum vitae. Applicants were then shortlisted according to the criteria set in the person specification for the post. Following these initial recruitment procedures, interviews were usually carried out by panels consisting of representatives from the Local Dean of Postgraduate Dental Education or nominated deputy, a lay chair, a University representative, the Training Programme Director (TPD), consultant representation from the training programme, a senior management representative (i.e. Clinical Director) and a representation from human resources.[3] The interview process was intended to be a rigorous process which involved stakeholders from different departments to ensure careful and unbiased selection of candidates.[4] However, there was still potential for bias associated with this selection tool where candidates were often know to one or more members of the interview panel.

In an attempt to reduce selection bias and produce a fair and equitable system, medical recruitment moved to a centralised system. The vast majority of recruitment to postgraduate medical training (more than 95%) is now carried out using a National Recruitment process.[3]

As medical and dental education have much in common, principles and techniques developed for one may be transferred to the other.

Following on from the introduction of a National Recruitment process for medical training posts and dental foundation training posts in England and Wales, in 2007 and 2011 respectively, the Committee of Postgraduate Dental Deans and Directors (COPDEND), working in partnership with the London Deanery, initiated an inaugural National Recruitment for orthodontic StR posts in England in September/October 2012.[6]   The working party for the National Recruitment process involved all stakeholders and had representation from the Consultant Orthodontists Group (COG), the University Teachers Group (UTG), the Training Grades Group (TGG) as well as the Specialist Advisory Committee (SAC) in Orthodontics. Six independent stations were developed by the working party with three parallel panels simultaneously interviewing up to 20 interviewees in three cohorts at one time. The stations assessed different competencies, including communication, governance/audit, research/teaching, management and leadership, written communication and clinical judgments as well as the content of the applicants' portfolio.[7,8] The recruitment process was conducted as a single exercise with a total interview time of 120 minutes as opposed to previously, 15-20 minutes per interview multiplied by how many interview(s) the applicant attended.

1.2   Curriculum for Specialist Training

Similarly, since the publication of MMC in 2007,[9] the curriculum of both the medical and dental training has undergone significant changes. This led to the development of formal UK wide curricula within dentistry, supplemented by a number of principles integrated into underpinning the delivery and assessment of postgraduate training to reflect the targeted learning outcomes. The adaptation of the focus towards outcome-based learning by the UK's statutory authority for standards in postgraduate medical education, the Postgraduate Medical Education and Training Board (PMETB), which has now merged with the General Medical Council), has necessitated the reshaping of curricula and assessment models for

Royal College examinations across all specialties. Although PMETB has no remit with respect to dental education,[10] the call for rigorous assessment strategies to be incorporated within dental specialty training programmes, has been adopted by postgraduate TPDs. This has been reflected in the new GDC orthodontic curriculum[11] and in the changes made in recent years to the orthodontic membership examination of the Royal Colleges.[12,13] All these educational reforms in the UK have led to important implications for all postgraduate training programmes, including those for orthodontic StRs whereby transformations of various components have been instigated by PMETB. Ultimately, assurance of the quality of specialist training is the central priority for all stakeholders.

This meant that at a similar time to the introduction of National Recruitment, the training programmes for orthodontic StRs in the UK were subject to radical changes as part of the implementation of the new curriculum for specialist training in orthodontics.[14] Workplace-based assessment (WBA) became a new but integral and essential element of the assessment framework of the new curriculum, for all trainees. As of October 2011, workplace-based assessment (WBA) was initiated and implemented in all orthodontic specialist training programmes in the UK as part of the assessment process contributing to the new orthodontic curriculum.[14]

Chapter 2: Literature Review

2.1   Background

The most recent significant reforms, related to the postgraduate medical training system, took place during the 1990s and were instigated by the Chief Medical Officer, Sir Kenneth Calman. The Calman reforms were initiated by the publication in 1993 of *Hospital Doctors—Training for the Future* and were mainly concerned with improving the specialist hospital training. This subsequently led to the introduction of Specialist Registrar posts at 1996 with explicit curricula and regular assessments of progress. The reforms also introduced the Certificate of Completion of Specialist Training, awarded by the General Medical Council (GMC).[1]

In August 2002, the Chief Medical Officer for England, Sir Liam Donaldson, published a consultation paper on medical training.[15] The paper, *Unfinished Business: Proposals for Reform of the Senior House Officer Grade*, described a number of problems experienced by some doctors in the junior training grades. Responses to this consultation revealed widespread support of the concept and it became one of the central planks of the *MMC*, launched in February 2003.[1]

In February 2003, Health Departments of the four UK home countries, i.e. the General Medical Council (GMC), the Joint Committee for the Postgraduate Training of General Practitioners (JCPTGP), the Postgraduate Medical Education and Training Board (PMETB) and the Conference of Postgraduate Medical Education Deans of the UK (COPMeD) published a Policy Statement on Modernising Medical Careers (MMC) setting out changes aimed at addressing long-standing problems with the UK medical education system, i.e. the uncertain career prospects.[15]

The Postgraduate Medical Education and Training Board (PMETB), the regulator for GP and Specialty training programmes, began operating on 30 September 2005.[15] The Board's main role was to provide regulation and quality assurance for postgraduate training. The

Board also took over responsibility for directly inspecting training providers, a task previously carried out by the Royal Colleges. In June 2007, PMETB in conjunction with the Royal Colleges and Specialist Societies, established new curricula for run-through training programmes across the 59 different medical specialties in the "Gold Guide" to specialty training. This later served as the operational framework for specialty training produced by the four UK health departments (Table 1).[7]

Table 1 Key events in the development of Modernising Medical Careers (MMC)

August 2002	Unfinished business (written by Sir Liam Donaldson, Chief Medical Officer for England) calls for reform of the Senior House Officer (SHO) grade.
February 2003	Modernising Medical Careers (jointly published by the 4 UK Health Ministers) sets out initial plans for reform of medical training.
July 2003	Choice and opportunity: Modernising medical careers for Non-Consultant Career Grade doctors (by the Department of Health for England) is published.
April 2004	MMC: The next step (jointly published by 4 the UK Health Ministers) sets out details of the new structures for medical training.
June 2005	Curriculum and operational framework for Foundation Training published.
August 2005	Start of new 2-year Foundation programme across the UK
March 2006	End to "permit-free" training for non-EEA doctors announced
January 2007	Start of recruitment to new GP and hospital Specialty Training jobs
June 2007	Publication of "Gold Guide" to Postgraduate Specialty training
August 2007	Start of new GP and Specialty Training jobs.

In August 2007, radical changes were made to the postgraduate training in the UK with the implementation of competency-based assessment process for junior doctors.[9] There was a new system of recruitment to training posts with the introduction of Specialty Training (ST). The recruitment system changed from individual hospital trusts to central recruitment.[16] The intended benefits of central recruitment were to ensure a fair, equitable and transparent recruitment basis and to deliver a Specialty Training Programmes in accordance to a set of nationally agreed standards.[17] All the reforms were driven by the need for care based in more effective teamwork, a multi-disciplinary approach and more flexible training pathways

tailored to meet service and personal development needs. Above all, the most crucial driver for such change was the need for better care systems for patients.[16]

In November 2011, the first National Recruitment process for dentistry was undertaken to first year dental foundation training (DF1) for posts available in August 2012.[3] For that process there were 1190 (on-line) applications and of these, 1145 eligible candidates were invited to one of the five selection centres held across England. A 100 percent fill rate was achieved within one week of offers being made, with all 927 available DF1 places allocated to Deanery DF1 schemes.[3]

The concept of performance assessment stems largely from concerns about patient safety and a perceived requirement to reassure the public that doctors provide safe, effective and high-quality clinical care. Workplace-based assessments (WBAs) intended to function as a robust mechanism facilitating regular assessment of trainees along with the provision of specific structured feedback and targeted training, while formally demonstrating such regular review and appraisal.[16]

It is of prime importance that any new system of assessment should be fair, balanced and beneficial to the medical/dental profession. Furthermore, the successful implementation of change is dependent on acceptance of the need for change by and cooperation from those affected by such change. Evidence indicating general dissatisfaction towards WBAs in the medical community is slowly emerging.[18-21] On the same note, the British Medical Association argues that the intrinsic validity and reliability of such assessment systems are influenced by multiple factors. These include the environment in which it is employed, the nature of the competencies it purports to measure, the effectiveness of its implementation, the availability of adequate and appropriate resources and support, and whether it is compatible with and complementary to the larger overall assessment programme. Additionally, WBAs tools have been validated in only a limited number of clinical settings and it is recognised that individual specialties require bespoke tailored assessment programmes in order to provide the best possible training.[22] Likewise, among trainees, the WBAs system

may not be fully understood by them. A poor score in an assessment may create a feeling of failure in a trainee, rather than the process being viewed as a formative experience with the opportunity to identify areas for learning.[23]

Finally, despite the recognition that WBAs are time consuming, little attention is paid to the fact that considerable resources are needed for its effective implementation particularly in the context of educational supervision and feedback. The PMETB trainers' survey in 2008 identified significant pressures which were intensified for trainers who did not allocate sufficient time within their job plans for the provision of supervision and structured feedback to trainees.[23]

There have been specific evaluations of WBAs in medical training.[22, 24, 25] In dental training, there has been some evaluation of WBAs including work associated with longitudinal evaluation of performance in Scotland[18] and an evaluation of WBA tools in the dental foundation training in the Mersey Deanery.[18,26]

The work reported in my thesis was therefore designed to explore the attitudes of both orthodontic trainers and trainees and determine their perceptions of the implementation of national recruitment as well as some of the practical difficulties they face implementing WBAs that form part of the new curriculum. The results of the study will provide structured feedback to the Consultant Orthodontic and Training Grades groups of the British Orthodontic Society as well as the National Recruitment Working Party and SAC in Orthodontics. Thus, the results of these two studies will contribute to the development of the National Recruitment process and improvements in the conduct of WBAs.

2.2   National Recruitment to Orthodontic StR Posts

Medical schools aim to select the best students into their programmes in order to meet their expectation of producing good doctors. Therefore, selection procedures are high-staked, stressful and resource-intensive assessments. One could also argue that the interview process is the most important evaluation exercise for securing a job. It is perhaps as a result of this argument that there is a considerable debate surrounding the question 'What is the most effective selection process for recruiting a candidate from a pool of highly qualified applicants?' Given that there are multiple diverging views on the recruitment processes and leading to no consensus on the matter; efforts to select suitable candidates for the Orthodontic StR posts are made all the more challenging.

Although one's opinion on what is the most effective recruitment criteria and process for selecting candidates is a subjective matter, a recent review of the effectiveness of admission tools used to select students in the health science profession, led to the conclusion that pre-admission Grade Point Average (GPA) was the most effective indicator of academic performance.[27] A GPA is a popular grading system, used predominantly in the United States of America, to measure a student's academic achievement. This is comparable to the British undergraduate degree classification. GPAs are calculated by dividing the total amount of grade points earned by the total number of credit hours attempted.[28] However, there are problems in interpreting the GPA scores which can be calculated in one of several ways and may or may not depend on the difficulty of the subject being studied and/or its assessment. For example, a "straight" GPA calculation is given where every class counts equally in the final GPA. Alternatively, a "weighted" GPA gives more consideration to certain classes than others. In a weighted system, academic classes, particularly mathematics and science, may count more than 'elective' subjects.   The ultimate formula may be complicated, but essentially a weighted average allows academic classes to contribute more to the final GPA than elective subjects. It is therefore important to know how the GPA is calculated because it may depend on the difficulty of the class or module and / or its assessment.[29] No matter

how academic achievement is measured, it takes more than academic achievements to make a good doctor, dentist or orthodontist. In addition to academic achievement, Health Sciences programmes value non-cognitive characteristics of potential candidates, such as: interpersonal skills, integrity and professionalism. Evaluation of a candidate based on their non-cognitive characteristics can lead to more subjective results depending on the person assessing the candidate's own subjectivity.[30,31] Furthermore, how a candidate presents their non-cognitive skills in an interview process can yield different results from how they perform outside the interview. Given these likelihoods, there are limitations of the traditional interview process in predicting the non-cognitive abilities in this domain.[32,33] Due to the limited value of the traditional interview process in predicting anything about the future performances of a health care provider, the intended fairness of this traditional interview process, as an important part of admissions procedures, was in doubt.[33]

One of the significant advantages of a National Recruitment process, to Orthodontic StR posts, is that the majority or all of the candidates, who satisfy the essential criteria, can be invited to interview whereas previously, for the smaller Deanery interviews, a short listing process was required and some capable candidates may have been excluded from the interview stage. In a National Recruitment process, interviewees can then be ranked, based on the scores they received in the interview and a nationally set cut-off point score, for appointability to the StR posts, can be agreed.[7] Furthermore, a National Recruitment process can be a standardised selection process and has the potential of being fair, efficient, reliable and valid. In terms of fairness, the National Recruitment process ensures that an applicant is exposed to several teams of assessors most of whom will be unknown to the applicant and unable to bias the selection, positively or negatively, due to prior knowledge of the applicant. In addition, performance at one station will not influence the score given at the next station allowing the applicant to move through the stations with a 'clean sheet' after each station. In both these ways MSI is likely to be fairer than traditional, panel based interviews because it is difficult for an assessor, know to the applicant, to influence the

process unduly, either positively or negatively. With respect to efficiency, the single round of assessment will be far more efficient in terms of time, effort and stress for the applicants. However, for the assessors, the National Recruitment process is probably more time consuming as it is held over two days and for most assessors, at a location some distance from their base. Both these aspects add to the time and financial costs of recruitment for any single recruiting Deanery, which would have previously held interviews locally, over one day. The reliability of the recruitment process is the ability of the National Recruitment process to appoint/not-appoint an applicant irrespective of the stream of assessors through which the applicant passes and would appoint/not appoint the applicant on a different occasion. Calculating the odds of appointment from each stream could assess the reliability of the streams in the National Recruitment process but the 'different occasion reliability would require a subgroup of applicants to go through the process twice. The validity of the National Recruitment process, in appointing the applicants best suited at specialist orthodontic training will not be determined until the first cohort of National Recruits completes their training and sits the Membership in Orthodontics examination. This is planned as Phase IV of the study which it is hoped will be carried out by a future DDSc student.

The National Recruitment interview process means that as more interviewers can be involved, a much more thorough and standardised assessment, against an agreed person specification, is possible thus ensuring a more robust system for selecting candidates at interview.[6] However, with the involvement of more assessors comes the problem of calibration of assessment. In an attempt to overcome this all-new assessors undertook a simulated assessment using a standard DVD. From this assessment, it was possible for the assessors to be categorised as 'harsh', 'lenient' or 'indecisive'. The scores were then used to pair 'harsh' and 'lenient' assessors whilst those who were 'indecisive' were assigned to a station for which the scoring was more objective.

The inaugural National Recruitment interviews took place in May 2012, over two days, in Central London. The actual number and site of posts available was not known until the Membership in Orthodontics (MOrth) results were published in late June. In the meantime, applicants were allowed to visit the hospitals/units to help them decide on their preferences. The specific preferred "Open Day" dates were provided by each Deanery and were available on the website. Open days were designed to give applicants the chance to gain the information they required, about the regional orthodontic programmes, to help them preference the posts when they were contacted, by the London Deanery, with the final list of all available posts.[3,7,8] Open days only took place after the interview thus attendance and performance at the open days had no effect on candidates' ranking/scores.[6,7]

Once the exact number and site of the posts were known, the interviewees were informed about the available posts and ranked their hospital unit preferences. After the preferencing stage, the successful applicants received a single offer for their first available preference. They then had 48 hours to accept or reject their offer. Unsuccessful applicants were notified during this period as well and were offered feedback. In the event of applicants declining their offer, then the post would be offered to the next highest ranked candidate. These applicants would also then have 48 hours to respond. If an applicant rejected his/her offer, he/she was removed from the process. Iterations of offers were then continued until all posts were filled by applicants who were ranked above the cut-off point. Once a post was accepted, London Deanery informed the local Deaneries and passed on details of the successful applicant.[6,7]

2.2.1 Multi-Station Interview (MSI)

The National Recruitment to Orthodontic StR posts was conducted via a multi-station interview (MSI). The multi-station-interview (MSI) is a relatively new assessment tool which aims to address concerns about the reliability of conventional panel interviews.

The multi-station interview typically consists of six to ten timed stations through which the applicants rotate in a manner similar to Objective Structured Clinical Examinations (OSCEs) style clinical exams. At each station, the applicant is presented with a question, scenario or task which they must answer or complete, both effectively and efficiently, within the time limit they are given.[34]

MSI was originally developed by researchers at McMaster University[34] who also claimed that the MSI has reliable predictive validity as it has good correlation with future performance as a medical student makes the transition into a doctor. Since its development, the MSI model has been used as a recruitment tool in several medical schools and some residency programs in Canada and the United Kingdom.[4,35,36] The reported reliability of the MSI has been varied ranging from r=0.35–r=0.95 using 6–14 interview stations, whereby the reliability for 8 questions was 0.7, and 14 stations were needed to reach the gold standard of 0.8.[30,34,37,38] (Table 2) Therefore, with enough stations, it can overcome the challenges of reliability and context-specificity, and increasing the number of stations is thought to be more important than increasing the number of panellists.[32,34,39]

As mentioned earlier, the best physicians are those who are not merely repositories of information; they are also ethical, caring professionals and excellent communicators. The MSI was created as a potentially more efficient means of assessing qualities that lie outside the realm of grades and test scores.[41] The MSI is considered to be more flexible than the traditional interview as it allows cognitive and non-cognitive competencies to be tested[39,40, 42] and holds the potential to predict subsequent performances.[35,37] Interviewers and applicants

have found that MSI to be an acceptable alternative, as opposed to the traditional panel based interview.[4,36,39,40].

Table 2 Comparison of reliability of MSI and panel interview.

No.	Study	Participants	Country	Interventions	Outcome (Reliability)
1	Harasym et al., 1996[48]	Medical students	Canada	5 panel interviews	Interviewer variability: 56%
2	Morris et al., 1999[46]	-	Australia	Panel interview: A review	Inter-rater reliability: 0.14-0.95
3	Eva et al., 2004[34]	Graduate volunteers	Canada	10 stations MSI	r=0.65
4	Smith et al., 2006[50]	Neurology SpRs	United Kingdom	3 stations MSI	r=0.54-0.83
5	Lemay et al., 2007[38]	Applicants to medical school	Canada	9 stations MSI	r= 0.97-0.98
6	Bindal et al., 2007[51]	Paediatric SHO	United Kingdom	6 stations MSI	r= ≥ 0.8
7	Roberts et al., 2008[30]	Graduate-entry medical programmes	Canada	8 stations MSI	r=0.7
				14 stations MSI	r=0.8
8	Eva et al., 2009[37]	Undergraduate students	Canada	12 stations MSI	r=0.35
		Postgraduate students			r=0.45

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The traditional panel based interview process allows an applicant to interact with one or more interviewers and provides a limited opportunity for the Deanery to assess the interpersonal skills of an applicant. However, the same interviewer or interviewers will not necessarily interview each applicant. In other words, some interviewers may be less or more challenging in general or have better or worse compatibility with particular applicants than others, thus providing those applicants with an advantage/disadvantage.[17,34,43] In addition, standard interview

questions may not reveal an individual's communication skills, problem-solving abilities, level of professionalism or other important skills that are crucial for the practice of medicine/dentistry. On the other hand, an MSI uses a series of stations to assess specific skills and assigns the same interviewer to assess and rate all applicants seen at that station.[44,45] An MSI avoids the issues found in long interviews where much of the observed mark of the candidate relates to biases from the limited interview content and the interview panels.[33]

Traditional panel based interviews are subject to potential sources of bias, with inter-rater reliability reported to vary between 0.14 and 0.95, but this inconsistency might largely be an effect of variability in the way in which interviews are administered;[46] structured formats (i.e. standardised questions with, sample answers provided to interviewers) tend to yield higher rates of reliability and validity than do unstructured formats.[31,47] However, even these reliability estimates may be artificially inflated by:

1- the interview team having access to academic information on candidates,[44,45,] and

2- non-verbal communication (which is, admittedly, often unintentional) between members of the interviewing team.

Despite acceptable inter-rater reliability in some cases, a candidate's score may still be attributable, in large part, to chance. A fortunate candidate, who is assigned to a like-minded, "easy" interviewer who influences the rest of the interview panel could potentially score higher. Meanwhile, an equally qualified, but less fortunate candidate who is assigned to an incompatible, "hard" interviewer who influences the rest of the interview panel could potentially score poorly.[42] Other biases that have been shown to impinge upon the personal interview include both the interviewers' backgrounds[48-51] and the interviewers' expectations.[45,48] In fact, Harasym *et al.* found that interviewer variability accounted for 56% of the total variance in interview ratings.[48] Such strong biases are unacceptable and potentially unethical for an assessment tool that is intended to examine the characteristics of the candidate, not the interviewers. Shaw *et al.* reported that panels are influenced by

dominant interviewers, interviewers' backgrounds and interviewers' expectations of the candidate based on prior knowledge of the application form.[45] Evidence suggests that the single panel interview may not give an accurate estimate of an applicant's attributes, while the MSI may be a more efficient and reliable method for assessing relevant competencies. The MSI has advantages, beyond being a more relevant assessment of prospective employees and can potentially provide a greater breadth and depth of information about candidates than a traditional interview.[48] It also allows assessment of skills appropriate to the job role and appears to be fairer than conventional panel interviews in giving candidates more time, a more independent assessment and a fresh start at each station.[49]

2.2.2   Structure of Multi-Station Interview (MSI)

Although the exact set-up would vary from interview to interview, an MSI usually includes six to ten stations, from eight to ten minutes in duration, with a group of applicants rotating through the stations.[52] Typically, six to eight minutes are allocated to complete the station before moving on to the next one with a two minute change over period between each station. The different types of stations may include ethical dilemmas or questions about policy or social issues, interactions with an actor, standard interview questions and essay writing.[4]

In order to assess a candidate's knowledge of the ethical dilemmas or questions about policy or social issues, there can be scenarios describing a situation during the interview process that then require the candidates to discuss the ethical or other issues involved. The interviewers may also follow up with questions to probe the applicant's response.[4] The additional questions may be standardised and pre-scripted however, often the vary for each candidate which may introduce significant bias into the interview.

Apart from stations that assess a candidate based on their knowledge of ethical conducts and communication skills, an MSI may include one or more stations with traditional interview questions. Some interviews also include an essay component as part of the interview

process so a station may therefore involve responding to a prompt in writing. This station may be longer than others to allow more time for the applicants to formulate and write their responses.[11] However, essays are difficult to mark objectively so inclusion of an essay, as one of the stations, may introduce bias. If a written station is used, then a more structured response, for example in the form of writing a referral letter or prescription, where key information needs to be included and can be objectively marked, could be used.[53,54]

2.2.3   MSI for National Recruitment of Orthodontic StR Posts

The Multi-station Interview (MSI) for National Recruitment of Orthodontics StR posts comprised six stations, blue-printed against the person specification, with a total interview time of 120 minutes.[5] The six stations were: Communication; Governance and Audit; Portfolio, Research and Teaching; Management and Leadership and Written Communication and Clinical judgement.[7]

Below is a breakdown description of each of these stations involved.

2.2.3.1   Communication

An actor played the part of a patient/parent with a clinical problem. Before entering the interview room, candidates were given a brief scenario to read for 2 minutes. The candidates were then asked to enter the room and to interact with an actor in the given scenario for ten minutes. These scenarios may have asked a candidate to deliver bad news to the individual (the actor), confront the person about a problem or gather information from the individual. Two observers (the assessors) were in the room as well to rate the applicant based on his or her interaction with the 'patient'/'parent'. The observers played no part in the station and apart from initial and final greetings, did not interact with the interviewees. This station lasted a total of 12 minutes and the candidates were assessed on their communication, management and leadership, personal skill, professionalism and commitment, as well as clinical skills.

2.2.3.2   Governance and Audit

In this station candidates were asked questions in an interview format. The station lasted for 12 minutes and candidates were assessed on the following domains: governance, audit and clinical skills.

2.2.3.3   Portfolio

Interviewees were asked to prepare their portfolio following the instructions and completing the proforma provided. They then brought it to the interview to provide evidence of their achievements as listed in their application form. This station lasted for 27 minutes and was double weighted so as to contribute to two-sevenths (28%) of the marks whereas other stations contributed one-seventh (14%). The station aimed to assess candidates' career progression, academic achievements and qualifications, courses attended, presentations and publications and also breadth of experience within and outside dentistry.

2.2.3.4   Research/Teaching

The station lasted for 12 minutes and the candidates were asked questions, in an interview format, to assess their knowledge and experience of research and teaching. At this station, applicants were asked preliminary knowledge based questions about research or teaching methods and then asked to develop a research protocol or teaching episode based on a given scenario.

2.2.3.4   Management and Leadership

In this station, candidates were asked to answer scenario based questions in an interview format with a total of 12 minutes' interview time. The candidates were assessed on communication, management and leadership, personal skill, professionalism and commitment, as well as clinical skills depending on how well they exhibited these skills. See Assessment Matrix and Scoring Criteria below.

Management scenario stations

__Please note if you mark 0 or 1 for any question you MUST record objective comments & reasons for your decisions__

Candidate Name:	Candidate Number:

Criterion	0	1	2	3	4	Score
Organisation and planning						/4
Comments:						
Managing others						/4
Comments:						
Situational awareness						/4
Comments:						
Coping with pressure						/4
Comments:						
Professional Integrity						/4
Comments:						
Total Score						/20
Interviewer name:	**Signed:**		**Date:**	**Scenario No:**		

Instruction sheets for management station: If you score a 0 or 1 you must make a comment

Understanding of management: Did the candidate demonstrate an understanding of management and the importance of organization?

To score 0 the candidate offers none or very little evidence of time management and organizational skills despite prompting

To score 1 the candidate offers little evidence of time management and organizational skills

To score 2 the candidate offers some evidence of time management and organizational skills

To score 3 the candidate offers good evidence of time management and organizational skills

To score 4 the candidate offers excellent evidence of time management and organizational skills

Managing others: What evidence does the candidate offer as a team leader and as a manager of other people?

To score 0 the candidate shows none or very poor evidence of management of others, tend to go it alone and not act as a team leader

To score 1 the candidate uses the majority of team members poorly and has weak evidence of teamwork and leadership

To score 2 the candidate uses some members of the team to good effect and has some evidence of teamwork and leadership

To score 3 the candidate uses the majority of team members to good effect and show good teamwork and leadership

To score 4 the candidate demonstrates excellent management of all team members with excellent evidence of teamwork and leadership

Situational awareness: What evidence does the candidate offer to show they are aware of the context of this situation and can set priorities in this context?

To score 0 the candidate demonstrates none or very poor understanding, lack the ability to anticipate issues and have no sense of priorities in this situation

To score 1 the candidate demonstrates poor understanding, seldom show the ability to anticipate issues and have a vague idea of priorities in this situation

To score 2 the candidate demonstrates some understanding, infrequently show the ability to anticipate problems and have some sense of priorities

To score 3 the candidate demonstrates good understanding, the ability to anticipate occasionally and a reasonable sense of priorities in this situation

To score 4 the candidate demonstrates excellent understanding; the ability to anticipate issues and has a good sense of priorities in this situation

Coping with pressure: How well does the candidate demonstrate they can cope with pressure?

To score 0 the candidate shows none or very poor capacity to work under pressure, lack initiative, flexibility and resilience to cope with challenges in the future

To score 1 the candidate shows poor capacity to work under pressure, lack initiative, flexibility and resilience to cope with challenges in the future

To score 2 the candidate shows some capacity to work under pressure, take the initiative and show some flexibility and resilience under pressure

To score 3 the candidate shows good capacity to work under pressure, take the initiative; show flexibility and resilience to cope with challenges in the future

To score 4 the candidate shows excellent capacity to work under pressure, take the initiative; show good evidence of their flexibility and resilience to cope with challenges in the future

Professional integrity: How well does the candidate demonstrate their professional integrity?

To score 0 the candidate takes none or very little personal responsibility for their own actions, show a lack of empathy for patients and parents putting the patients' needs last

To score 1 the candidate takes little responsibility for their own actions, have some empathy for patients and parents

To score 2 the candidate takes some responsibility for their own actions and has a degree of empathy for patients and parents

To score 3 the candidate takes most of the responsibility for their own actions and demonstrates good empathy for patients and parents

To score 4 the candidate clearly takes full responsibility for their own actions; demonstrate respect for and empathy with the patients and parents, putting the patients' need first

2.2.3.5   Written Communication and Clinical Judgment

This station took the form of a written exercise. Candidates were asked to sit in exam conditions and complete a written scenario based exercise. This station lasted 30 minutes and assessed not only candidates' written communication, management and leadership skills, but also their clinical skills, professional integrity and teamwork abilities.[6-8] The written piece of work was a referral letter and marks were given for providing basic information, for example name, address, date of birth as well as the key features of the clinical problem and their ability to prioritise the needs of the patient they were asked to refer.

Although MSIs for the National Recruitment of Orthodontic StR posts were challenging, they offered applicants the chance to demonstrate skills and qualities that are not always evident on a written application form.[30,31,39] The existence of six stations, each with a different pair of interviewers, freed the applicants from the worry that interview consisted of interactions with only one or two individuals with whom they may not be compatible.[34] However, some perceived drawbacks of MSI were identified including: the requirements for greater planning; additional expenses for venue hire and time keepers' employment; potentially greater workload for the interviewers and increased administrative support. Furthermore, all interviewers needed additional training to standardise the assessment of the stations across the interview panels.[50]

In an attempt to give a reliable mark, the two interviewers marked in duplicate and independently from each other. Only when there were markedly divergent marks did the Lay Chair intervene to achieve a consensus mark. After the interviews, various statistics were calculated to check that the streams of assessors were assessing in a similar manner and whether applicants had equal chances of recruitment whether they were in the first or last cohort of interviewees or being assessed by the blue, green or yellow stream of assessors.

The validity of the stations to assess the candidates who would be capable of being trained and perform best in training will be assessed at MOrth from June 2015 onwards. This will be the topic of Phase IV of this project.

All new assessors were trained and assessed against mock interview responses. From this, their marking tendency was assessed so that 'harsh' and 'lenient' assessors could be paired and 'indecisive' assessors allocated to a station that was more objective to assess.

2.3   Workplace-based Assessments (WBA)

Workplace-based assessments (WBAs) refer to the assessment of working practices based on what trainees do in their workplace. They are, therefore, predominantly carried out in the workplace. The Postgraduate Medical Education and Training Board (PMETB) was responsible for the standards of postgraduate medical education and training until it was merged with the General Medical Council (GMC) in April 2010. At this point, PMETB functions were subsumed into the GMC, however, standards set by PMETB remain in force. WBAs are carried out in both coupled and uncoupled specialty programmes.[51] They emphasise the cognitive processes associated with personal and professional development and are intended to identify areas for improvement for the individual trainee on the basis of supportable and documented evidence.[18]

Guidance on implementing WBAs was produced jointly by the PMETB and Academy of Medical Royal Colleges (AoMRC) in 2009.[52] The assessment of clinical competence using WBAs has been based on the work by George Miller who, in the1990s, developed a framework for assessing clinical competence – (Figure 1: Miller's pyramid). Miller's 'pyramid of competence' is useful for mapping assessment methods against the various tiers of the pyramid. At the top of the pyramid is 'does' which has always been difficult to assess. It focuses on what occurs in professional practice rather than what happens in an artificial setting or test situation. WBAs target this highest level of the pyramid by collecting

information about how doctors perform in their normal practice,[51] and how they behave in their real life on a day-to-day basis.[8]

Figure 1 Miller's Pyramid

MILLER'S PRISM OF CLINICAL COMPETENCE (aka Miller's Pyramid)

it is only in the "does" triangle that the doctor truly performs

Based on work by Miller GE, The Assessment of Clinical Skills/Competence/Performance; Acad. Med. 1990; 65(9); 63-67
Adapted by Drs. R. Mehay & R. Burns, UK (Jan 2009)
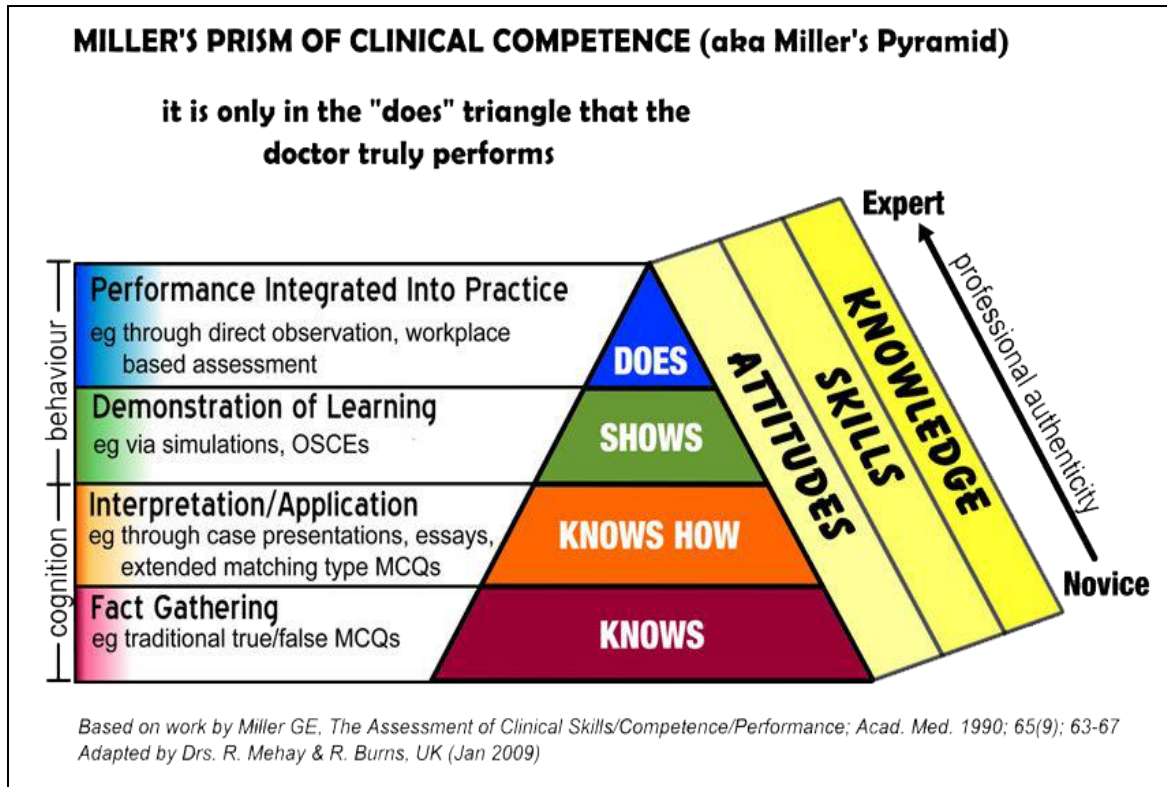
WBAs have a number of potential advantages.[1] They offer a formative assessment tool by offering information about one's actual performance in the workplace rather than in the artificial environment of a summative examination.[23] They complement the more traditional examination-based assessment of knowledge and thus afford a more holistic and comprehensive assessment of trainees' progress. They provide an opportunity to not only improve training and facilitate interaction with the trainee, but they also, ultimately, aim to improve patient care.[55]

In addition to the advantages of WBAs, numerous disadvantages have also been highlighted. It is argued that with WBAs there exists a strong subjective element to whether any given competency is achieved. They are also time consuming, require the full co-operation and engagement of the trainees and their trainers/assessors, interfere with the normal clinical

flow of patients and may not be reliable unless many tools and/or assessors are used.[15,56] It has been pointed out that a competency based approach leads trainees on a superficial path towards achieving a set of discrete and narrow prescribed skills, with little attention paid to the relationships associating the individual competencies and the deeper meaning underlying each task.[57] However, in my experience, WBAs provided an opportunity to be observed in clinical practice and to gain tailored feedback from my supervisors. They were some of the few times I actually got to sit down with my supervisor and go through a case in a structured manner, and in itself that was useful.

2.3.1 Structure of Workplace-based Assessments (WBAs)[10,58]

The four tools currently used in orthodontic practice for WBAs[59] are: Multi-source feedback (MSF), Mini-Clinical Evaluation Exercise (mini-CEX), Direct Observation of Procedural skills (DOPS) and Case-based discussion (CBD). [10,58]

2.3.1.1 Multi-source feedback (MSF) [10,58]

The Multi-source feedback (MSF) is a 360° peer assessment on what healthcare colleagues observe about one's performance on a day-to-day basis. It is a tool used for assessing generic skills such as communication, leadership, team working, reliability etc., across the domains of Good Medical Practice. This provides objective systematic collection and feedback of performance data on a trainee, which are derived from a number of colleagues' observation. 'Raters' are individuals, with whom the trainee works, and includes trainers, administration staff, and other allied professionals. The trainee will not see the individual responses made by the raters as feedback is given to the trainee by the Educational Supervisor.

2.3.1.2 Mini-Clinical Evaluation Exercise (mini-CEX)

Mini-CEX is an observation of what happens when a trainee encounters and deals with a patient. This tool evaluates a clinical encounter with a patient to provide an indication of competence in skills essential for good clinical care such as history taking, examination,

diagnosis, and management or clinical reasoning. The trainee receives immediate feedback to aid learning. It can be used at any time and in any setting when there is a trainee and patient interaction and an assessor is available.

2.3.1.3   Direct Observation of Procedural Skills (DOPS)

A DOPS is an assessment tool designed to evaluate the performance of a trainee undertaking a practical procedure against a structured checklist. The trainee receives immediate feedback to identify their strengths and areas for development.

2.3.1.4   Case-based Discussion (CbD)

The case-based discussion (CbD) is a discussion used to reflect on why a trainee manages a particular case in a particular way.[51] It assesses the performance of a trainee in their management of a patient in order to provide an indication of their competency in areas such as clinical reasoning, decision-making and application of medical knowledge in relation to patient care. It also serves as a method for documenting conversations about, and presentations of, cases by trainees. Focus on written record (such as written case notes, out-patient letters, and discharge summaries). A typical encounter might be when presenting newly referred patients in the out-patient department. While it is the case that an appropriately trained senior trainee or consultant can be the assessor for WBAs, a CbD should be assessed by a consultant.[5,50,51]

2.3.2   Workplace-based Assessment (WBA) in Orthodontic StR training

Traditionally, the assessment of Orthodontic Specialist Trainees was mainly based on written and oral examinations, assessing what the trainee knows rather than what he or she does in practice. However, the attributes of orthodontists are multiple and one should possess not only specialty knowledge and skills, but also generic skills and attitudes such as honesty, integrity, communication skills and teamwork abilities. The competency of a trainee can therefore be justly inferred through actual performances in the clinical environment on how he/she performs and behaves in day-to-day practice.[40]

The study conducted by Grieveson *et al.*[26] investigated the trainers' and trainees' perceived effectiveness of workplace-based assessments (WBAs) used in the Committee of Postgraduate Dental Deans and Directors' (COPDEND) foundation training portfolio. In this study, both trainers and trainees highlighted the value of WBAs in providing feedback and insight into the developmental needs of young practitioners. This study also reported positive feedback on the WBA tools that trainers felt were easy to use and provided a clear and comprehensive record of progress throughout their training years. Anecdotally, it has been reported that the use of the COPDEND foundation training portfolio, to record training, assess progress and competency during training, has not been universally accepted or comprehensively used throughout England and Wales.[26] A later, but similar study conducted by Kirton *et. al.*, confirmed that the experience with WBAs was positive in that they have a role in the trainees' learning during the foundation training. However, in order to provide a consistent approach to the delivery of foundation training and its learning outcomes at the national level, changes are required to the WBA tools used. The importance of comprehensive training in the use of WBAs as an assessment tool, for both trainers and trainees, has also been emphasised in this study.[3]

2.4   Orthodontics StR training

The majority of patients deemed to be in need of orthodontic treatment in the U.K. have a treatment complexity that only can be managed by a Specialist Orthodontist. Therefore, the purpose of the 3-year orthodontic training curriculum is to enable trainees (StRs) in Orthodontics to achieve the level of competence expected in order to provide appropriate care for this group of patients who are normally treated in the primary care setting. This curriculum is not intended to provide competence in the management of patients requiring more complex, multidisciplinary medical and/or other dental specialty care. It is expected that 'specialists' providing such care would undertake an extended, additional period of training, that equips them to deliver more complex maxillo-facial orthodontic treatments and associated services,[60] namely one of the Post-Certificate of Completion of Specialty Training (post-CCST) training programmes.

Training and education should be systematically planned in both the clinical and academic environments. The educational contract should be structured and, in this context, training should take precedence over service provision. Only a few hospitals and clinics are permitted provide a complete training. Hospital departments are normally expected to link with University Dental Schools, primary care settings and other training environments to provide all aspects of teaching and training as appropriate. Educational plans should be co-ordinated so that the opportunities available in approved training environments can be linked to form an orthodontic training network. Besides that, training has been planned in modules linked to various generic and specialty specific topics.

In the preparation for specialists undertaking and maintaining a modern evidence-based approach in their orthodontic practice, achievable through continuous professional and personal development, it is expected that trainees also have personal research training and experience. This experience is expected for all trainees and should be structured to the eventual career intentions of the trainee. The research component should fulfil the minimum Masters level requirements of the Quality Assurance Agency and may take the form of the

satisfactory submission of a research dissertation (for example as part of an MSc, MClinDent, DDS or equivalent), and/or two papers published in appropriately peer reviewed journals that were submitted on work undertaken during the training period. Academic trainees would normally be expected to spend time acquiring a PhD or other higher research qualification.[9]

The training programme, leading to the CCST in Orthodontics, will be not less than 3 continuous years of full-time training or the equivalent part-time training (maximum time in training 6 years). The full-time trainee should spend at least 6 sessions per week involved in patient contact, with at least 5 of these sessions devoted to supervised personal treatment of patients. A balanced programme should include personal treatment, diagnostic sessions, review clinics, formal and informal teaching, research and reading time (Table 3 and Table 4).[11]

Table 3 Training times and clinical sessional distributions

Trainee	Full time trainee
Training time (years)	3
Weekly sessions	10
Total clinical sessions	6
Personal treatment	5
Other- diagnostic, review clinic etc.	1

Table 4 Sessional distribution within non-clinical sessions

Trainee	Full time trainee
Total session	10
Total clinical sessions	6
Total non-clinical sessions	4
Non-clinical taught	15
Non-clinical research, study, audit	2
Non-clinical management, admin	0.5

The objective of the training programmes is to equip the trainee, at the end of the training period, with the knowledge, skills, attitudes and competence to provide the services of a specialist Orthodontist normally practising in a Primary Care setting. This objective should be met by having sufficient clinical experience to ensure that the development of these characteristics is both realistic and achievable within the work-based experiential environment. Whilst individual trainees will vary in their ability and progress in developing and achieving the appropriate knowledge, skills and attitudes, a total of 80 to 120 cases would be appropriate. A guide figure of 65 to 90 cases treated using a primary appliance system, 10 to 20 additional cases employing growth modification, and 5 to 10 cases involving a minor element of interdisciplinary care might be anticipated.[11]

By treating this number of cases, a trainee with be exposed to the breadth and depth of malocclusions, treatment modalities and treatment techniques to equip them with the knowledge and clinical skills to satisfy their requirements of one of the Membership in Orthodontics examinations and become a competent specialist capable of independent practice. Case loads should be modified pro rata for part-time trainees. It is not intended that the figures should be prescriptive but rather to be helpful as guidelines. All trainees would be expected to keep a logbook of their caseload, which should be reviewed as part of the Annual Review of Competence Progression (ARCP) process.[11] The time devoted to the research component and how those sessions are distributed over two or three years of the programme, will depend on degree specifications and individual university regulations. The number of research dedicated sessions, on average, should not normally exceed two per week for Master's level degrees but this should be revised in the light of local university regulations for other higher degrees.[11]

2.5   Job plans for National Health Service (NHS) Employers- Consultants[61]

Consultants are fundamental in the delivery of quality and safe clinical care, and treatment for patients within the NHS in the UK. Consultants hold the ultimate responsibility for and the delivery of expert clinical care, usually within a team. This includes diagnosis and management of complex cases, and spending time and effort reflecting on and reviewing patient care activities so that quality of care and safety of the patients are assured. They should also be involved in teaching, training, researching, managerial decisions, running departments and developing local services.

A job plan, can be described, in simple terms as a prospective and professional agreement that sets out the duties, responsibilities, accountabilities and objectives of the consultant, and the support and resources provided by the employer. The Job Plan will include appropriate and identified personal objectives that have been agreed on between the Consultant and his/her clinical manager and will set out the relationship between these personal objectives and local service objectives.[61,62] For clinical academic staff and NHS staff with a substantial academic component to their job, there should be an established mechanism, between the university and the NHS employer, to agree on both general and specific arrangements for employment on a regular basis and prior to individual Consultant job planning sessions.[61] Objectives should cover all aspects of a Consultant's role, direct clinical care (DCC), supporting professional activities (SPAs) including personal development, those that are more professionally oriented and academic sessions, where appropriate.

2.5.1 Programmed Activities (PAs)[61,62]

Each Consultant has a job plan that sets out the number of agreed PAs which the Consultant will undertake and a list of the duties they are expected to perform within those PAs. The programmed activities (PAs) are categorised as direct clinical care (DCC), supporting professional activities (SPAs), additional NHS responsibilities and external duties. A key feature of the contract is that it provides a clear maximum commitment to the NHS. The full time commitment of a Consultant is for 10 programmed activities (PAs) of 4 hours each (3 hours in premium time) and within this it has been agreed upon that a full time Consultant will devote on average 7½ PAs per week to DCC and 2½ to SPAs.. These may be divided into any of the following categories, as defined in the terms and conditions of service: DCC, SPAs, additional responsibilities, external duties and academic activities. The precise balance will vary in order to take account of and individual consultant's duties.

2.5.1.1 Direct Clinical Care (DCC)

Direct clinical care now incorporates work that might previously have been described separately in a job description, such as clinical administration and outpatients. Any activity that involves the care of individual patients should be included in programmed activities of direct clinical care e.g. emergency duties (including emergency work carried out during or arising from on call); operating sessions; pre- and post-operative care; ward rounds; outpatient clinics; clinical diagnostic work; multi-disciplinary meetings about direct patient care; administration directly related to patient care (e.g. referrals, notes, complaints, correspondence) and travelling time associated with these duties.

2.5.1.2 Supporting Professional Activities (SPAs)[61,62]

Supporting Professional Activities (SPAs) are defined in the Terms and Conditions, Consultants (England) 2003 as "activities that underpin direct clinical care. These reflect time spent undertaking teaching, training, education, continuing professional development (CPD) (including reading journals), audit, appraisal, research, clinical management, clinical

governance, service development, job planning etc; activities that are essential to the long-term maintenance of the quality of the service but do not represent direct patient care".

All this means that, in real terms, the consultant has very little time specifically allocated to teaching and training.

2.6   Annual Review of Competence Progression (ARCP)[5]

Structured postgraduate dental training is dependent on having curricula which clearly set out the standards and competencies of practice, an assessment strategy to know whether those standards have been achieved, and an infrastructure which supports a training environment within the context of service delivery. The three key elements which support trainees in this process are: *appraisal, assessment* and *annual planning*. These three elements can be presented individually, but when integrated together, they contribute to the ARCP.[5] In other words, the ARCP is a formal annual review that is designed to provide evidence and judgement about the progress of the trainees and assess a trainee's readiness to progress to the next level in their training. The ARCP is applicable to all Specialty Trainees and addresses the important processes found within an educational workplace based appraisal and programme planning that should respectively precede and follow from the formal assessment process (Figure 2).[5,63]

The ARCP replaced the Record of In-Training Assessment (RITA) in 2011. This was mainly due to the ARCP involving a more explicit use of evidence, i.e. the use of workplace based assessments (WBAs) to record the level of competencies achieved by trainees in their clinical practice and their progression throughout the development of the training programme. It provides better links to services and the public as set out in the Principles of Assessment, originally developed by PMETB and now incorporated into the GMC. Assessment strategies normally also include well-constructed and "fit-for purpose" professional examinations which are based on expectations laid out in the curriculum, together with in-work and real-time assessments. The ARCPs are undertaken by a panel of

assessors including: the Training Programme Director (TPD), the Chair of the Specialty Training Committee and the College Dental Faculty Specialty Adviser relevant to each country. It is also considered to be usual to invite an external panel member who should be a member of the SAC nominated panel of external advisers to participate in and contribute towards the assessment process.[3]

The ARCP panel reviews the evidence submitted by the trainee for the period since the commencement of their training or from the previous ARCP review. This evidence includes

Details of courses attended; examinations sat; presentations given; publications; research; audit; case log book and a full record of all WBAs undertaken including case based discussions (CBDs), Clinical examinations (CEx), directly observed procedures (DOPs) and multi-source feedback (MSF).

Trainees will then receive feedback and also discuss their future career plans and the outcome of their ARCP. Satisfactory progress is defined as achieving the competencies within the specialty curriculum approved by the GDC at the rate required. If a trainee receives unsatisfactory or insufficient evidence, this indicates that they need to meet with the panel to discuss things further in order to obtain feedback and implies that the development of specific competencies, with remedial or additional training, may be required by the trainee. In these circumstances, additional training time may not be required.[5,64]

Figure 2 The Annual Review of Competence Progression

1. Learning agreement:
   - aims & intended learning outcomes
   - based on specialty curriculum
2. Advice on portfolio
3. Regular feedback (2 ways)
4. Personal Development Plan
5. Trainer's structured report

Educational Appraisal

ARCP
A. Evidence
1. Assessment of performance e.g.
   - **Workplace based assessments and observational methods, e.g. Mini-CEX, DOPS, video, CBD, examinations**
   - Structured report
2. Assessment of experience, e.g.
   - portfolio/log book
   - audit
   - research
   - critical incidents

B. Annual Competence Review
➢ Appropriately constituted panel considers evidence

Outcome ⟶

Annual Review of Competence Progression

Outcome

Educational supervisor and/or TPD meet with trainee to
   - ❖ review competence outcome with trainee
   - ❖ plan next part of training

Annual Planning

2.7   Membership in Orthodontics of the Royal Colleges (MOrth RCSEdinburgh and IMOrth RCS England and RCPS Glasgow)[12,13]

The Diploma of Membership in Orthodontics of the one of the Royal Colleges in the UK are summative assessments of the core knowledge and competence levels in the field of orthodontics. They are intended to test the candidate's competency at a level expected of a specialist practitioner.   The aims of the examinations are to allow the candidate to demonstrate core knowledge of orthodontics and demonstrate a level of competence in the planning and provision of orthodontics treatment.[12,13] See Table 5 for details of Eligibility; Level; Aims; Content; Assessments and Outcomes.

Successful candidates will be granted a Membership to the Faculty of Dental Surgery of the relevant College(s), on completion of their clinical training programme and payment of such election fee and annual subscription as may be determined from time to time by the Council of the College. [12,13]

Table 5 Format of MOrth RCSEd and IMOrth RCS England and RCPS Glasgow

Examination	MOrth RCSEd	IMOrth RCS England and RCPS Glasgow
Eligibility	Candidates may enter the examination upon completion of 30 months of appropriate training in the relevant specialty	Successfully completed 2½ years (or part-time equivalent of a 3-year recognized specialty training programme
Level	Competency at a level expected of a specialist practitioner.	Level of knowledge and competency which will enable them to function as a Specialist in Orthodontics
Aims	To allow the candidate to demonstrate core knowledge of orthodontics and demonstrate a level of competence in the planning and provision of orthodontics treatment.	The purpose of the examination is to determine whether candidates have reached a level of knowledge and competency which will enable them to function as a Specialist in Orthodontics
Content	Part I(a) applied basic dental sciences written paper; Part I(b) applied sciences relevant to orthodontics.[*] Part II assesses a candidate's knowledge on Principles and Practice of Orthodontics.	Part 1 - Applied Science in relation to orthodontic practice Part 2 - Orthodontics [*]Exemptions possible

Examination	MOrth RCSEd	IMOrth RCS England and RCPS Glasgow
Assessments	Part I(a & b) written papers. Part II 1. A three hour written paper in Orthodontics;[*] 2. A two hour diagnostic examination (in two sections) related to treatment planning and patient care with four sets of patient records; 3. A 15 minute oral examination on aspects of communication relating to orthodontic treatment; 4. A 30 minute oral examination on any aspect of orthodontics; 5. A 30minute oral examination based on five fully documented clinical case histories, each describing a patient personally treated by the candidate.	Part 1 - Three hour Multiple Choice/ Multiple Short Answer paper. Part 2 1. A written examination to explore the candidate's knowledge of orthodontic theory.[*] 2. Objective Structured Clinical Examination (OSCE) to assess the candidate's ability to manage and execute scenarios commonly experienced in the clinical practice of contemporary orthodontics. 3. Structured Clinical Reasoning - to test the candidate's breadth and depth of knowledge in diagnosis and treatment planning over a range of cases. 4. Case Presentation: assess the clinical management skills of the candidate through the written presentation of clinical data relating to 5 patients of the candidate's choice.
Outcomes	The evaluation scheme for each section of both the examinations is as follows: 4- An outstanding performance; 3- A definite pass; 2- A reasonable performance but not up to pass standard; 1- A poor performance. Each section should be passed concurrently.	

Chapter 3: Study Objectives

3.1   Study Objectives

The overall objectives of this study were:

1. To assess interviewers' and interviewees' perceptions and experiences of the central multi-station interview (MSI) for the selection of StRs to 3-year orthodontic training programmes in the UK.

2. To assess Trainers' and Trainees' perceptions and experiences of National Recruitment.

3. To explore perceptions and experiences of trainers and trainees towards workplace-based assessments (WBAs) that contributed to Orthodontic StR training in England.

4. To assess whether outcome at interview predicts progress through training (ARCP) and outcome at MOrth/IMOrth.

Parts 1-3 will be explored in this Thesis and Part 4 will contribute to another body of work.

Chapter 4: Methodological Framework

4.1   Study Design

This study comprised a series of cross sectional surveys of those involved with central recruitment and work based assessments. The study was conducted in four phases:

Phase I aimed to assess interviewers' and interviewees' perceptions and experiences of a central Multi-Station Interview (MSI) for selection of Orthodontic StR to the UK regional Orthodontics training programme;

Phase II aimed to assess trainers' and trainees' perceptions and experiences of National Recruitment;

Phase III aimed to explore perceptions and experiences of trainers and trainees towards Workplace-based Assessment (WBAs) contributing to Orthodontic StR training in England.

Phase IV, will be to assess whether an interviewee's outcome at interview predicts progress through training (ARCP) and / or outcome at MOrth/IMOrth. However, this thesis will not include Phase IV as this will be conducted in at year 2015 (after the trainees recruited in 2012, have completed their three years' orthodontic training).

4.2   Participants

Phase I	All the interviewers and interviewees who participated in the May 2012 National Recruitment interviews held in London, England.
Phase II (a)	The non-interviewing trainers in all training centres.
Phase II (b)	The trainees who were recruited in May 2012 and their trainers.
Phase III	All Orthodontics StRs intake 2011 and 2012 and their trainers.

4.3   Methodology

Two questionnaires were designed for each phase of the study. One each for the trainers and trainees.

The **Phase I** questionnaires were based on a previous study carried out on paediatric recruitment.[32]

For the *interviewers*, five of the questions inquired about their social-demographics. They were then asked to consider 20 statements about the interview process and to score them on a Likert scale of 1 (strongly disagree) to 6 (strongly agree). These statements were designed to assess the interviewers' perceptions of the validity, reliability, fairness and content of the MSI.

For the *interviewees*, six questions were asked about their demographics, two questions on whether the candidates had any previous experiences of MSIs and how well informed they felt about the format prior to the interview. Eight questions, scored on a Likert scale of 1 (strongly disagree) to 6 (strongly agree), then asked the candidates how they found the format of the interviews, whether the questions were easy to understand, and how fair the candidates found this format when compared to a panel interview.

Responses were initially divided into two categories: agree or disagree, based on the Likert scale.Likert scale 1 to 3 indicated that the respondents disagreed with the statement, whereas Likert scale 4 to 6 indicated that the respondents agreed with the statement being suggested for each specific question. The six point Likert scale responses were then treated as a linear scale to obtain mean scores and 95% confidence intervals.

Phase II (a) and Phase II (b), were held nine months after the commencement of the Orthodontics Specialist Training. All the Trainers and Trainees were invited to participate in a questionnaire-based study to assess StR progression through training and to assess their perceptions of National Recruitment. The questionnaires for Phases IIa and IIb were based

on the responses made in a previous survey undertaken by COG of the British Orthodontic Society (BOS) in Autumn 2011 and one carried out by the TGG of BOS when National Recruitment was introduced. The free text comments were used to determine key areas of concern which were then used to formulate the themes and individual questions contributing to the questionnaires.

For Phase III, all Orthodontics StR intakes from 2011 and 2012 and their trainers were invited to participate in a questionnaire based study designed to evaluate their perception towards WBAs. The questionnaires were based on a previous study carried out in psychiatry to assess WBAs.[24,25] The questionnaires were organised into six thematic frameworks.

Section A - questions were asked about demographic data and general information of trainers and trainees.

Section B - questions explored trainers' and trainees' opinions on why WBAs were introduced.

Subsequently, trainers and trainees were asked to indicate the extent to which they agreed with the statements posed in the following sections:

Section C - attitudes and perceptions of WBAs,

Section D - WBAs as an assessment tool and

Section E - overall perception about WBAs.

Trainers and trainees were asked to score their perceptions based on a five-point Likert scale for the last three sections, where 1 was strongly disagree, 2 - disagree, 3 - neither agree nor disagree, 4 - agree, and 5 - strongly agree.

Section F explored trainers' perception of themselves as an assessor or trainees' perception of their assessor. Trainers and trainees were asked to rate any given subject on a five-point scale, where 1 - poor, 2 - poor, 3 - acceptable, 4 - good, and 5 - very good.

For the descriptive statistical analysis of Phase II and Phase III, responses were divided into two categories; agree or disagree based on the Likert scale. Likert scale 1 and 2 indicated that the respondents disagreed with the statement, whereas Likert scale 4 and 5 indicated that the respondents agreed with the statement. Likert scale of 3 indicated that the respondents neither agree nor disagree with the statement.

A pilot study was conducted before sending out the Phase I, II and III questionnaires in order assess and then to improve the design of the questionnaires. The pilot study was carried out on consultants, orthodontics StRs and post-CSST trainees who attended the Merseyside Deanery Audit meeting in January 2013. The questionnaires were subsequently modified for the present study.

All the questionnaires were checked by the biostatistician (GB) before they were sent out. GB analyses the questionnaires to determine the Chronbach's Alpha to determine the questionnaire's internal consistency. He then deleted questions that did not contribute to this and to ensure the Cronbach's alpha was at least 0.7 which is the minimum level of acceptable reliability. This meant that all the questions in the specific sections were related to the themes that were set.

Invitations to participate in the surveys were distributed by email to potential participants (all current trainers and trainees in each Deanery) in August 2013. The secretaries of the Consultant Orthodontist Group (COG) and Training Grade Group (TGG) of the British Orthodontic Society (BOS) distributed the e-mails for the trainers and trainees respectively. The email sent by the secretary, of the relevant groups, contained a link to the online questionnaire via Survey Monkey^{TM} and an information sheet that described the study in detail.

Data collection was initially intended to be over the course of four weeks. However, the response rate was low and remained at less than 30% despite further reminder emails sent during the last two weeks of data collection. Therefore, the data collection period was

extended for another 4 weeks with weekly reminders being sent to the trainers and trainees encouraging them to respond to the questionnaire(s).

4.4   Data Analysis

Statistical support was sought from the biostatistician, Dr. G. Burnside for analysis advice. All data collected from the interviewees', interviewers' and trainers' questionnaires were analysed using SPSS Version 21.0 (SPSS Inc., Chicago, IL, USA). A p-value of less than 0.05 was considered a statistically significant difference.

The distribution of the linear data was examined using the Shapiro-Wilk test to test for normality of the data and determine whether parametric or non-parametric tests were to be used for the main data analysis. Percentages and frequencies are reported for the descriptive statistics for the different groups in the data. Cronbach's alpha was calculated to assess internal consistency within the data. Data from negative Likert questions were reverse coded, as recommended to all current trainers and trainees in each Deanery by Field,[65] before calculating Cronbach's alpha. Independent t-tests were used to identify if the trainers' and trainees' perception of National Recruitment and WBAs were significantly different. A Pearson chi-square was employed to explore the significance of any associations between the variables in the two groups. Fishers' exact test was reported wherever 20% or more of the cells had an expected count of less than five.

4.5   Consent

All the participants were above the age of 18 years, therefore consent to participate in the study was obtained from the participants themselves. Each participant was provided with a participant's information leaflet describing the purpose of the study and how their information would be used. Informed consent was sought from the participants who agreed to take part in this study as soon as ethical approval and Trust Research and Development approval was granted.

4.6   Ethics and Regulatory Approvals

The study was conducted in compliance with the principles of the Declaration of Helsinki (1996), the principles of GCP and in accordance with all applicable regulatory requirements including but not limited to the Research Governance Framework and the Medicines for Human Use Regulations 2004, as amended in 2006 and any subsequent amendments.

The methodology to be pursued for carrying out this research was discussed ahead of time with Heather Rogers (Research Governance Manager of Royal Liverpool and Broadgreen University Hospitals Trust) who confirmed that as for Phase I of the proposal qualifies as service evaluation and therefore did not require formal NHS ethical review (Email Reference Number: REF 04/26/31).

Ethical approval was necessary for gaining access to individual interviewees' scores from London Deanery, in order to assess whether interviewees' scores were a predictor of progress through training and also the MOrth outcome. In addition, ethical approval was required for recruiting trainees and trainers to Phase II-IV.   Research and Development approval were sought from the Royal Liverpool and Broadgreen University Hospital Trust Research and Development department. A research protocol and related documents were submitted for review at Liverpool. (Reference Number: UoL000897)

4.7   Quality Assurance

This study was monitored by the lead researcher, Dr. Jayne Harrison, to ensure compliance with Good Clinical Practice and scientific integrity will be managed and oversight retained by the sponsor (University of Liverpool).

4.8   Data Handling

The Chief Investigator (JH) acted as a custodian for the study data. The following guidelines were strictly adhered to:

Participant data were anonymous.

- All anonymous data were stored on a password protected computer.

- All study data were stored and archived in line with the Medicines for Human Use Amended Regulations 2006 as defined in the Joint Clinical Trials Office Archiving Standard Operating Procedure.

4.9   Publication Policy

The findings from this study have been and will be reported and disseminated at international orthodontic conferences and in peer-reviewed scientific journals.[66]   The information and outcome of this study were also used as the framework for a research dissertation associated with the DDSc programme at the University of Liverpool.

4.10   Funding Aspect

Financial support was sought from the DDSc research fund (University of Liverpool) to cover costs of paper, copying, travel, Survey Monkey™ licence, statistical support and conference fees.

Chapter 5: Results

Phase I: Interviewers' and Interviewees' Perception of MSI for National Recruitment of orthodontic StRs

Interviewers

Demographic data

Out of 41 interviewers, 36 (88%) of them completed the questionnaire. All the interviewers were at the consultant level with at least one year's experience at that grade. The mean age of the interviewers was 46 years (standard deviation (SD) 7.2; 95%Confidence Interval (CI) 43.5, 47.5) and 56% of the interviewers were male. The vast majority of the interviewers (81%) had time in their job plan for education. Professional leave was taken by 80% of the interviewers to attend the two interview days and 89% of those who took professional leave had no problem with obtaining leave for the trainings and interview days, however, 5.8% of the interviewers had used annual leave to attend the interview.

Responses to the statements

Out of the 20 questions in the questionnaires, more than 90% of the interviewers strongly agreed with the following eight statements:

- 'I would consistently offer the same assessment if asked to review my opinion at a later date',

- 'Interview stations were of the right duration',

- 'Interviewers usually agree when comparing their assessment of candidates at different stations',

- 'Our interviews appeared fair to the candidates'(Figure 3),

- 'The interview format selects the best candidate to be appointed',

- 'The same panel conducting the interviews for a second time, several weeks later and with the same candidates, would appoint the same people',

- 'We asked searching questions during the interview'and

- 'We tested an appropriate range of competencies during the interview'.

More than 75%, but less than 90% of the interviewers agreed that:

- 'Performance at interview predicts future performance' and

- 'The format was better than that of a traditional panel'. (Figure 5).

More than 25%, but less than 50% of the interviewers mentioned that:

- 'The candidates' personality influenced my assessments',

- 'The interview helped candidates to understand what a good orthodontist is' and

- 'The interview process is more likely to select a nice orthodontist than a clever one'.

Less than 10% of the interviewers agreed that:

- 'Appointment by application form, without interview, would have selected the same candidates',

- 'One interviewer is needed at each station',

- 'The interview process should involve more stations',

- 'The interview was unfair to male candidates' and

- 'The workload involved in interviewing was excessive'.

Free text comments were given by 15 (21%) of the interviewers. Four interviewers commented about the space for comments on the assessment form and two interviewers were uncertain whether the process selected the best candidate. Two interviewers made suggestions about the logistics of attending the interviews.

The interviewers strongly agreed (mean score of >4.0) with these statements:

- 'Interview stations were of the right duration',

- 'Interviewers usually agreed on their assessment of the candidate at each station',

- 'My performance over the two days was consistent',

- 'Our interviews appeared fair to the candidates',

- 'The format of the MSI was better than that of the traditional panel interview',

- 'The same panel conducting the interviews for a second time, several weeks later and with the same candidates, would appoint the same people', and

- 'We tested an appropriate range of competencies during the interview'. (Table 6)

Interviewers agreed that 'Performance during the interview helped to predict future performance' (mean score 3.9; 95%CI 3.49, 3.22). Ratings suggested that there was a weak agreement (mean score 3.0) with the statements:

- 'The interview process is more likely to select a nice orthodontist than a clever one';

- 'The interview process should involve more stations'; and

- 'The workload involved in interviewing was excessive'.

Interviewers did not agree that

- 'Appointment by application form without interview would have selected the same candidates';

- 'Only one interviewer is needed at each station' and

- 'The interview was unfair to male candidates'.(Table 6)

There was no clear opinion when considering the statements:

- 'The candidates' personality influenced my assessments' or

- 'The interview helped candidates to understand what a good orthodontist is'

Table 6 Interviewers' agreement with and Likert score for statements about the multi-station interview.

No	Questions	N	Agree		Disagree		Likert scale				Standard Deviation
			Number	Percentage (%)	Number	Percentage (%)	Minimum Score	Maximum Score	Mean (95% CI)		
1	The interview format selects the best candidate to be appointed.	32	30	93.8	2	6.2	1	6	4.78 (4.43, 5.13)		0.97
2	We tested an appropriate range of competencies during the interview.	36	34	94.4	2	5.6	1	6	5.11 (4.75, 5.47)		1.06
3	We asked searching questions during the interview.	36	33	91.6	3	8.4	2	6	4.72 (4.38, 5.06)		1
4	The format was better than that of a traditional panel.	35	29	82.8	6	17.2	1	6	4.6 (4.19, 5.01)		1.19
5	Performance at interview predicts future performance.	34	27	79.4	7	20.6	1	5	3.85 (3.49, 3.22)		1.05
6	The interview process is more likely to select a nice orthodontist than a clever one.	35	10	25.6	25	74.4	1	5	2.8 (2.40, 3.20)		1.16
7	Our interviews appeared fair to the candidates.	36	36	100	0	0	4	6	5.47 (5.24, 5.71)		0.7
8	Interview stations were of the right duration.	36	34	94.4	2	5.6	2	6	5.36 (5.05, 5.68)		0.93
9	The same panel conducting the interviews for a second time, several weeks later and with the same candidates, would appoint the same people.	36	35	97.2	1	2.8	1	6	5.06 (4.71, 5.40)		1.01
10	Interviewers usually agreed on their assessment of the candidate at each station.	34	34	100	0	0	4	6	5.35 (5.08, 5.62)		0.77

No	Questions	N	Agree		Disagree		Likert scale			
			Number	Percentage (%)	Number	Percentage (%)	Minimum Score	Maximum Score	Mean (95% CI)	Standard Deviation
11	Interviewers usually agree when comparing their assessment of candidates at different stations.	21	21	100	0	0	4	6	4.71 (4.36, 5.07)	0.78
12	I would consistently offer the same assessment if asked to review my opinion at a later date.	35	32	91.3	3	8.7	1	6	4.8 (4.42, 5.18)	1.11
13	My performance during over the two days was consistent.	35	35	100	0	0	4	6	5.49 (5.24, 5.73)	0.7
14	The workload involved in interviewing was excessive.	35	3	8.5	32	91.5	1	4	2.46 (2.16, 2.75)	0.85
15	Appointment by application form without interview would have selected the same candidates.	35	3	8.6	32	91.4	1	5	1.83 (1.41, 2.25)	1.22
16	The interview process should involve more stations.	35	3	8.6	32	91.4	1	6	2.11 (1.72, 2.51)	1.16
17	One interviewer is needed at each station.	35	3	8.5	32	91.5	1	6	1.71 (1.24, 2.19)	1.38
18	The candidates' personality influenced my assessments.	36	22	61.1	14	38.9	1	6	3.39 (2.91, 3.87)	1.42
19	The interview was unfair to male candidates.	34	1	2.9	33	97.1	1	4	1.26 (1.02, 1.51)	0.71
20	The interview helped candidates to understand what a good orthodontist is.	36	16	44.5	20	55.5	1	5	3.08 (2.67, 3.50)	1.23

Interviewees

Demographic data

All 82 (100%) interviewees completed the questionnaire. Fifty-one (61%) were female and the interviewees' age ranged from 25 to 44 years with a mean age of 28.9 years (95%CI 28.1, 29.6). The year of qualification ranged from 1992 to 2009 with over half (68%) having qualified within the last 5 years. Of the interviewees, 45% had not had past experience of a multi-station interview.

Responses to the statements

Agreement

More than 90% of the interviewees strongly agreed with these following statements (Table 5):

- 'The questions were easy to understand',
- 'I was given adequate information on arrival',
- 'I thought the overall format was fair',
- 'The interview process was well organised' and
- 'I was well informed about the interview process'.

More than 75% but less than 90% of the interviewees agreed that:

- 'I thought that the multi-station interview was fairer than a traditional panel interview' (Figure 4),
- 'I felt well prepared for the types of questions asked' and
- 'I found the multi-station interview helpful to me'.

73% of the interviewees preferred the MSI to a traditional panel interview (Figure 6). The mean Likert scale score for how 'fair' the interviewees found this interview format was 4.76, (SD 0.98, 95%CI 4.54, 4.94) (Table 7).

Table 7 Interviewees' agreement with and Likert score for statements about the multi-station interview.

No	Question	N	Agree		Disagree		Likert Scale			
			Number	Percentage (%)	Number	Percentage (%)	Minimum Score	Maximum score	Mean (95% CI)	Standard Deviation
1	I was well informed about the interview process.	82	74	90.3	8	9.7	2	6	4.8 (4.57, 5.04)	1.07
2	I found the multi station interview helpful to me.	81	66	81.7	15	18.3	2	6	4.46 (4.21, 4.70)	1.1
3	I was given adequate information on arrival.	82	77	93.9	5	6.1	2	6	4.98 (4.77, 5.18)	0.94
4	The questions were easy to understand.	81	79	96.3	3	3.7	2	6	4.54 (4.37, 4.71)	0.78
5	I felt well prepared for the types of questions asked.	82	67	81.9	15	18.1	2	6	4.28 (4.09, 4.47)	0.88
6	I thought the overall format was fair.	82	77	93.9	5	6.1	1	6	4.76 (4.54, 4.97)	0.98
7	I prefer this format to a traditional panel interview.	81	67	73.2	14	26.8	1	6	4.22 (3.92, 4.52)	1.36
8	I thought that the multi-station interview was fairer than a traditional panel interview.	82	71	85.5	11	14.5	1	6	4.63 (4.39, 4.88)	1.13
9	The interview process was well organised.	82	76	91.6	6	8.4	1	6	4.94 (4.70, 5.18)	1.1

Figure 3 Interviewers' perception of 'Our interviews appeared fair to the candidates'.

Legend:
- Strongly agree
- Moderately agree
- Tend to agree
- Tend to disagree
- Moderately disgaree
- Strongly disagree

11%
31%
58%
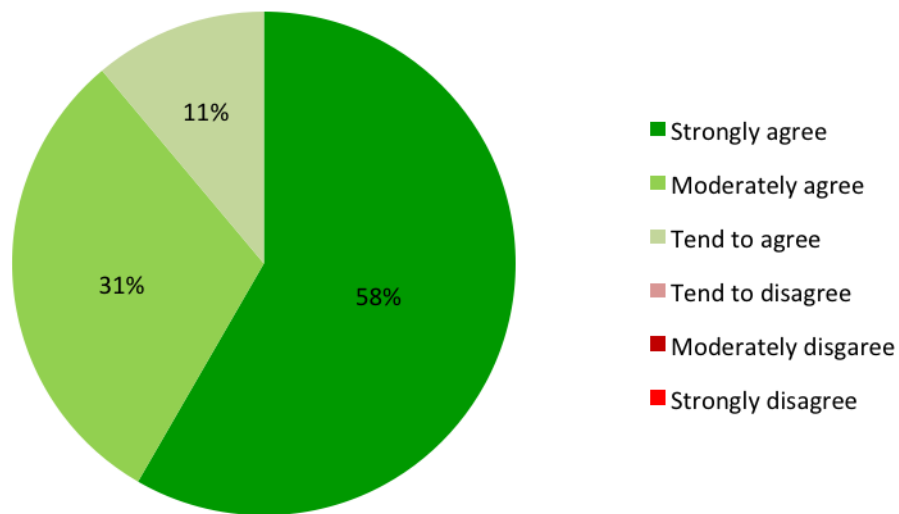
Figure 4 Interviewees' perception of 'Multi-station interview was fairer'.

2% 1%
10%
32%
27%
28%

Legend:
- Strongly agree
- Moderately agree
- Tend to agree
- Tend to disagree
- Moderately disgaree
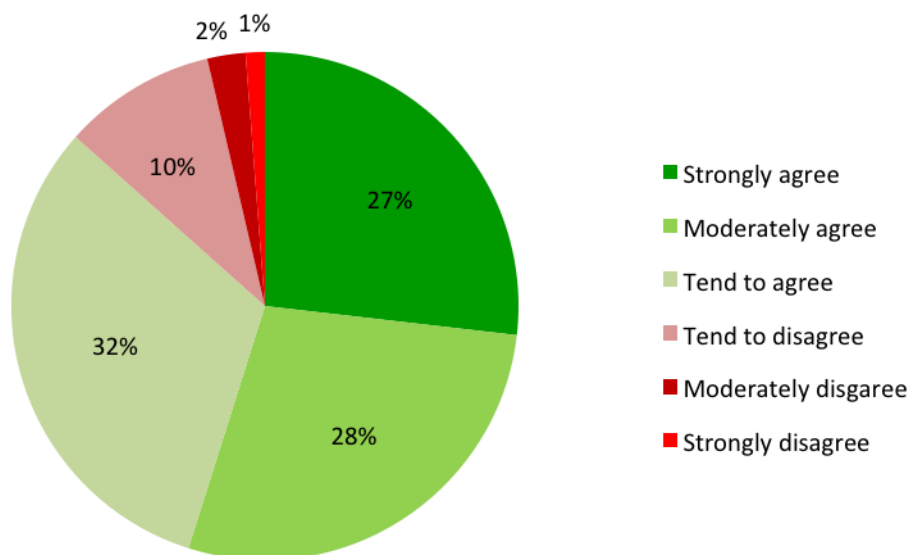- Strongly disagree

Figure 5 Interviewers' perception of 'The format was better than that of a traditional panel'.
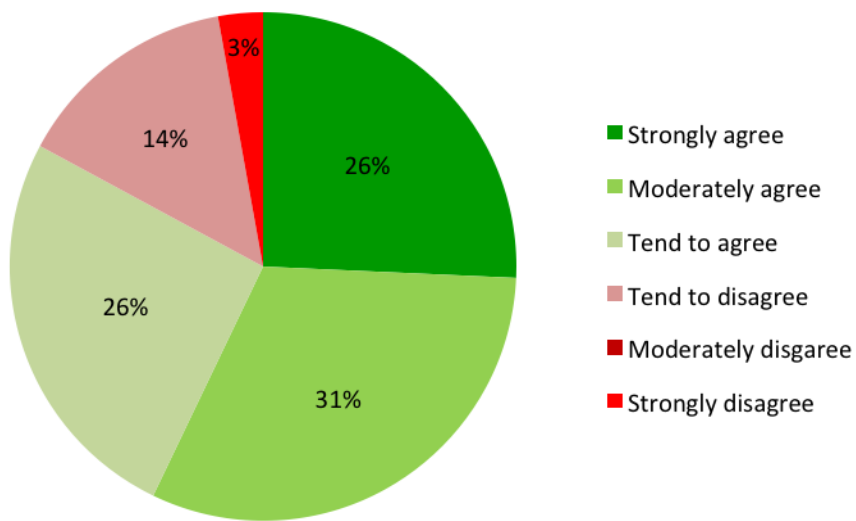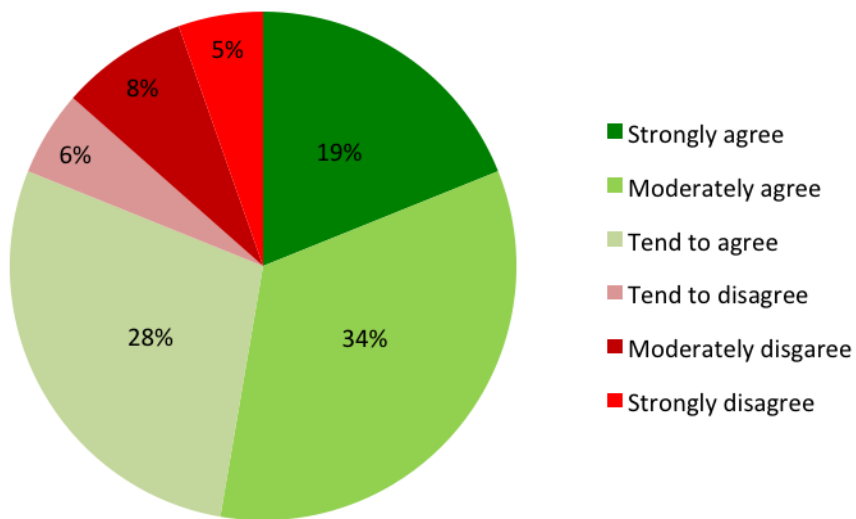

Figure 6 Interviewees' perception of 'I prefer this format to a traditional panel'.

Free text comments were given by 42 (51.2%) interviewees. Eighteen of the comments (22%) were about the short notice the interviewees received for attending the interviews. Three candidates wanted more time for the questions and two interviewees commented that the delay between when the interview took place and when the results of the interview were released to them was too long.(Table 8)

Table 8 Interviewees' comments from the Phase I survey

1. Old system fairer; 2 months wait for results is not acceptable
2. Re Q12, all ok except research Q.
3. Re Q12, not for research Q, difficult to tell what exactly they were after
4. Short notice btw notification of interview n interview date
5. Short notice prior interview, esp regarding references.
6. Short notice; Doc to bring unspecified, eg.photos n p/copy of passport.
7. Short notice; fairer sys; length of waiting too long, unfair for other jobs.
8. Some Qs were very vague
9. Time too short for Q; Too long delay for result, how to tell hosp??
10. Too short notice
11. Too short notice for the interview and getting the p/folio together.
12. Too short notice for the interview and getting the p/folio together.
13. Too short notice prior interview
14. Too short notice(5 days b4 interview), pt cancellation
15. Too short notice, 3 workings days!
16. Too short notice, a wk not enough to gather references and p/folio.
17. Too short notice, in rush to fill up forms n Ref need weeks to sought.
18. Too short notice; all eligible had interview, ?CV impact; Consultants say…
19. Understandable; written station too long; scenario in separate sheet.
20. Well structured day; Everyone is very helpful.
21. Written station, instructions not clear, ? back of the info sheet was answer sheet.

Phase II: Trainers' and Trainees' Perception of National Recruitment

Trainers

Out of 180 trainers, 96 (53%) completed the questionnaire. For these trainers, the number of years in service as a consultant ranged from one year to 31 years (Figure 7), with the mean time being 13.6 years (SD 7.98; 95% CI 11.97, 15.20) (Figures 8 and 9). The vast majority of the trainers were white British (85%), 8% were Indian; 4% were white Irish; 2% were from other white ethnic groups and 1% were from other ethnic groups. Just over half (53%) of the trainers were male. Three quarters (76%) of the trainers had not been involved with the National Recruitment interview process but almost half of them (46%) had a trainee who had been recruited through National Recruitment 2012.

The reliability of the questionnaire was considered to be good with a Cronbach's alpha of 0.81.

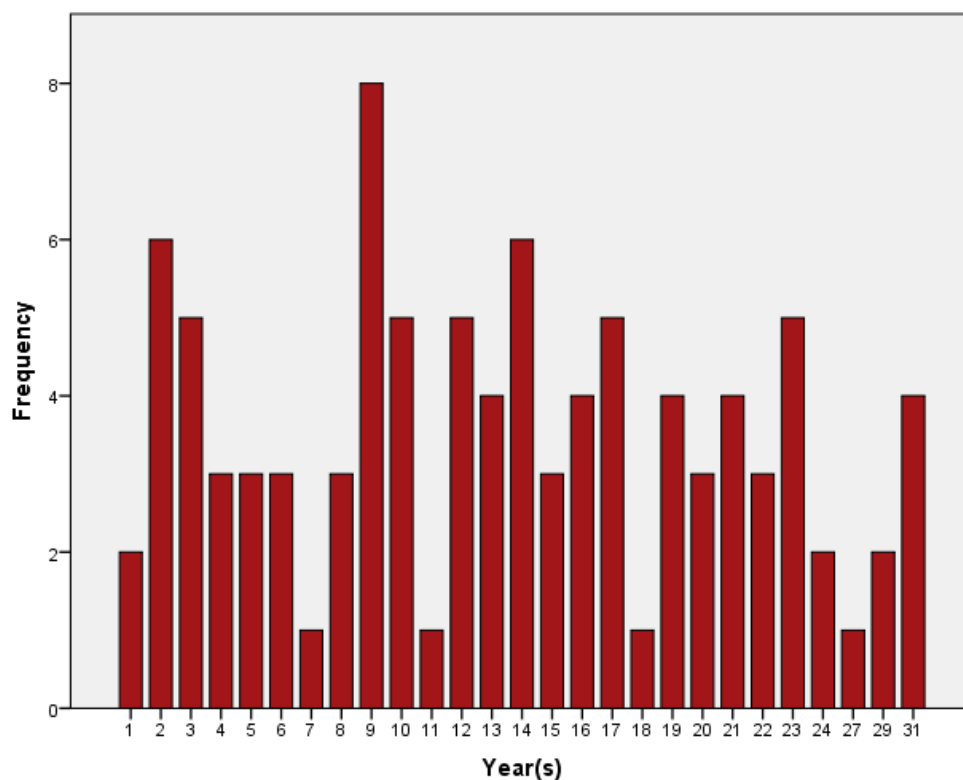**Figure 7 The number of year(s) as consultant**

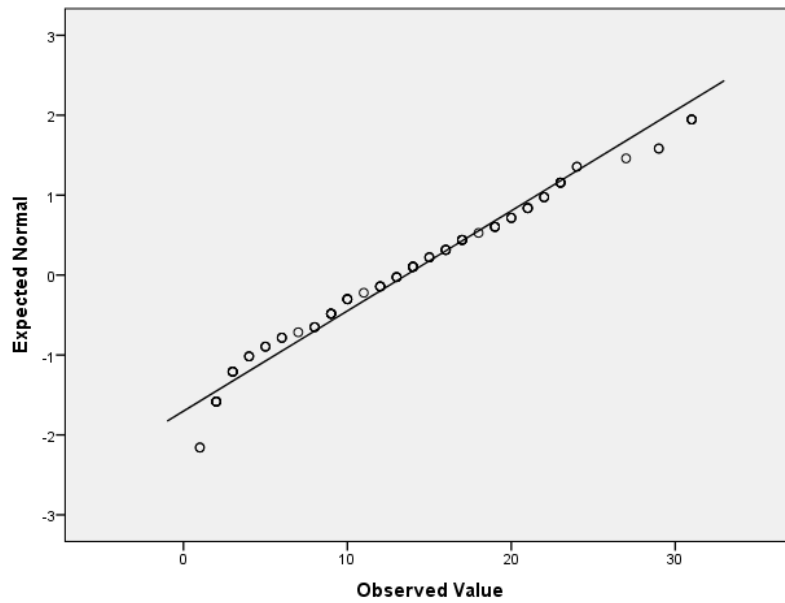**Figure 8 Normal Q-Q plot of year(s) been as consultant**

Figure 9 Box plots of year(s) been as consultant
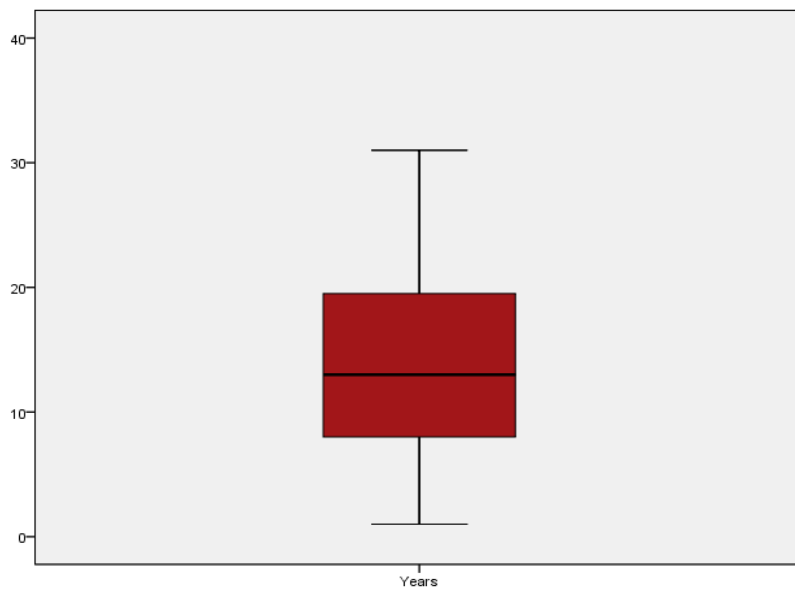
None of the trainers agreed and just over half (51%) of the trainers neither agreed nor disagreed that National Recruitment of orthodontic StRs will result in fewer MOrth failures. Nearly three quarters, (72%) of the trainers agreed that National Recruitment meant that consultants at District General Hospitals had limited input into the selection of their trainee(s). Of the 99 trainers who answered the questionnaire,

- 63% of them agreed that all training consultants should be given the opportunity to be involved in the interview process and

- 81% agreed that trainers need some choice as to who is appointed to their unit.

- 73% of the trainers agreed that the previous recruitment system gave them more ownership and responsibility for their trainees;

- 55% of the trainers neither agreed nor disagreed that the trainee who was allocated to / had chosen their unit was difficult to work with, however, 32% of the trainers disagreed with this statement.

- 66% of the trainers who answered the questionnaire would rather have the post empty for a year than accept a weak trainee.

Of the 71 trainers, 11 had spent more than £100 but less than £200 to attend the interview in Centre London. Likewise, 11 trainers spent more than £200 but less than £300 in attending the interview, three trainers spent about £301-£350; three trainers spent £401-£450 and one trainer spent more than £550 but less than £600 in order to attend the interview (Figure 10).

Figure 10 Cost (£) incurred to attend the interview
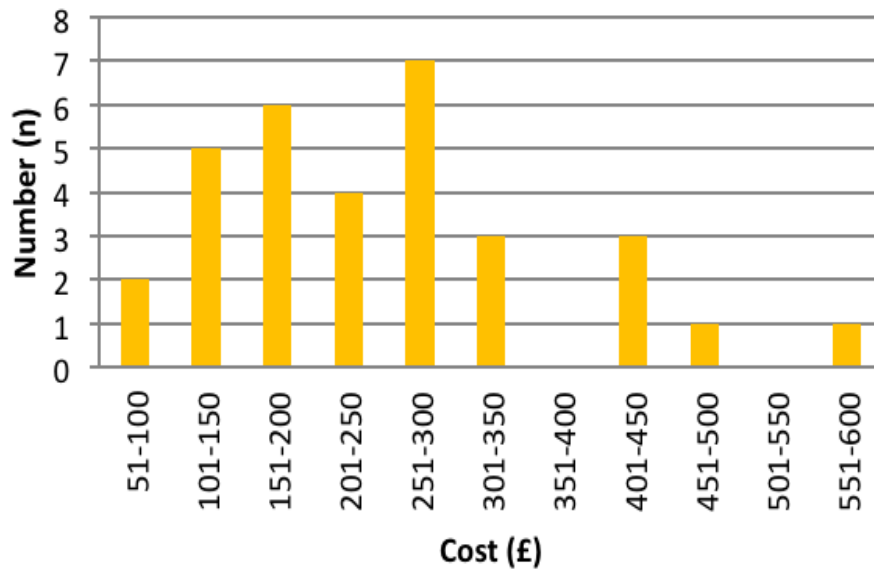
Trainees

Of the 26 trainees who were recruited through the National Recruitment 2012, 19 (73%) completed the questionnaire. The median time since interviewees had obtained their BDS, or equivalent, was 5 years (Inter Quartile Range, IQR 4), with a range from four to twelve years (Figure 11). Of the19 trainees who answered the questionnaire, 11 were white British (58%); two were white Irish, two were Indian and two were of another Asian ethnic group e.g. Arabian and Middle Eastern; one was from another white ethnic group and one was Chinese.

Figure 11 Year(s) since qualification as a dentist.
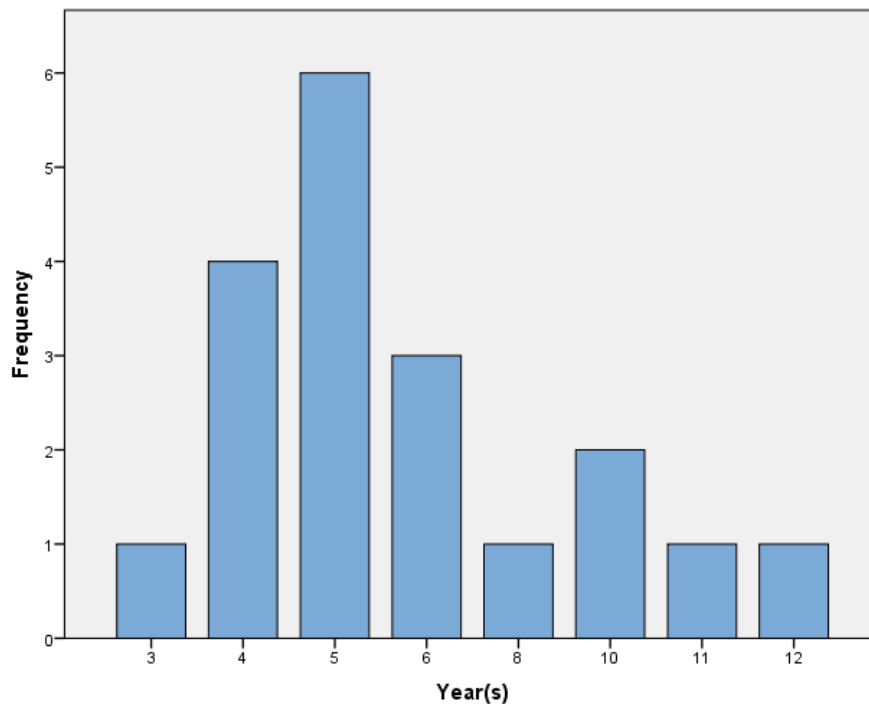
The reliability of the questionnaire was good, with a Cronbach's alpha of 0.73, after excluding 5 of the possible responses to the questions because they did not relate specifically to the themes of the other questions. The excluded questions were:

- "National Recruitment is more about efficiency of selecting trainees than the quality of their training";

- "If potential applicants are good, National Recruitment will ensure that they get the job of their choice";

- "National Recruitment is impersonal";

- "National Recruitment makes 'Visiting/Open Days' of no value" and

- "National Recruitment means that trainees may be allocated to units that they know little about".

About half of the trainees (48%) agreed that National Recruitment made it difficult to balance an applicant's performance with their choice of unit. Over half (11/19, 58%) of trainees, who answered the questionnaire, agreed that National Recruitment increased their choices about

where they wanted to be trained; however, 8 (41%) of the trainees also agreed that they felt pressurised to preference more units than they would have applied to previously.

The majority of the trainees (81%) agreed that the National Recruitment meant that they did not have to miss out on other job possibilities whilst waiting for the one they wanted, and all the trainees agreed that the National Recruitment reduced the time-off work they needed for interviews and visits.

Just over half (55%) of the trainees agreed that if the potential candidates were good then the National Recruitment will ensure that they get a job of their choice. Equal numbers of trainees agreed and disagreed that National Recruitment was impersonal (n=6, 32%). There were 13 trainees who completed the questionnaire who would have liked to have been interviewed by their potential trainer(s) however, 12 out of the 19 (63%) trainees would not have preferred to apply through the regional recruitment process that ran previously. A large majority (83%) of the trainees had been allocated one of their first three preferences posts and 67% of the trainees would rank the units in the same order again.

The vast majority (90%) of the trainees agreed that visiting the units helped them to rank their preferences. However, only about half (52.6%) of the trainees visited the units that they had preferred. Nevertheless, almost all of them, 18 out of 19 (95%) were happy with their allocated unit(s).

About half of the trainees, (9/19, 47%) who answered the questionnaire, spent less than £100 to attend the interview. The maximum incurred cost was £300 to £350 but only one trainee has spent this amount in order to attend the interview (Figure 12).

Figure 12 Cost (£) incurred to attend the interview.
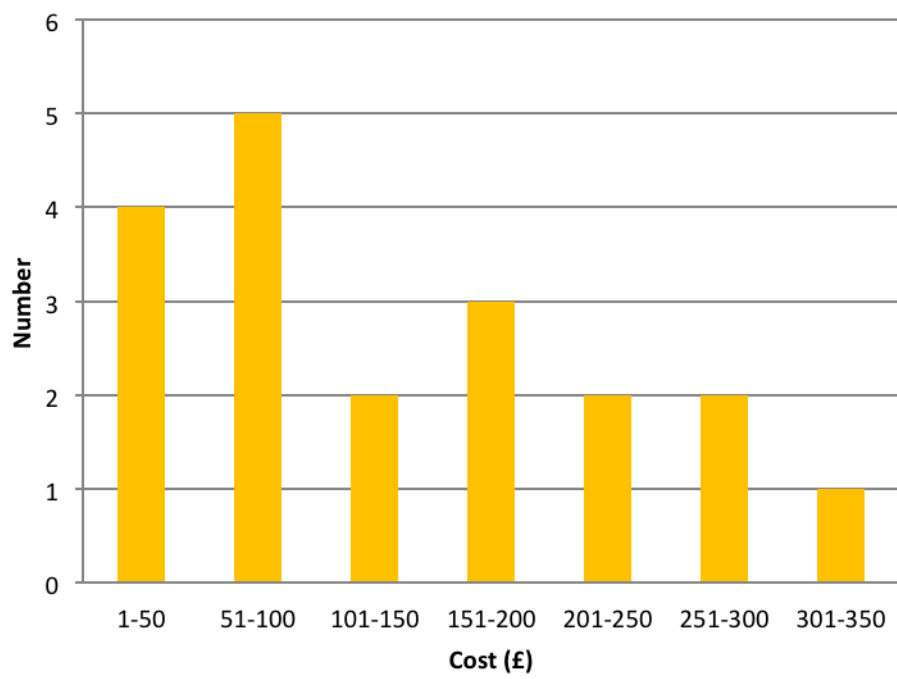
Comparison of trainers' and trainees' perceptions on National Recruitment

Questions used to explore the associations between the variables in the trainers' and trainees' perceptions of National Recruitment had good reliability with Cronbach's alpha of 0.75. The total score for the trainers and trainees were normally distributed (mean 1.05; SD 5.78; mean 1.37; SD 3.80 respectively). From the graph and value of the standard deviation, I can conclude that the trainees had a smaller range of responses and that their responses did not vary as much as the trainers' perceptions (Figure 13). An independent T-test of the total score of the trainers and trainees showed that there were statistically significant differences ($p < 0.05$, $p = 0.027$) if equal variances were not assumed. In other words, this suggested that overall; there was a statistically significant difference in the perception of National Recruitment between the trainers and the trainees.

Fishers' exact test , rather than chi-squared test, was used to compare the contingency tables of responses from the trainers and trainees because of the relatively small sample size and low counts in some cells. It showed that there was no statistically significance difference in trainers' and trainees' perceptions on the following statements:

- 'National Recruitment matches the best candidate with the post that will give them the best training';
- 'It is more important for trainees to fit into smaller units (DGH) than into larger units (DH)';
- 'National Recruitment is more about efficiency of selecting trainees than the quality of their training';
- 'National Recruitment means that weak candidates will not be appointed';
- 'A practical test, e.g. wire bending should be incorporated into the National Recruitment interview process';
- 'National Recruitment favours units that are close to the Teaching Hospitals';

- 'National Recruitment has stopped the first programme to advertise, getting the better trainees';

- 'National Recruitment disadvantages trainees who can only train in one Deanery';

- 'National Recruitment makes 'Visiting/Open Days' of no value';

- 'National Recruitment means that trainees may be allocated to units that they know little about'; and

- 'National Recruitment will leave trainers feeling more involved in the recruitment process'.

Figure 13 Total score of trainers' and trainees' perceptions on National Recruitment.
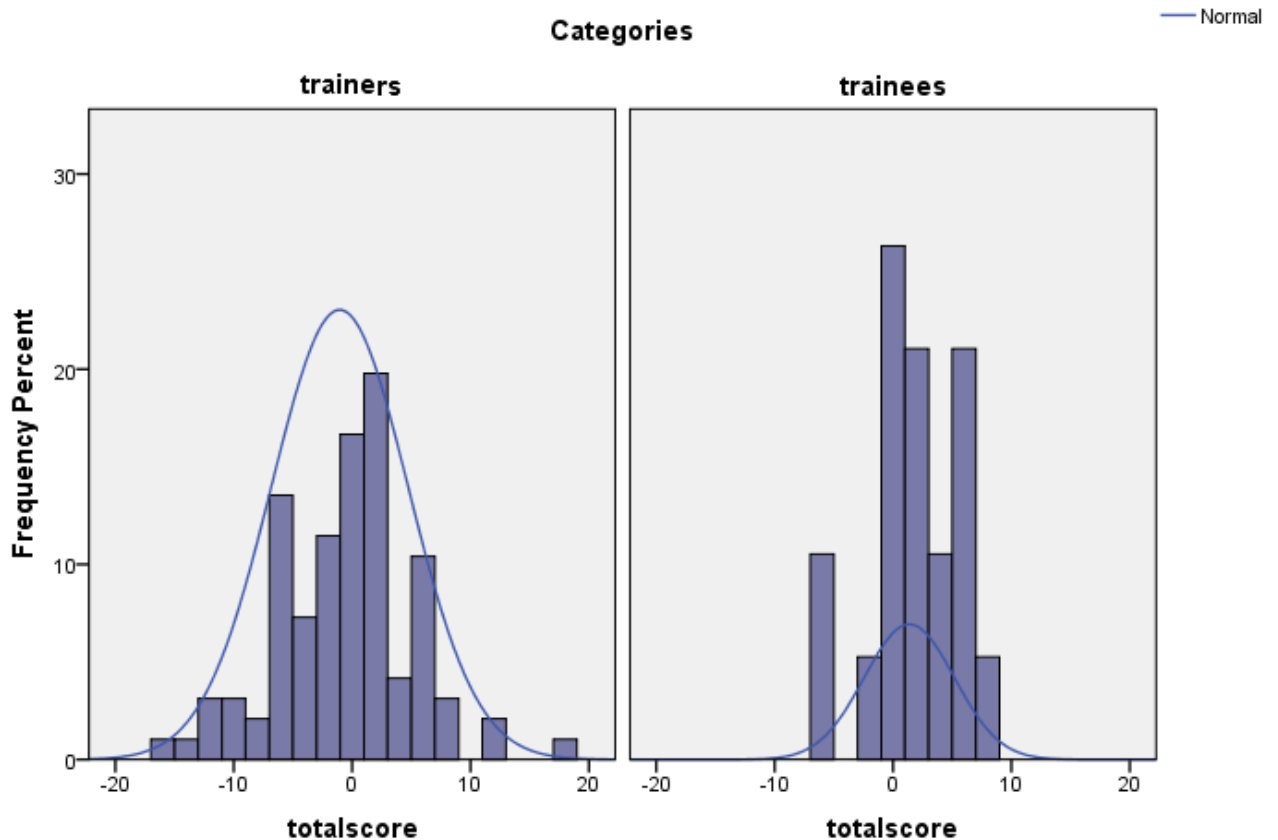
Trainers and trainees were asked to rank the factors: i.e. location, family reason(s), research reputation, clinical reputation, MOrth pass rate, post that is less competitive, trainers in the unit(s), teaching methods, unit(s) that they are familiar with, university which the trainee(s) did his/her undergraduate training, and fees that they think it influenced trainees(s) in their

preferences for one unit over another. When comparing the results, both the trainers and trainees ranked location of the post as the most important factor followed by family reason(s). Trainers thought that unit(s) that the trainee(s) are familiar with would be the third influencing factor after location and family reasons, however trainees' ranked it in the lower third of the list. On the other hand, trainees ranked fees as the third most important influencing factor whereas trainers ranked it as the second last (10th) factor (Table 9).

Table 9 Trainers' and trainees' perceptions on factors that influenced trainee(s).

Rank	Trainers' perceptions	Trainees' perceptions
1	Location	Location
2	Family reason(s)	Family reason(s)
3	Unit(s) that they are familiar with	Fees
4	Clinical reputation	Teaching methods
5	Trainers in the unit(s)	Clinical reputation
6	MOrth pass rate	Research reputation
7	Research reputation	MOrth pass rate
8	University which the trainee(s) did his/her undergraduate training	Trainers in the unit
9	Teaching methods	Unit(s) that they are familiar with
10	Fees	Post that is less competitive
11	Post that is less competitive	University which the trainee(s) did his/her undergraduate training

There were statistically significant differences between the trainers' and trainees' perceptions on the following three statements:

- 'National Recruitment has made the process of recruitment fairer for trainees';
- 'I think the National Recruitment offers more benefits than drawbacks compared with the previous system';
- I/my trainee fit(s) into the unit well'.

The trainees perceived that the National Recruitment was fairer than the trainers perceived it to be. Most responses from the trainers expressed ambivalence as to whether National Recruitment offered more benefits than drawbacks compared with the previous system, however, most of the trainees (79%) agreed that National Recruitment offered more benefits. Similarly, almost half of the trainers (49%) neither agreed nor disagreed as to whether their trainee(s) fitted into the unit well and 68% of the trainees thought they fitted into the unit well (Table 10).

Table 10 Trainers' and trainees' perceptions on "NR has made the process of recruitment fairer for trainees"; "I think the NR offers more benefits than drawbacks compared with the previous system"; "fit into unit well"

	Trainers' perceptions, % (n) N=96					Trainees' perceptions, % (n) N=19					Fisher's exact test
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	p-value
Fairer	4.2 (4)	10.4 (10)	29.2 (28)	44.8 (43)	11.5 (11)	0 (0)	0 (0)	10.5 (2)	42.1 (8)	47.7 (9)	**0.002**
NR more benefits	8.3 (8)	16.7 (16)	36.5 (35)	28.1 (27)	10.4 (10)	0 (0)	0 (0)	21.1 (4)	42.1 (8)	36.8 (7)	**0.003**
Fit into unit well	0 (0)	5.2 (5)	49 (47)	28.1 (27)	17.7 (17)	0 (0)	0 (0)	0 (0)	68.4 (13)	31.6 (6)	**0.000**

The questionnaire also gave trainers and trainees the option to express their views on the National Recruitment process in a free text format. While this option was made available for trainers and trainees to elaborate on their responses to the questions, the trainees did not provide any free text responses. On the other hand, the trainers did provide free text responses to the questionnaire.

Fifteen out of the 28 free text comments given by the trainers were about their 'responsibilities and ownership' in this new recruitment process. In the previous system, the criteria for appointment were different in each region. However, National Recruitment treated all units and training programmes similarly. National Recruitment has meant that the trainer(s) had limited input as to whom was appointed specifically to their unit and trainers' preferences as to whom they thought would fit into their unit were not integrated into the process. This could lead to the problem that the trainee did not fit into or struggled to fit into their unit.

One of the comments was regarding fairness of the National Recruitment, was that trainers felt underprepared for his/her particular role at the start of the recruitment process. As the days progressed, interviewers became more "calibrated" and consistent with their judgement however, it was also become apparent that the criteria given at the outset required adjustment. In addition, the interviewers were asked to reconsider some of their decisions if scores were found to be divergent which may have difficult because the decision had been made much earlier and the interviewers might have forgotten how that particular interviewee performed and this would subsequently lead to bias and unfairness, which contradicts with the rationale for the introduction of National Recruitment.

Phase III: Trainers' and Trainees' Perception on Work-based Assessments (WBAs)

Section A: Demographics and General Information

Trainers

Out of 180 trainers, 76 (42%) completed the questionnaire. The mean number of years they had been a consultant was 12.8 years (SD 7.49; 95% CI 10.98, 14.66), with a range of 1 year to 31 years (Figure 14). The vast majority of the trainers were of white British origin (84%), with 7% being of Indian origin; 4% of white Irish origin and 5% who were from others ethnic origins. The gender of the trainers who answered the questionnaire was equally distributed.

Figure 14 Year(s) has been as consultant.
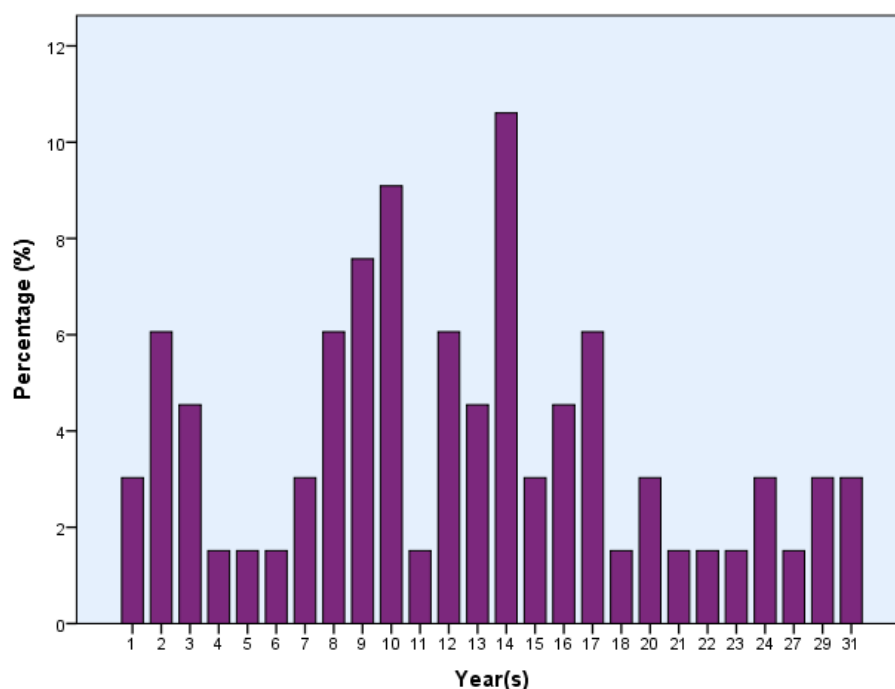
Of the 76 trainers who initially answered the demographic questions, 10 (13%) did not have a trainee for whom they undertook WBAs so their data were excluded from the data analysis. Results shown below were based on perceptions of the trainers who answered the questionnaire with trainee(s) for whom they undertook WBAs. The reliability of the questionnaire was excellent with an overall Cronbach's alpha of 0.92 and Cronbach's alpha of 0.92, 0.76, 0.89 and 0.88 for Section C, D, E and F respectively.

The vast majority, 58 out of 66 (88%) of the trainers have not got any Programmed Activity (PA) sessions in their job plan specifically to undertake WBAs (Figure 15). However, about half of them spent about a quarter of a session (1 hour) per month to undertake WBAs for their trainee (Figure 16). Out of all the trainers who answered the questionnaire, 55% of them used less than 25% of their SPAs sessions for WBAs. However, 17% of the trainers had to use more than 75% of their SPA sessions to conduct WBAs (Table 11).

Table 11 SPA sessions(s) used for WBAs

SPAs Session(s) (%)	Number (n=66)	Percentage (%)	Session(s) %, (n)
0	24	36.4	
5	2	3.0	
10	3	4.6	
15	1	1.5	54.5, (36)
20	4	6.0	
25	2	3.0	
30	3	4.6	
40	3	4.6	25.9, (17)
50	11	16.7	
75	2	.03	3.0, (2)
80	1	1.5	
90	4	6.0	16.6, (11)
100	6	9.1	
Total	*66*	*100*	*100 (66)*

Figure 15 PAs per week planned to undertake WBAs.
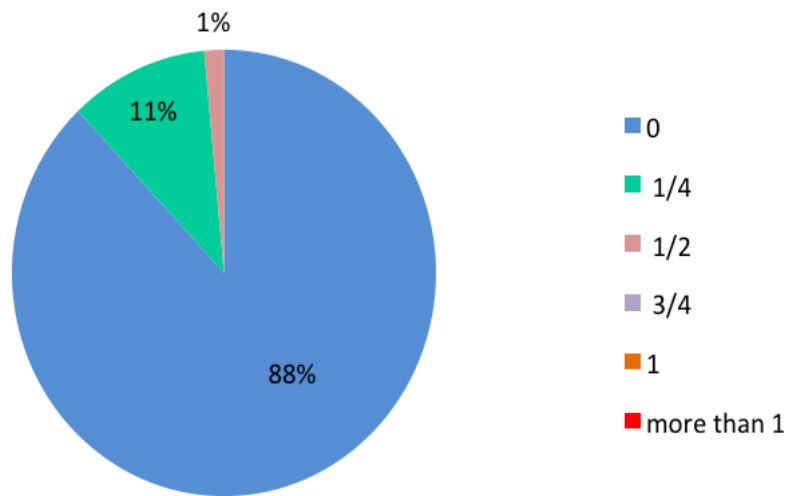
Figure 16 PAs per month spent undertaking WBAs
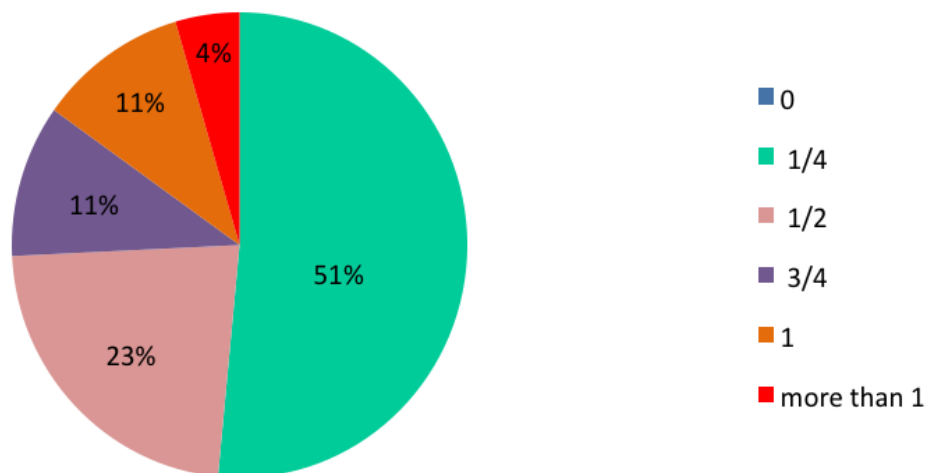
A large majority of trainers (83%) had received training for the Intercollegiate Surgical Curriculum Programme (ISCP) and slightly more than half (56%) of the trainers had not had any experience of WBAs before October 2011. The trainers undertook WBAs for a median of 3 trainees (IQR 4) however, 7 of the 66 trainers (11%) had more than 10 trainees for whom they undertook WBAs (Figure 17). On average, the trainers undertook a median of 5.5 (IQR 4) WBAs per trainee per year (Figure 18).

Figure 17 Bar chart for question: For how many trainees do you undertake WBAs
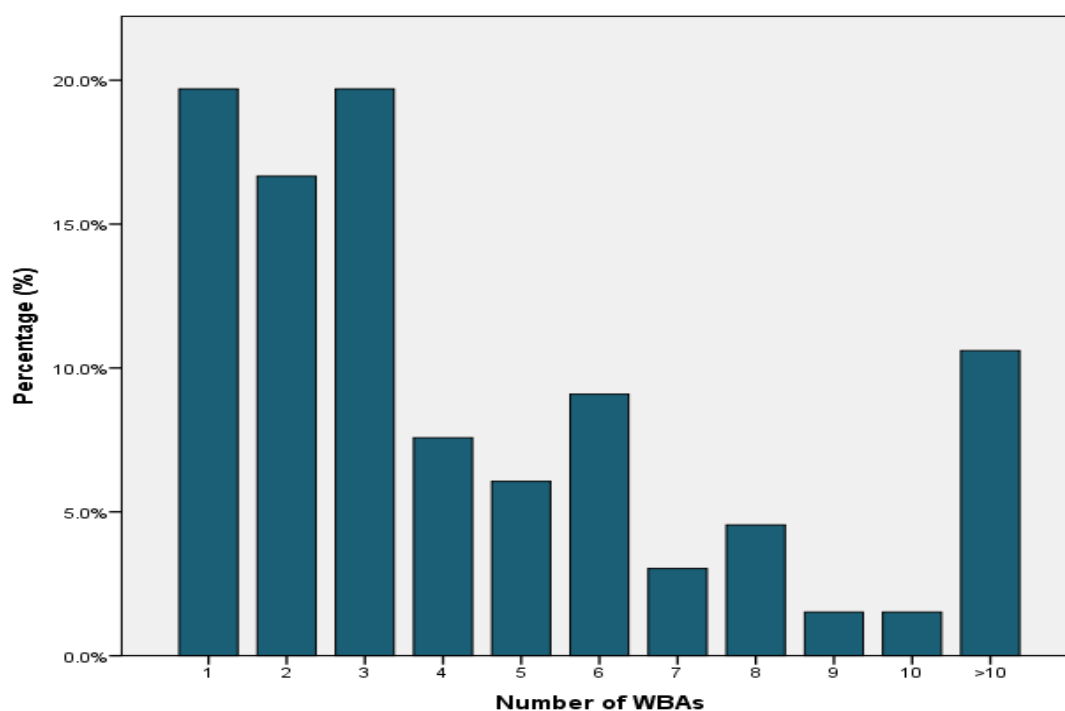
Figure 18 Bar chart for question: On average, how many WBAs do you undertake per trainee per year
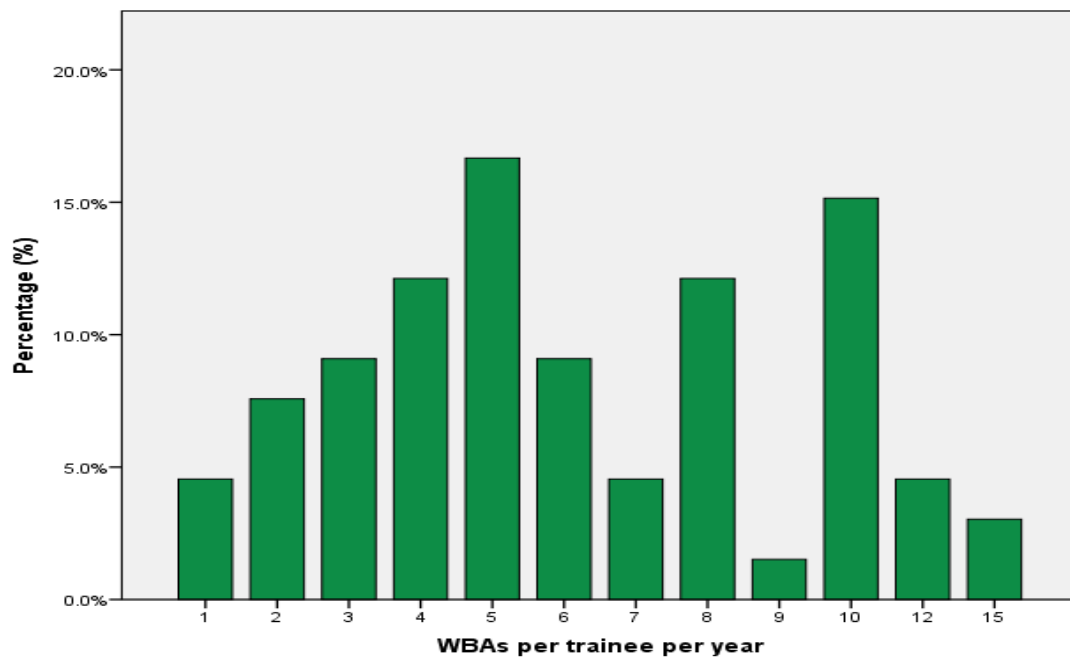
Trainees

Out of 74 trainees, 46 (62%) completed the questionnaire. About a half of the trainees were of white British origin (52%), 17% were of Chinese origin, 11% were of white Irish origin and 10% were of another ethic group. Among trainees that answered the questionnaire, 74% were female. Most of the trainees who answered the questionnaire were UK StRs with twenty-two (50%) of them in their second year of training and 32% in their first year of StR training, 18% were second year international postgraduate students, and none of them were first year international postgraduate students.

Of the trainees who initially answered the demographic questions, 12 out of 46 (26%) did not undergo WBAs and their data were therefore excluded from the analysis. The results presented were based on the perceptions of 34 trainees whom answered the questionnaire and underwent WBAs within their unit(s). The reliability of the questionnaire was excellent with an overall Cronbach's alpha of 0.93 and Cronbach's alpha of 0.91, 0.69, 0.87 and 0.88 for Section C, D, E and F respectively.

More than half, 62% of the trainees had experience of WBAs before October 2011. In the District General Hospital (DGH), nearly all (91%) of the trainees arranged their own WBAs; whereas 74% of the trainees arranged their own WBAs in the Dental Hospitals. Twenty-eight (28/34, 82%) of the trainees spent an average of an hour per month undertaking WBAs. The mean number of completed WBAs was 12 (SD 4.2; 95% CI 10.7, 13.7) with most of the trainees (8/34, 24%) having completed 10 WBAs (Figure 19). Most of the trainees, 41% (14/34) had 3 trainers to undertake their WBAs. There was a median of 4 (IQR 2) trainers who had undertaken WBAs for the trainees. Almost all, (33/34, 97%) trainees who answered the questionnaire had more than 80% of their WBAs undertaken by their consultants, however, one of the trainees had 60% of his/her WBAs undertaken by the Fixed Term Training Appointment (FTTA) and only 40% by their consultant(s).

Figure 19 Bar chart for question: Number of completed WBAs
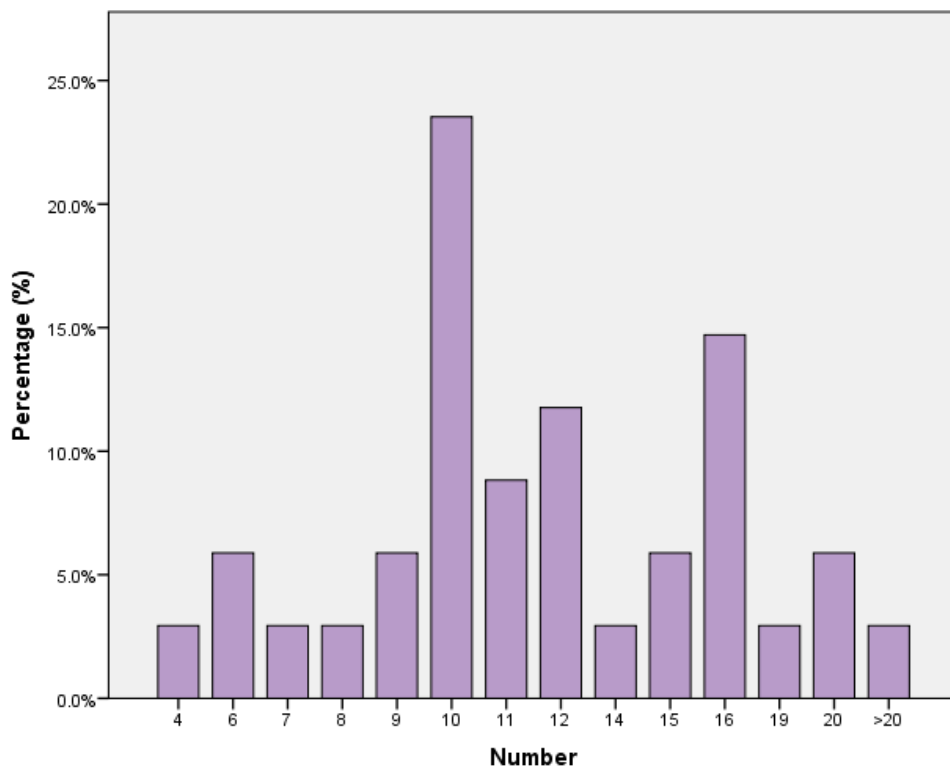
Shapiro-Wilk's test (Table 12) and visual inspection of trainers' and trainees' histogram, normal Q-Q plots and box plots (Figure 20 and Figure 21) showed that trainers' and trainees' overall perception on WBAs were normally distributed with a mean of1.8; SD 11.7; 95%CI -1.07, 4.68 for the trainers and a mean of2.09; SD 12.30; 95%CI -2.19, 6.36for the trainees. However, from the normal curve, we can see that trainers' perception skewed to the left and trainees' perception skewed to the right which indicated that the trainers' perceptions were more inclined to the negative value whereas trainers' perceptions were more positive (Figure 22). Independent T-test of the total score of the trainers and trainees showed that there are no statistically differences between the equal variances assumed and not assumed (p>0.05). This showed that overall there is no statistically difference in the perception of the WBAs among the trainers and the trainees.

Table 12 Tests of Normality

Type	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Trainers	0.105	66	0.066	0.976	66	**0.239**
Trainees	0.091	34	.200*	0.977	34	**0.687**

*. This is a lower bound of the true significance.

[a]. Lilliefors Significance Correction

Figure 20 Normal Q-Q plots for trainers and trainees.
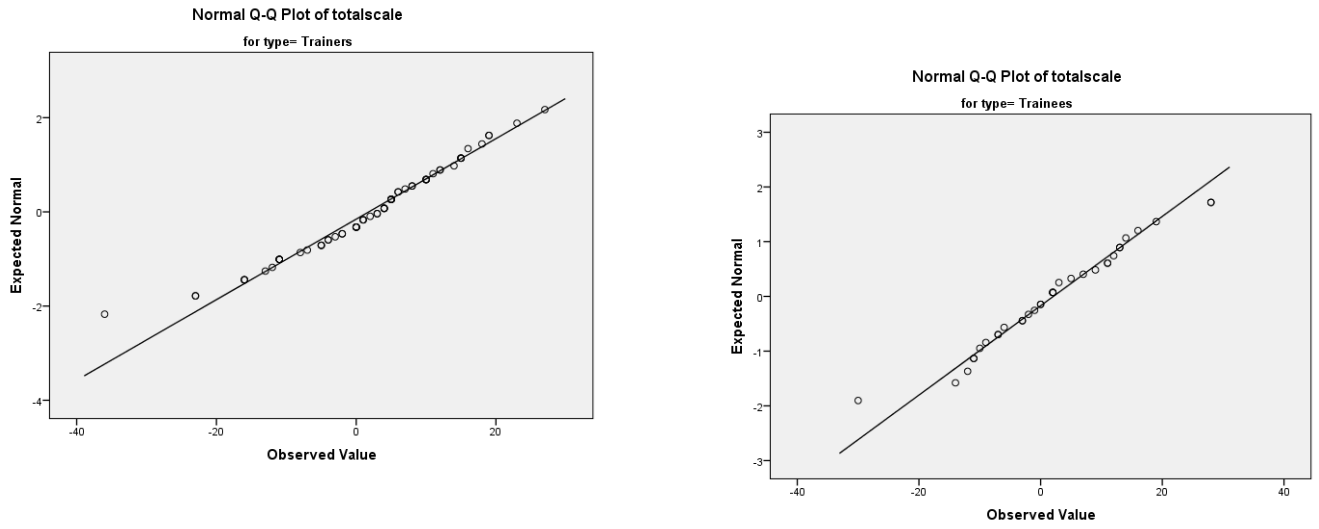
Figure 21 Box plots for trainers' and trainees' perception of WBA score.
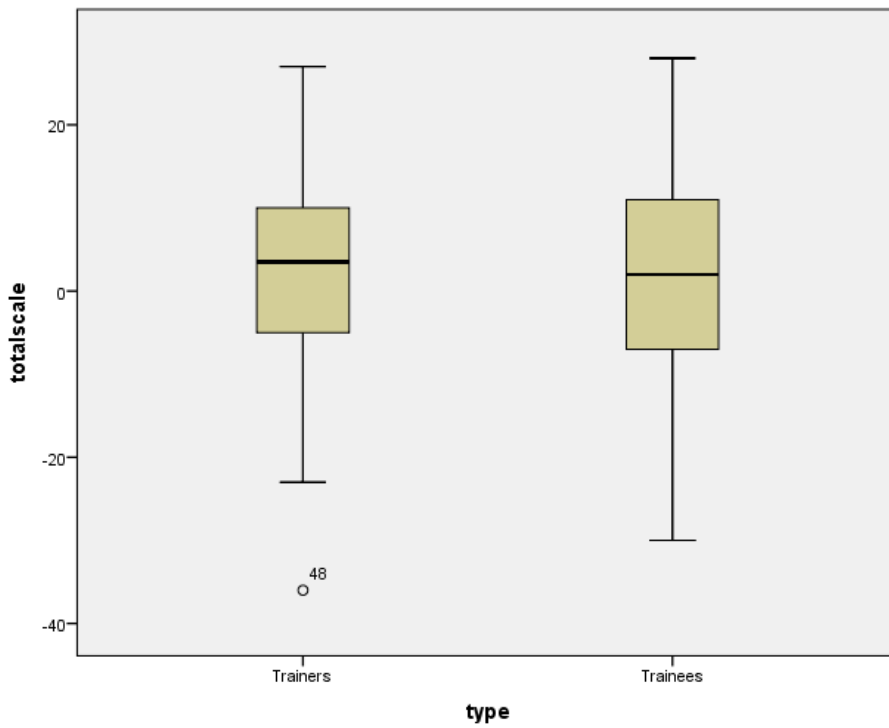
Figure 22 Histogram and normal curve for trainers and trainees.
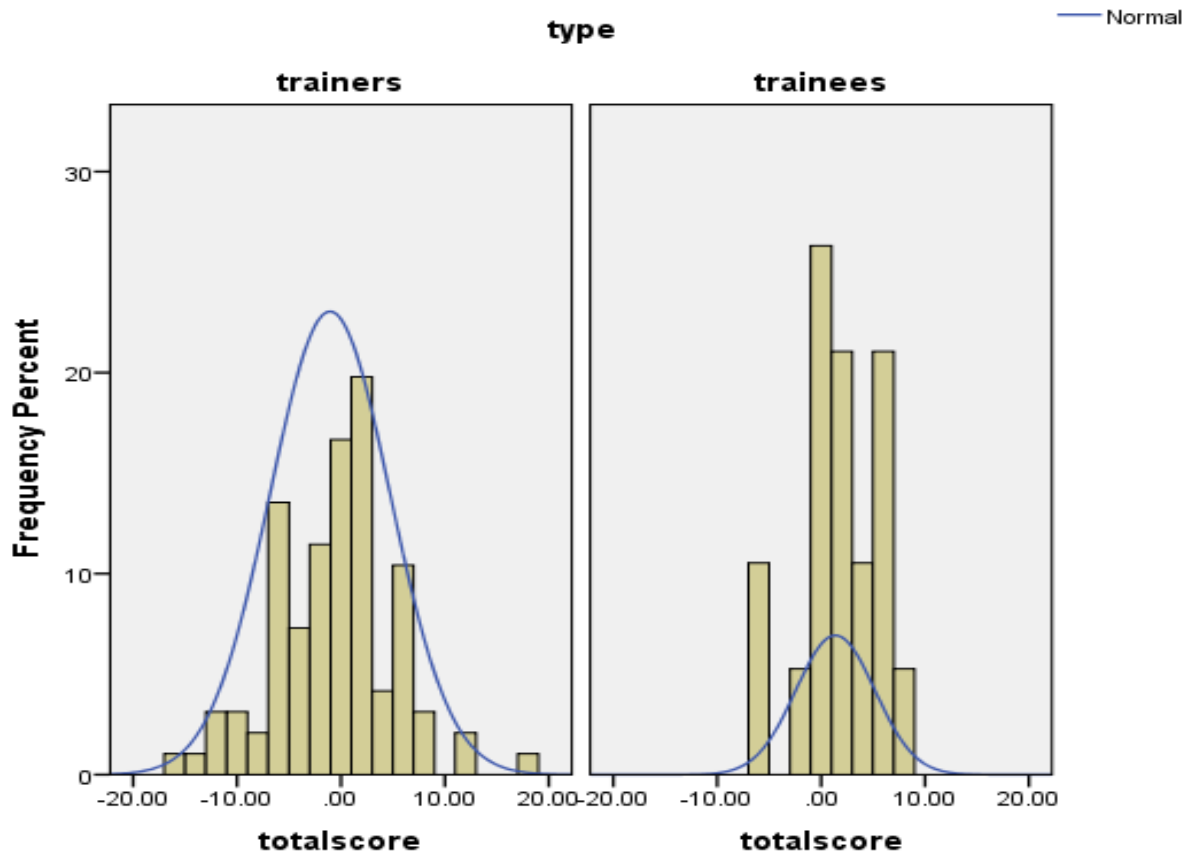
Section B: Opinions on why WBA was introduced.

Trainers' and Trainees' Perception

The three most prominent perceived reasons for why WBA was introduced were: 'to improve training', 'to improve patient care' and 'to follow the medical model'. These accounted for 82% of trainers' and 87% of trainees' responses. Only one of the trainers considered that the introduction of WBA was due to the failure of the previous system and none of the trainers or trainees felt that the introduction of WBAs was for financial reasons (Table 13).

Table 13 Comparison of trainees' and trainers' perceptions about the main reasons behind the introduction of WBAs.

	Trainers % (n)	Trainees % (n)
To improve training.	39.4 (26)	54.3 (19)
To improve patient care.	12.1 (8)	8.6 (3)
To follow the medical model.	30.3 (20)	25.7 (9)
To prevent litigation.	7.6 (5)	8.6 (3)
Failure of the previous system.	1.5 (1)	0 (0)
Political reasons.	9.1 (6)	2.8 (1)
Financial reasons.	0 (0)	0 (0)
Total	100 (66)	100 (35)

Section C: Attitudes to and Perceptions of WBAs

Trainers' and Trainees' Perceptions

The majority of the trainers and trainers were impressed with the WBAs as an educational tool in terms of their validity. However, only about 45% of trainers and trainees perceived WBAs to be a reliable tool. This suggests that the trainers and trainees, using the WBAs, are doubtful as to the reliability of the assessments. Just over half (53%) of the trainers agreed that it was appropriate for WBAs to have been made compulsory whereas an equal number of trainees agreed and disagreed with this statement. Under half of the trainees (14/34, 41%) agreed that the WBAs been introduced in a well thought-out manner whereas equal number of trainers agreed and disagreed with this statement. Both trainers and trainees agreed that WBAs have been accompanied by sufficient information and training (Tables 14 and 15). However, the majority of trainers and trainees who answered the questionnaires felt that WBAs had no real beneficial effects on supervision, training, clinical practice or confidence.

Section D: WBAs as an assessment tool

Trainers' and Trainees' Perceptions

Both trainers and trainees, especially the trainees (62%), felt that there were difficulties involved with organising the WBAs and that the assessments had a negative impact upon time for their clinical duties. Thirty-four (52%) of the trainers agreed that WBAs have a negative impact on their time for SPAs. More than three quarters, (51/66, 77%) of the trainers and nineteen (66%) of the trainees agreed that WBAs have had negative impact on time available for their clinical duties. About half of the trainers and trainees agreed that they had received necessary support from their colleagues and supervisors to carry out the WBAs. However, the vast majority of the trainers, (82%) harboured concerns about the lack of acknowledgement of the time commitment undertaking WBAs involves, from their respective Trust (Tables 14 and 15).

Varying concerns were raised about the College's recording forms, i.e. Intercollegiate Surgical Curriculum Programme (ISCP) forms. There were no clear opinions from the trainers on how easy the forms were to use. Nevertheless, 61% of the trainees felt that the forms were easy to use. However, (38/66, 57%) of the trainers and (20/34, 59%) of the trainees felt that the ISCP forms were not relevant to orthodontic training (Tables 12 and 13).

Section E: Overall Perception about WBAs

Trainers' and Trainees' Perceptions

Nearly two-thirds, (43/66, 65%) of the trainers felt that the WBAs were acceptable to them as a trainer. Almost half of the trainers (47% - 49%) agreed that the WBAs have accurately reflected his/her trainees' progress, that they are being used appropriately and they are the way forward and should be retained (Table 14).

Similarly, although at a lesser degree of agreement, nineteen (56%) of the trainees who answered the questionnaire, also felt that the WBAs were acceptable to them as a trainee. Just over one-third of the trainees (38%) felt that the WBAs have accurately reflected his/her own progress. Fifteen of the trainees (44%) agreed that the WBAs are being used appropriately and that they are the way forward and should be retained (Table 15). The weighting of trainees' perceptions on each question was similar to the trainers'. Interestingly, a third of the trainers and trainees expressed their uncertainty with the same statements: i.e. WBAs 'have accurately reflected his/her trainees' progress'; 'are being used appropriately', and 'they are the way forward and should be retained' (Table 14 and 15).

Table 14 Trainers' attitudes and perceptions to WBA, its effects, practicalities of assessments and the ISCP assessment tools[a]

Attitudes and perceptions to WBAs	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
			% (n)		
WBA:					
is valid	1.5 (1)	7.6 (5)	24.2 (16)	62.1 (41)	4.5 (3)
is reliable	1.5 (1)	21.2 (14)	31.8 (21)	40.9 (27)	4.5 (3)
has appropriately been made compulsory	1.5 (1)	12.1 (8)	33.3 (22)	47.0 (31)	6.1 (4)
has been introduced in a well thought-out manner	7.6 (5)	31.8 (21)	28.8 (19)	31.8 (21)	0 (0)
has been accompanied by sufficient information	6.1 (4)	28.8 (19)	19.7 (13)	42.4 (28)	3.0 (2)
has been accompanied by sufficient training	4.5 (3)	27.3 (18)	15.2 (10)	48.5 (32)	4.5 (3)
WBA has improved:					
supervision	12.1 (8)	33.3 (22)	24.2 (16)	25.8 (17)	4.5 (3)
Training	12.1 (8)	22.7 (15)	37.9 (25)	22.7 (15)	4.5 (3)
clinical practice	13.6 (9)	24.2 (16)	43.9 (29)	15.2 (10)	3.0 (2)
confidence	13.6 (9)	19.7 (13)	42.4 (28)	21.2 (14)	3.0 (2)
Assessments:					
are easy to organise	7.6 (5)	43.9 (29)	21.2 (14)	25.8 (17)	1.5 (1)
have no impact on time available for my DCC	28.8 (19)	48.5 (32)	13.6 (9)	9.1 (6)	0 (0)
have no impact on my time for SPAs	18.2 (12)	33.3 (22)	15.2 (10)	27.3 (18)	6.1 (4)
receive the necessary support from colleagues	3.0 (2)	10.6 (7)	33.3 (22)	50.0 (33)	3.0 (2)
have been acknowledged by my Trust	16.7 (11)	65.2 (43)	13.6 (9)	3.0 (2)	1.5 (1)
Assessment tools adopted by the College:					
are easy to use	6.1 (4)	31.8 (21)	22.7 (15)	37.9 (25)	1.5 (1)
are relevant to orthodontic training	16.7 (11)	30.3 (20)	30.3 (20)	22.7 (15)	0 (0)
Overall, WBA in its current form:					
is being used appropriately	1.5 (1)	16.7 (11)	33.3 (22)	47.0 (31)	1.5 (1)
is acceptable to you as a trainer	3.0 (2)	7.6 (5)	24.2 (16)	56.1 (37)	9.1 (6)
accurately reflected my trainees' progress	3.0 (2)	13.6 (9)	36.4 (24)	43.9 (29)	3.0 (2)
is the way forward and should be retained	4.5 (3)	9.1 (6)	37.9 (25)	40.9 (27)	7.6 (5)
a. Total number of trainers n = 66.					

Table 15 Trainees' attitudes and perceptions to WBA, its effects, practicalities of assessments and the ISCP assessment tools[a]

Attitudes and perceptions to WBAs	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
			% (n)		
WBA:					
is valid	5.9 (2)	20.6 (7)	20.6 (7)	38.2 (13)	14.7 (5)
is reliable	2.9 (1)	20.6 (7)	32.4 (11)	38.2 (13)	5.9 (2)
has appropriately been made compulsory	2.9 (1)	32.4 (11)	23.5 (8)	32.4 (11)	8.8 (3)
has been introduced in a well thought-out manner	8.8 (3)	26.5 (9)	23.5 (8)	38.2 (13)	2.9 (1)
has been accompanied by sufficient information	2.9 (1)	20.6 (7)	14.7 (5)	55.9 (19)	5.9 (2)
has been accompanied by sufficient training	5.9 (2)	11.8 (4)	35.3 (12)	44.1 (15)	2.9 (1)
WBA has improved:					
supervision	8.8 (3)	32.4 (11)	35.3 (12)	20.6 (7)	2.9 (1)
training	2.9 (1)	38.2 (13)	26.5 (9)	23.5 (8)	8.8 (3)
clinical practice	2.9 (1)	35.3 (12)	29.4 (10)	29.4 (10)	2.9 (1)
confidence	5.9 (2)	29.4 (10)	32.4 (11)	29.4 (10)	2.9 (1)
Assessments:					
are easy to organise	5.9 (2)	55.9 (19)	14.7 (5)	20.6 (7)	2.9 (1)
have no impact on time available for clinical duties	11.8 (4)	44.1 (15)	14.7 (5)	23.5 (8)	5.9 (2)
receive the necessary support from supervisors.	2.9 (1)	11.8 (4)	32.4 (11)	47.1 (16)	5.9 (2)
Assessment tools adopted by the College:					
are easy to use	0 (0)	20.6 (7)	17.6 (6)	55.9 (19)	5.9 (2)
are relevant to orthodontic training	17.6 (6)	41.2 (14)	5.9 (2)	32.4 (11)	2.9 (1)
Overall, WBA in its current form:					
is being used appropriately	0 (0)	20.6 (7)	35.3 (12)	44.1 (15)	0 (0)
is acceptable to you as a trainee	2.9 (1)	14.7 (5)	26.5 (9)	50.0 (17)	5.9 (2)
accurately reflected my progress	2.9 (1)	23.5 (8)	35.3 (12)	32.4 (11)	5.9 (2)
is the way forward and should be retained	8.8 (3)	14.7 (5)	32.4 (11)	38.2 (13)	5.9 (2)
a. Total number of trainees n = 34.					

Section F: Overall Perceptions of the assessor(s).

Additionally, the questionnaire offered the trainers an opportunity to rate themselves as assessors. They were given the option of rating themselves as very good, good, poor or very poor. 'Good' and 'very good' responses were collectively considered as good and satisfactory standards, whereas 'poor' and "very poor" responses were considered as poor and unsatisfactory standards.

The vast majority of trainers rated themselves as good (availability 71% of trainers, willingness to complete assessments 83%, ability to assess accurately 75%, ability to assess impartially 83% and the ability to provide constructive feedback 86%) (Table 16, Figure 23).

Trainees rated their assessors lower than the trainers rated themselves on every parameter. There were only 41% of the trainees who rated their assessors as good for the parameter of availability. In fact, 50% of the trainees considered the availability of their assessors to be only acceptable. Slightly more than half, (19/34, 56%) of the trainees felt that the willingness of their assessors to conduct WBAs was good, however, there were 12 trainees who felt that their assessors' willingness was only acceptable. About two-thirds of the trainees rated their assessors as good - ability to assess accurately (76% of trainees), ability to assess impartially (56% of trainees) and ability to provide constructive feedback (71% of trainees) (Table 17, Figure 24).

None of the trainees rated their assessors as very poor, however there were two trainers who rated themselves as a very poor assessor throughout the five questions. The same trend appeared for the rating of unsatisfactory, i.e. more trainees rated their assessors as unsatisfactory as compared to how the trainers rated themselves on every parameter. However, it was only a very small portion, only 4 of the trainers and 3 of the trainees who rated 'poor' with regards to availability and willingness (Table 16, 17, Figure 23, 24).

Table 16 Overall perception of myself as an assessor

My overall perception of myself as an assessor	Very Poor	Poor	Acceptable	Good	Very good
			% (n)		
Availability	3.1 (2)	3.1 (2)	23.4 (15)	42.4 (27)	28.1 (18)
Willingness to complete assessments	4.7 (3)	0 (0)	12.5 (8)	45.3 (29)	37.5 (24)
Ability to assess accurately	3.1 (2)	2.9 (1)	20.3 (13)	57.8 (37)	17.2 (11)
Ability to assess impartially	3.1 (2)	0 (0)	14.1 (9)	54.7 (35)	28.1 (18)
Ability to provide constructive feedback	3.1 (2)	2.9 (1)	9.4 (6)	59.3 (38)	26.6 (17)
a. Total number of trainers, n = 64.					

Figure 23 Bar chart for response to statement: Overall perception of myself as an assessor.
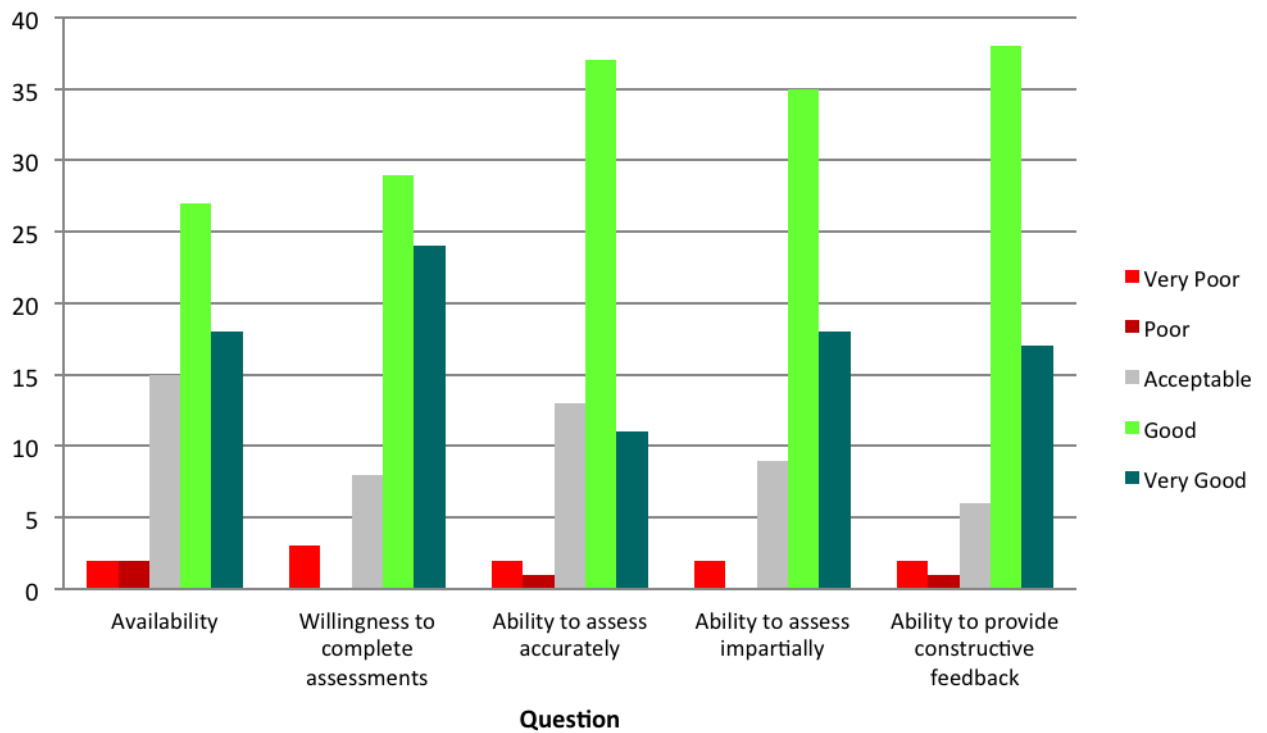
Table 17 Overall perception of my assessors

My overall perception of my assessors	Very Poor	Poor	Acceptable	Good	Very good
			% (n)		
Availability	0 (0)	8.8 (3)	50.0 (17)	26.5 (9)	14.7 (5)
Willingness to complete assessments	0 (0)	8.8 (3)	41.2 (12)	29.4 (10)	26.5 (9)
Ability to assess accurately	0 (0)	2.9 (1)	20.6 (7)	50.0 (17)	26.5 (9)
Ability to assess impartially	0 (0)	2.9 (1)	17.6 (6)	52.9 (18)	26.5 (9)
Ability to provide constructive feedback	0 (0)	5.9 (2)	23.5 (8)	41.2 (14)	29.4 (10)
a. Total number of trainers, n = 34.					

Figure 24 Bar chart for response to statement: Overall perception of my assessor(s).
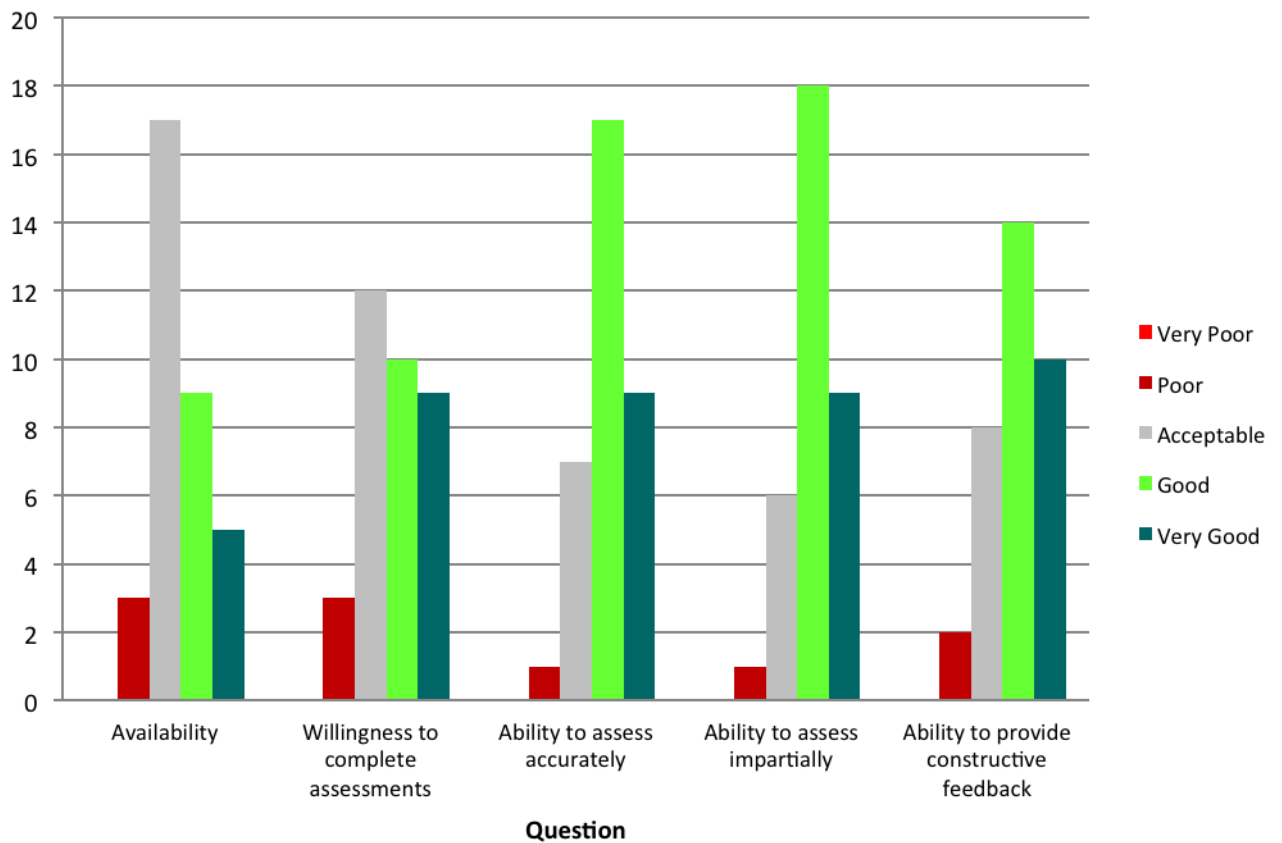
The questionnaire also incorporated the option for trainers and trainees to express in free text their views on WBAs. The majority of the free text comments given by the trainers can be categorized into four themes, which include: expectations towards WBAs, practicalities of WBAs as an assessment tool, effects of WBAs, and issues regarding the ISCP forms as an assessment tool. Issues regarding different expectations of trainers from trainees towards the WBAs were raised with some of the respondents feeling that the WBAs were merely a tick-box exercise. The practicalities of undertaking the assessments, especially in the Dental Hospitals, where there were more trainers and trainees as compared to DGH and therefore more time to conduct the WBAs is needed and had directly affected trainers' and trainees' time available for clinical duties. However, some of the trainers commented that this issue had not been recognised by their employing Trusts. The time frame of when to conduct the WBAs was also an issue that the trainers raised. Ideally, assessments were meant to spread out over the whole assessment period however, there was a tendency for trainees to bunch-up the assessments towards the end which detracted from the purpose of the WBAs. The ISCP forms were thought to be not relevant to orthodontic training and the functionality of the site has also been questioned. In conjunction with those problems, issues regarding fees, storage and appropriate training in the use of the ISCP forms were also raised.

Chapter 6: Discussion

6.1   Summary

6.1.1   Phase I

Interviewers were positive about the selection of candidates, fairness and conduct of the multi-station interview format, whereas overall interviewees were very positive about the organisation and fairness of the multi-station interview format.

6.1.2   Phase II

There were statistically significant differences between the trainers' and trainees' perception of National Recruitment, with statistically significance differences in perception about the following three statements;

- "National Recruitment has made the process of recruitment fairer for trainees";
- "I think the NR offers more benefits than drawbacks compared tote previous system" and
- "I / my trainee fit(s) into unit well".

6.1.3   Phase III

There were no statistically significant differences between the trainers' and trainees' perception on the Workplace-based assessments. WBAs were acceptable to the trainers and trainees, even though both the trainers and trainees have expressed their uncertainty as to whether WBAs:

- have accurately reflected his/her trainees' progress,
- are being used appropriately, and
- are the way forward and should be retained.

6.2 Limitations of the study

6.2.1 Phase I

The response rate for the trainers and trainees were excellent. Out of 41 interviewers, 36 (88%) of them completed the questionnaire and all (82/82) of the trainees completed the questionnaire. However, the questionnaires were distributed and completed on the day of interview so the trainers and trainees might have felt under pressure when answering the questions and which could, therefore, have biased the answers given and hence results obtained. However, if the questionnaires had been distributed after the interview days, the response rate would probably have been lower which in turn may have biased the results. The impact of the balance between response rate and obtaining responses after a period of reflection is difficult evaluate and could have influenced the results in many different ways for example, the perception may have been more positive having been carried out before the scores from the interview and post allocation were known.

6.2.2 Phase II

There were 19/26 (73%) trainees who answered the questionnaire and the results showed that the trainees had a smaller range of responses and their responses did not vary as much compared to the trainers' perception; therefore, these data need to be interpreted with caution.

6.2.3 Phase III

Only 76/180 (42%) of the trainersand 46/74 (62%) of the trainees responded to the online surveys. These response rates were both less than 80% and therefore below what is considered to be a rate when the results can be viewed with a fair degree of certainty. Reasons for the low response rates could include that the trainers and trainees were invited to answer the questionnaires via the Secretaries of the COG and TGG of the BOS in order to maintain the confidentiality of the participants. Therefore, individuals who did not answer the

questionnaire could not be traced, and subsequently sent targeted reminders. In addition, the response rate may have been higher if the questionnaires had been sent out by post. However, this would have been more costly and it would have been very difficult to obtain a complete list of all trainees and trainers other than through the BOS which is bound by data protection law in the use of its membership details and mailing lists.

6.3 Other studies

6.3.1 MSI for Central Recruitment

MSI has been used in other settings to recruit to undergraduate and postgraduate training schemes. Its specific advantage is that multiple interviews should dilute the effect of chance and interviewer/situational biases. Unlike traditional interviews, we can ensure that the ratings assigned to the multiple points of discussion are given independently because interviewers engage the applicants in separate rooms.[34]

Studies	Participants	Method of MSI	Intervention	Outcome
Roberts C et al.[30]	Candidates and interviewers applying to a undergraduate medical programme.	10 short objective structural clinical examination (OSCE)-style stations.	Questionnaires	Reliability of MSI: 0.65 (moderate reliability).
				Applicants and examiners were positive about the experience.
				An increased number of stations are required to improve reliability.
Smith P et al.[50]	Eighteen neurology specialist registrars.	Three stations interview. (CV-based interview, interview with a simulated patient, discussion of scenarios based upon teaching, audit and research)	Questionnaires	Fairer than conventional panel interview.
				More independent assessment at each station.
				Greater planning and expense.
Bindal T et al.[51]	Candidates and interviewers in pediatrics recruitment for specialty training in West Midlands Deanery.	Three stations interview. (presentation, structured interview and communication)	Questionnaires	Three stations interview was not reliable enough.
				An increased number of stations are required to improve reliability.

The interviewers and interviewees, surveyed for this study, viewed the MSI as a fair and reliable tool for the selection of Orthodontic StRs. This is in line with the studies done by Roberts et al. and Smith et al. who showed that, MSI was reliable,[30] and appear fairer than conventional panel interviews in giving candidates a more independent assessment, and a fresh start at each station.[50]

The MSI for National Recruitment of Orthodontics StR posts comprised of six stations,[3] no comment was given as to whether more station was needed.

6.3.2 WBAs

Workplace-based assessment carries a number of potential advantages. It potentially offers as a formative assessment tool and its perceived validity in terms of offering information about actual performance in the workplace rather than in the artificial environment of a summative examination.[1] This competency-based system is intended to identify areas for improvement in the individual trainee, on the basis of supportable and documented evidence. Workplace-based assessment complements themore traditional examination-based assessment of knowledge, and thus affords a more holistic and comprehensive assessment of trainees' progress.[25]

Studies	Participants	Intervention	Outcome
Menon S et al.[24,25]	Psychiatric trainers and trainees in Wales (University of Cardiff)	Questionnaires-based, cross-sectional survey	Compared with widespread dissatisfaction among the trainees, trainers appear more diverse in their opinions.
			Negative attitudes harboured by trainees and trainers constitute a significant hurdle to the effective implementation of WBAs and undermine its efficacy as a tool intended to improve training.

The orthodontic trainers' and trainees' attitudes towards WBAs, surveyed for this study were overall better than a similar survey conducted on psychiatry trainers[25] and Specialty Registrars in Wales.[24]

6.4 Interviewers' and interviewees' Perception

6.4.1 National Recruitment

6.4.1.1 Phase I

The use of MSI in the recruitment of Orthodontic Specialty Registrars in England was a new development in 2012. Therefore, the acceptability of it, by both the interviewers and interviewees, was an important issue to explore. In 2012, a total of 116 applications were received for a provisional number of 28 orthodontic StR posts across six English Deaneries. There were 94 applicants who satisfied the essential criteria and were invited to interview. A ranked list of successful applicants was obtained and the top 28 were offered a post depending on the individual's interview score and preferencing rank. In addition, 20 appointable reserves were identified and the 'appointable' cut-off mark was 66%. The lowest ranked candidate with a job offer scored 72% in the interview process and no candidate from the reserve list was given a job offer.[3] The process of National Recruitment achieved its aims, in producing a 100% fill rate of all the 26 StR posts available across six Deaneries in England, using a single MSI.[3]

It is reassuring that the interviewers and interviewees, surveyed for this study, viewed the MSI as a fair and reliable tool for the selection of Orthodontic StRs. This is in line with the findings of Eva et al. who showed that, for admission to medical school, candidates and interviewers viewed the MSI as an acceptable tool.[39] In the current study, both the interviewers and interviewees agreed that the MSI was better than a traditional panel interview. However, their statement should only be viewed as an opinion and does not imply to be factual. Secondly, although the interviewers agreed that this interview format selected the best candidates and their performance at interview was likely to predict future performance, there was a variable agreement as to whether more than one interviewer was needed at each station. Nevertheless, this does not necessarily mean that two interviewers per station are of any additional benefit compared to one interviewer in a station. It is merely

likely to reflect the fact that the interviewers were comfortable with the situation due to their previous experience of having two or more people in a panel.

This study was only about interviewees' and interviewers' perceptions of the MSI and it would have been beneficial if lay assessors could have been included into the MSI assessment team as they have been shown to be efficient and effective at interviewing applicants for general practice.[4]

Eighteen of the comments from the interviewees were related to the short notice given for attending the interviews. However, the interview date was provided in the advertisement so applicants could have made arrangements to be available for the interview days and prepared their documents in anticipation of being shortlisted. For the 2013 and 2014 rounds of interviews, comments to this effect were included in the adverts. Two interviewees commented that the delay for result of the interview was too long; however, this was dictated by the final confirmation of posts after the results of the MOrth and IMOrth examinations were known and current incumbents had resigned from their posts. National Recruitment interviews could not be conducted closer to MOrth due to competing commitments of the interviewers with respect to local University exams. Four interviewers commented that the space for comments on the assessment form was too little. Again, this was addressed for the 2013 and 2014 recruitment rounds.

As orthodontics is the largest dental specialty and the vast majority of posts have a unified start date (at the end of September/beginning of October), the Committee of Postgraduate Dental Deans (COPDEND) agreed to run a National Recruitment pilot for dentistry involving the specialty of orthodontics for the NHS StR training post intake of autumn 2012. For 2012, the pilot only involved the England Deaneries, as Northern Ireland (NI) did not have any specialty registrar (StR) training posts in 2012. In addition, at that stage, Scotland and Wales preferred to recruit locally but had observers involved in the 2012 pilot process.[3]

Since the 2012 pilot, Northern Ireland are still not recruiting StRs but Scotland and Wales have joined the National Recruitment process.

In this study, I demonstrated that the MSI format was perceived to have worked effectively and efficiently for the recruitment of Orthodontic StR posts. The acceptability of the MSI was an important factor to consider when performing the interviews because both interviewers' and interviewees' confidence in the process was vital if this recruitment process was to be continued. It was pleasing that the MSI was evaluated favourably by both interviewees and interviewers and that the process was perceived to be fair and fit for purpose by both parties.

6.4.1.2   Phase II

None of the trainers agreed that National Recruitment would result in fewer MOrth failures, and half of the trainers were uncertain as to whether National Recruitment would have a true benefit in resulting in less MOrth failures. This was probably attributed to the fact that this was the first year in which the recruitment of Orthodontic StRs was conducted via National Recruitment. Thus, none of the trainees whom were recruited via this mechanism have sat their MOrth/IMOrth examination so the potential ultimate benefits, associated with National Recruitment, cannot be measured. As mentioned in Chapter 3, this will be explored after the orthodontic StR intake 2012 have sat for their MOrth/IMOrth examination in 2015. In addition, the continuation of this study will assess whether the score obtained in the National Recruitment, using the MSI format, predicted the progress through training (ARCP) as well as the StRs' outcome at MOrth/IMOrth.

The vast majority of the trainers agreed that all training consultants should be given the opportunity to be involved in the interview process and that they need some choice as to who is appointed to their unit. Personality and team fit are especially important for harmonious working in a small training unit. This could be a real problem in a small unit where a good relationship between trainer and trainee is crucial to get the best from both. With the previous recruitment process, the trainers perceived that because they had chosen

or at least had a strong input into the appointment of their trainee(s0), they felt they had more responsibility towards them. Therefore, in their perception, if the trainees did not fit into the unit well, it would be the trainer's responsibility and they would be keen for the trainee to succeed. Besides, concerns have been raised by the trainers that they thought the trainees might have been appointed to the unit about which they know very little and they have not done the necessary homework to establish the logistics, costs and practicalities of the job. In other words, applicants would be expected to undertake the due diligence required to see if they are suitable and able to undertake the requirements of the post. However, National Recruitment seems to be removing some of the responsibility and initiative usually required of applicants in order to make a reasoned choice. Consequently, the trainees may struggle at the very outset when taking up a post for which they may be ill prepared. The fact that fewer applicants were visiting the open days has added support to this problem occurring. In the trainers' perceptions, all these factors could then be the basis for anticipating more inter-deanery transfers in the future. The trainers therefore suggested that trainees should be allocated into a Deanery Programme instead of to each individual post and then allocation to the individual posts is made locally. However, allocation to a Deanery Programme, rather than individual post, may defeat the purpose of National Recruitment and it would not be as cost-effective because a second round of interviews, to appoint the candidates to the individual posts, may be required.

The concern that all training consultants should be given the opportunity to be involved in the interview process has been improved in the 2014 National Recruitment as all the training consultants were invited to be one of the interviewers so that representatives from each Deanery were not limited as they had been previously.

More than half of the trainers who answered the questionnaire responded that they would rather have the post vacant rather than accept a weak trainee. It would be interesting to know what and how the trainers defined "weak". However, this was not defined in the free text comments and as the minimum score for an appointed StR was 72%, it is unlikely that a

'weak' candidate was appointed. It is likely that the 'appointable score' will vary from year to year so this level must be defined. It may be that a minimum interview score becomes defined as more rounds of recruitment are held.

As noted previously, 23 out of 41 (56%) interviewers who attended the National Recruitment in central London were based in provincial Deaneries and would have incurred travel and subsistence costs for their Deaneries estimated at £300 per person. When the questionnaire was developed, there was no column for 'No additional cost' incurred and the nature of the questionnaire was set as such that the respondents had to answer this question before they could proceed to the next question. Therefore, for trainers who had 'no additional' costs incurred to attend the interview, had to tick the next nearest column, i.e. £1-£50. This meant that the £1-£50 column could not be included in the analysis as it was not a true reflection on cost (£1-£50) incurred to attend the interview. Nevertheless, with careful data analysis, it showed that our estimation was reasonably accurate because 11 trainers, who answered the Phase II questionnaire, spent around £251-£400.

Among the 19 trainees, 4 (21%) had been qualified, with BDS or equivalent, for more than 10 years. Traditionally, owing to the nature and policy of the NHS, this might appear to be rather unusual but may be seen as another benefit of National Recruitment in that it has opened up the possibility of undertaking specialist training to people not usually considered for such posts as it reduces bias and therefore increases fairness.

Another potential advantage of the National Recruitment was that it reduced the time-off work the interviewees needed to visit programmes and attend interviews; this was demonstrated as vast majority of trainees agreed with these statements. However, for the interviewers, it increased the time needed and costs incurred in interviewing for their trainees.

The trainees indicated that they would like to have been interviewed by their trainers(s) but would not have preferred to have applied through the regional recruitment process run

previously. Similarly, as previously mentioned, all training consultants would like to be given some choice as to who is appointed to their unit to train. As a remedy for this, perhaps National Recruitment could ask the interviewees to express a preference for the programme(s) in which they would like to train and then interviews structured in such as way that they are subsequently interviewed by the interviewers from that / those regions. However, this could be more time- and resource- intensive and would be difficult logistically.

Over half (53%) of the trainees who answered the questionnaire were given their first preference and 15 of the trainees (74%) who answered the questionnaire were given one of their first three preferences. This was consistent with the findings by Cook et. al., i.e. 46% of the applicants were given their first preference and 73% of the applicants were given one of their first three preferences and the lowest ranked of the 26 candidates was offered their 12th choice.[3] This suggests that the StRs who answered the questionnaire were typical of all those appointed.

More than half (58%) of the trainees agreed that National Recruitment increased their choices about where they wanted to be trained, however, 41% felt pressurised in ranking more units than they would have applied previously. This probably explained the finding that all applicants accepted their job offers, with no applicants being preferenced out or opting themselves out of the process.[40]

Nearly all (90%) of the trainees thought that visiting units helped them to rank their preferences but only 10/19, just about half (53%) of the trainees visited unit(s) that they preferenced. This was probably because traditionally, visiting units was by invitation and it placed the applicant in a good position if he/she visited the unit(s) as it showed the trainers that he/she was keen and interested in being trained in their unit(s). The visits also, unofficially, acted as an informal interview and gave the potential trainees some insight into the posts and an opportunity to meet their potential trainers. However, after the introduction of National Recruitment, visiting unit(s) was no longer by invitation only and the units were

open to all those who were interested in training in that Deanery. Ideally, the visits helped the applicants to rank their preferences but as the interviewees had already been ranked but did not know if they had been successful or not by the time of the "open day" period, they may have thought visiting would be a waste of time because their attendance and performance would not influence the outcome of the interview result. Secondly, it was most likely that all the interviewees who had been interviewed would rank all or most of the units, therefore it would be impossible to visit all the units during the "open day" period as they were close together in date but spread throughout the U.K.

With regards to the cost incurred to attend the interview, a wide range of cost variation was given by the trainees with the maximum cost being £350. However, I could not tell if this amount of money was higher or lower than those interviewees who had been recruited via previous regional recruitment process who may have needed to travel from one Deanery to another, to attend several interviews, if they were unsuccessful at their first interview.

6.4.1.3 Comparison of trainers' and trainees' perceptions on National Recruitment

Regarding trainers' and trainees' perception on factors that they thought would have influenced trainees' choice of ranking their preferences, both trainers and trainees perceived that the 'location of the training unit' was the most important factor followed by 'family reason(s)'. Trainees ranked the 'University fees', payable for the research component of their training, as the third most important influencing factor whereas trainers ranked it as the second from last factor. The difference in this perception might be because in the past, the university fees did not vary much between one university and another. It is interesting to note that for the 2014 recruitment round, the fees varied from £3,225 to £12,486 per annum which represents between 9% and 33% of the mid-point of the StR salary scale (approximately £38,000). It is, therefore, understandable that the University fees are one of the main factors influencing the trainees' preferencing.

Trainers perceived that unit(s) with which the trainee(s) were familiar, would be the third most important influencing factor but trainees' ranked it in the lower third of the list. This was probably because they were ready to accept changes in their working environment to allow them to enter specialist training and for a better future. Also, an orthodontic StR's training was most probably not going to be the same as their previous post so staying in the same unit, or returning to a unit in which they had previously worked, was not particularly important from thethetrainees' point of view.

Ranking 'Posts that were perceived as being less competitive' was ranked quite low by both the trainers and trainees, this indicated that both trainers and trainees perceived that trainees' were quite confident in themselves and the trainees would strive for the best training programme that best suit them rather than compromising in accepting a post that was perceived as being less competitive. In addition, it may be that there is no perceived difference in the posts and the trainees' priority is to get any training post. The 'MOrth pass rate' was not a concern for either the trainers or trainees probably because orthodontic training is well-structured and the training has been standardised across the country so failure at MOrth, for trainees who have undergone StR training in the UK, is an uncommon event.

Although both the trainers and trainees agreed that National Recruitment was fairer, the trainees perceived National Recruitment to be much fairer than the trainers perceived it to be and this difference was statistically significant. This result was inconsistent with the result of Phase I where all the interviewers agreed that National Recruitment appeared fair to the candidates. T he possible explanation for the inconsistency in the trainers' perception of National Recruitment, as reported before and after the recruitment process, could be that for Phase I of this study it was the actual interviewers who perceived the process to be fair. However, for Phase II, the trainers who responded to the questionnaire included those whom might or might not have been involved in the National Recruitment interview process. This means that the sample frames for and respondents to, the two surveys were similar but not

exactly the same for the questionnaire in Phase I and Phase II. This could therefore be an explanation for the inconsistency in the perceptions of the trainers between Phase I and II. Secondly, the difference might have been because the trainers, responding in Phase II, may have been involved in the training of the trainees whom had been recruited via the National Recruitment for the previous nine months which could have changed their perceptions as to whether National Recruitment had made the process of recruitment fairer for the trainees.

Most of the trainers expressed ambivalence as to whether National Recruitment offered more benefits than drawbacks compared with the previous system and whether their trainees fitted into the unit well. These perceptions were statistically different from the trainees' perceptions in which the trainees agreed that National Recruitment offered more benefits and they thought they fitted into their units well. This was probably because most of the trainers, especially those training Consultants in the District General Hospitals, felt more involved in the previous recruitment process and the previous system gave them more input into the recruitment, ownership of and responsibility towards their appointed trainee.

Orthodontic trainers generally thought that the main reason for the introduction of National Recruitment process into the dental profession was due to a similar change that occurred in the medical profession in the UK in 2008. The trainers highlighted that whilst this change may have worked for medicine, it may not have the same potential benefit in dentistry. They believed that the dental profession does not cater to the same 'one-size fits all' criteria that may be possible in medicine. As a result, the effort to assign posts to trainees may require a more holistic approach which may make the current National Recruitment initiative less effective in dentistry then it has been in medicine. In orthodontics, the main difference from medicine is that trainees work in the same unit for the whole three years where as in medicine, trainees usually rotate on a 3-6 monthly basis. This has obvious implications for the impact of how well trainees fit into a unit.

In their responses about the logistics of the National Recruitment process, trainers commented that National Recruitment was neither as efficient nor as effective as the previous Deanery based process. To this effect, some of the trainers commented on the time and cost efficiency of National Recruitment. It took more time (i.e. between advertisement and post allocation) and potentially costing more money (i.e. for taking trainers out of their workplace for two days with travel and overnight stay to attend interviews) to run the National Recruitment process. Whilst trainers may normally sympathise with this change, the potential for these changes not resulting in an improved recruitment process would be disheartening for them and may make them less inclined to be in favour of the National Recruitment process. Furthermore, trainers have also expressed their frustration with the lack of communication between those co-ordinating the National Recruitment process and the local Deaneries. For example, in 2012, there was significant delay in trainers being informed about their incoming trainee. Trainers thought that this portrayed an unprofessional image on behalf of the trainers and in a long run, the orthodontic StR training. However, this process has been modified for the 2013 and 2014 recruitment rounds so the same delay should not have been as long.

Trainers have also commented on the fairness of the National Recruitment process. Whilst the National Recruitment process claims to be a fairer process to the trainees, the trainers reflect on this claim and express opposing opinions about this statement. The trainers' sentiments indicate that the National Recruitment process lacks the ability for adequate preparation of the trainees for the post to which they are assigned. This may ultimately disadvantage orthodontic training and all of its stakeholders, including the trainees and their ability to perform in the profession.

Another concern reflected in the trainers' responses was the fact that the National Recruitment process has passed on more responsibilities to the trainers than previously. This may disadvantage the trainers specifically and may compromise the integrity of the program. This is linked with the idea that the National Recruitment process does not

adequately prepare trainees for the individual posts. This, in turn, then imposes more responsibility on the trainers to remedy problems that arise due to issues that the trainees should have been familiar with before being assigned their posts e.g. distances between training centres; differences in research expectations. Overall, this means that trainers may have more problems to solve whilst having less ability to provide input into the recruitment process and in turn, the trainees that choose / are allocated to their unit.

Many of the trainers have also indicated that the calibre of the candidates may have been compromised under the new system. Trainers are concerned with the overall quality of education that these candidates are receiving. In defence of this argument, many trainers have highlighted that it is harder for the candidates to distinguish themselves from the other candidates so trainees may represent a more homogenous group and lack individuality within the profession. In addition, due to the competition for the training posts, the 'minimum allocation score' in each round of the recruitment, has been around 70% (69%-72%).

In addition to academic performances and aptitude for the dental profession, it is also important to consider the personality of a trainee when creating a conducive training and working environment. As a result, trainers also consider these criteria in their reflections when responding to the questionnaire. According to the trainers, insufficient effort was placed on recognising the personality of the appointed trainees and whether they are would fit-in well to the department(s) to which they have been appointed. Furthermore, given the stress imposed if the new National Recruitment system is inadequate, trainees and trainers may feel jaded by the entire system. This ultimately impacts the relationships that the trainees and trainers are able to develop when working together.   In addition, they may lose the interest to fulfil their full potential within the profession that may then create a conundrum for the individual and the profession as a whole. The consideration of all of these factors may have an impact on the number of inter-deanery transfers.

Last but not least, two of the comments from the interviewers related to the National Recruitment process being championed by a few individuals purely to promote their own careers and to increase their chances of reward and recognition of doing the governments bidding without thinking of the devastating effect National Recruitment may have on the quality of orthodontic training in the UK. However, it was probably preferable to have the National Recruitment introduced by individuals keen to make the new system work, rather than for it to have been enforced upon the speciality by those out with orthodontics who did not have a vested interest in the speciality.

6.4.2 WBAs

6.4.2.1 Phase III

A large majority (88%) of the trainers responded that they did not have any time in their job plan specifically to undertake WBAs. However, about half of the trainers, who answered the questionnaire, spent about 0.25 of a Programmed Activity (1PA=4 hours) per month (i.e. 1 hour) undertaking WBAs for their trainee. One of the reasons for the lack of time in consultants' job plans to undertake WBAs, might be because WBAs have been introduced in orthodontics StR training relatively recently and the trainers may not have reviewed their job plan, to reflect their new responsibilities, with their employer (NHS). In addition, with the phased introduction of WBAs into StR training, it is only in the last year that the full impact of the time requirement to undertake the WBAs has materialised. The other possibility is that the time needed to conduct the WBAs had not been acknowledged by their Trust. This is a more likely explanation because more than 80% of the trainers, who answered the questionnaire, agreed that time that they have spent on the WBAs has not been acknowledged by their NHS employer.

Most consultants currently lack the proper and necessary resources e.g. time, to carry out all the activities that comprise supporting professional activities (SPAs). These activities include teaching, continuing professional development, education, clinical governance and audit. It is important to have an appropriate balance between clinical and non-clinical duties for all consultants. According to the British Medical Association (BMA) guidelines, when the new consultant contract was agreed, 2.5 PAs were for SPAs and 7.5 for direct clinical care (DCC). More recently, consultant contracts are based on 2 SPAs and 8 DCCs. However, many orthodontic consultants are using their SPAs to undertake WBAs that should be categorised as DCCs. As a result, consultants find it extremely difficult to undertake all their SPAs and make a wider contribution to the development of their service as well as their own career development.

For the trainees, more of them arranged their own WBAs in their District General Hospital compared with those undertaken in their Dental Teaching Hospital that tended to be planned by their trainers. This was, perhaps, not surprising because in District General Hospitals, there are usually only 1-3 trainees in a unit, therefore it is easier for the trainees to organise the WBAs at a convenient time for their trainer(s) and themselves. However, in the Dental Hospitals, there are more trainees and the trainers are usually supervising several trainees in any one session. If each trainee arranged their own WBAs, it would be logistically impossible for the trainers to undertake the WBA and supervise other trainees at the same time. Therefore, in terms of practicability, it is easier if the trainer(s) set-aside time for all the trainers and trainees to undertake the WBAs at the same time.

As outlined in the GDC specialist training curriculum, it is recommended that approximately 10 WBAs are undertaken annually.[12] There are, however, some logistical issues to consider, which are time, costs and team management as well as the willingness of staff members to approve and implement these new methods of assessments.[25] This was well illustrated in the results that were received from the questionnaires, where most of the trainees completed 10 WBAs but as few four as WBAs, to in excess of 20 WBAs, were completed by trainees.

As outlined in the updated guidelines for orthodontic StR training in July 2012,[11] the majority of direct supervision and assessment should be provided by a consultant, however some could be undertaken by experienced senior specialist practitioners in orthodontics, and would be welcomed. This was the case for almost all of the trainees who answered the questionnaire, where their consultants undertook 80% of their WBAs; however, there was one trainer and one trainee who answered the questionnaire who only had 40% of their WBAs undertaken by consultant trainers and 60% were by the FTTA. Hopefully, this latest guideline is noticed by this training centre and they act to rectify the balance accordingly.

6.4.2.2   Comparison of trainers' and trainees' perceptions on WBAs

From the results, I noted that there were no statistical differences in the overall perception of trainers and trainees about WBAs although I found that there was a slightly more positive perception towards WBAs among trainees than trainers. However, I have to bear in mind that no statistical difference in perception cannot be interpreted as that they both agreed that the WBAs were good, it only indicates that the trainers and trainees had similar perception of the same statement. This perception could be positive or negative or it might also mean that they had different perceptions but that the difference might be due to random variation and therefore was not statistically significant to allow a definite conclusion to be draw. In addition, if the difference was only small, the sample sizes may have been too small for this difference to be detected.

The ranking of the main perceived reasons, as to why WBAs were introduced, was the same among trainers and trainees: i.e. to improve training, to follow the medical model and to improve patient care (in descending order of ranking). Both the trainers and trainees perceived that to follow medical model was more likely to be the reason WBAs were introduced than to improve patient care. This may be because most of the trainers and trainees still perceived WBAs as a '*tick box exercise'* for the ARCP to demonstrate that trainees' competencies have been achieved before proceeding to the next level of training. A small number of trainers and trainees (less than 10%) perceived that the introduction of WBAs was due to political reasons and to prevent litigation. This result was different from a survey conducted by Menon et, al.[25] among psychiatry trainees where large proportions of the trainers and trainees perceived that the introduction of WBAs was a result of politically motivated initiatives with an unclear rationale and purpose. None of the orthodontic trainers or trainees felt that the introduction of the WBAs was grounded on financial reasons although some of the trainees commented, in the free text comments, about the rationale of paying annual fees to the ISCP authority to maintain the data base and their portfolios.

Given the universal agreement that the objective for the introduction of a new assessment tool needed to be a fair, valid and reproducible system of assessment, it was interesting that only about half of the trainers and trainees agreed on the above statements. However, orthodontic trainers' and trainees' attitudes towards WBAs were still overall better than a similar survey conducted on psychiatry trainers[25] and Specialty Registrars in Wales.[24]

Both trainers and trainees, especially trainees (62%) felt that there were difficulties associated with the organisation of WBAs and the vast majority of the trainers and trainees agreed that the WBAs have had a negative impact on the time available for their clinical duties. WBAs are intrinsically time and resource intensive because an increased level of supervision and assessment of trainees is needed. Time is also needed to provide constructive feedback to the trainees and time to complete the relevant forms, which undoubtedly detract from time available to undertake clinical duties. Furthermore, the fact that the trainees found it difficult complete the necessary WBAs was perhaps not surprising because they do take a significant amount of time to perform if were done in a proper manner. This negative perception from the trainees was probably related to the fact that most of the time, especially at the District General Hospitals (as shown in the above result), the trainees were responsible for organising the WBAs. In addition, time pressures and difficulties in finding a consultant available to undertake the WBAs, were highlighted in the free text comments. This has also been noted in previous studies.[24,25] It is vital that both trainees and assessors work together to negotiate time which can be used effectively when conducting such assessments.

Numerous concerns were raised regarding the assessment tool and the ISCP forms that were available online. There was no clear opinion from trainers as to whether the forms were easy to use although more than half of the trainees felt that they were. The possible reason for this was that perhaps that the trainees were more computer literate and competent than the trainers. Both the trainers and trainees felt that the ISCP forms were not

relevant to orthodontic training. With regard to this, perhaps continued refinement of the forms is required.

Disappointingly, the majority of trainers and trainees who answered the questionnaire felt that the WBAs had no real beneficial effects on supervision, training, clinical practice and confidence. In addition, one-third of the trainers and trainees expressed uncertainty in their overall perceptions about WBAs: i.e. 'WBA has accurately reflected his/her (trainees') progress', 'is being used appropriately', and 'is the way forward and should be retained'. These results need to be interpreted in light of the fact the trainees were obliged to complete a given number of assessments within a limited time frame. This is an undeniably stressful task, given that non-fulfilment of these requirements carries the potential for a trainee not to progress at their ARCP. This process may, therefore, be at considerable risk of degenerating into a 'tick box'/'paper-pushing' exercise if trainees and trainers alike do not 'buy into' the process. This could possibly explain why the trainers and trainees were unsure as to whether the WBAs have been used appropriately and have achieved their true benefit in accurately reflecting trainees' progression and therefore should be retained.

From the results of this study, it is evident that trainers almost unanimously rate themselves as satisfactory on the numerous parameters in the context of their availability and ability to undertake WBAs. However, a lower proportion of trainees rated their trainers as 'satisfactory' on all parameters. On the parameters of availability and willingness to conduct WBAs, the differences were marked in such a way that trainers perceived themselves as 'good' whereas trainees only perceived their assessors as 'acceptable'. Such discrepancies in perceptions may stem from a number of factors including differences between trainers' and trainees' expectations, lack of consensus among trainers and trainees, and lack of clear guidance on prescribed standards to be attained for each stage of training. Developing a national training and calibration process for assessors has been mooted in medicine, and the same could be considered for orthodontics. In addition, standards (e.g. end point or at a

particular time point in training) and criteria against which judgements are made need to be clear for the assessor and trainee.[19,67]

6.5   Implications for practice

6.5.1   National Recruitment

Multi Station Interviews (MSI) for National Recruitment remains in place for the recruitment of Orthodontic StRs and to refine the process based on the experiences from those who took part in the 2012 National Recruitment. COPDEND has also suggested that the process of National Recruitment should be applied to the recruitment of trainees in other dental specialties. It is likely that the recruitment to Paedodontic and Restorative StR posts will take place in 2015. Whether recruitment to these specialities will follow the MSI format is uncertain.

In July 2014, recruitment to orthodontic Post-CCST posts also took place using the MSI format.

6.5.2   WBAs

There is a need to revise consultants' job plans to allow more flexible working patterns to allow them to deliver high quality training as well as the time for assessment of trainees that is now required. There also needs to be a relevant cost analysis and aside from the financial costs, the time costs, to trainers and trainees with regard to the implementation of WBAs should be reviewed together with their impact on patient care.

6.6 Implications for further research

6.6.1 National Recruitment

As mentioned in Chapter 3, the continuation of this study will be to assess whether the score achieved at National Recruitment, using the MSI format, predicted the progress of the recruited trainees through their training (ARCP) as well as their outcome at MOrth/IMOrth. This will be explored; ultimately, after the orthodontic StR intake 2012 have sat their MOrth/IMOrth examination in year 2015. In addition, comparisons of the perception of the interviewees and interviewers in 2013 and 2014 will be made.

A similar study for the Post-CCST interviewees (who were the last cohort of trainees recruited under the previous Deanery system) and interviewers has been started in collaboration with the Training Grades Group and Consultant Orthodontists' Group of the British Orthodontic Society.

6.6.2 WBAs

There is need for more research to evaluate the educational impact of WBAs in orthodontics, in particular the real benefit of WBAs on supervision, training, clinical practice, trainees' confidence and patient care.

A cost / benefit analysis of WBA also needs to be undertaken taking into account time lost from routine clinical practice and revenue lost to the Trusts from the consultants' case load due to them undertaking the WBAs.

Chapter 7: Conclusions

1. Overall, interviewers were positive about the selection of candidates, fairness and conduct of the multi-station interview format, whereas overall interviewees were very positive about the organisation and fairness of the multi-station interview format.

2. Overall, there was a statistically significant differences in trainers' and trainees' perception on the National Recruitment, with statistically significance differences on the following three statements:

   a. "National Recruitment has made the process of recruitment fairer for trainees";

   b. "I think the NR offers more benefits than drawbacks compared tote previous system" and

   c. "fit into unit well".

3. Overall, there was no statistically significant difference in trainers' and trainees' perception of Workplace Based Assessments. WBAs were found to be acceptable to the trainers and trainees, even though both the trainers and trainees expressed their uncertainty as to whether WBAs have accurately reflected their trainees' or their own progress. However, they did feel that WBAs were being used appropriately, were the way forward and should be retained.

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APPENDICES

Appendix 1: Interviewers' Questionnaires-Phase I

QUESTIONNAIRE for INTERVIEWERS
Please put a cross in the box where appropriate☒

1. What is your gender?

☐ male   ☐ female

2. How old are you?

☐☐ years

3. How many years have you been a Consultant?

☐☐ years

4. Do you have time in your job plan for education?

☐☐ yes   no

5. Did you have problems obtaining leave to attend the training day and interview days?

☐☐ yes   no

6. What type of leave have you taken to attend on these days?

☐☐☐☐ annual   professional   study   other

Please consider the following statements and score them on the scale provided.

7. The interview format selects the best candidate to be appointed.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

8. We tested an appropriate range of competencies during the interview.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

9. **We asked searching questions during the interview.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

10. **The format was better than that of a traditional panel.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

11. **Performance at interview predicts future performance.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

12. **The interview process is more likely to select a nice orthodontist than a clever one.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

13. **Our interviews appeared fair to the candidates.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

14. **Interview stations were of the right duration.**

Strongly agree	Moderately agree	Tend to Agree	Tend to disagree	Moderately disagree	Strongly disagree

15. **The same panel conducting the interviews for a second time, several weeks later and with the same candidates, would appoint the same people.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

16. **Interviewers usually agreed on their assessment of the candidate at each station.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

17. **Interviewers usually agree when comparing their assessment of candidates at different stations.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

18. **I would consistently offer the same assessment if asked to review my opinion at a later date.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

19. **My performance during over the two days was consistent.**

Strongly agree	Moderately agree	Tend to Agree	Tend to disagree	Moderately disagree	Strongly disagree

20. **The workload involved in interviewing was excessive.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

21. **Appointment by application form without interview would have selected the same candidates.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

22. **The interview process should involve more stations.**

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

23. **One interviewer is needed at each station.**

Strongly agree	Moderately agree	Tend to Agree	Tend to disagree	Moderately disagree	Strongly disagree

24. **The candidates' personality influenced my assessments.**

Strongly agree	Moderately agree	Tend to Agree	Tend to disagree	Moderately disagree	Strongly disagree

25. **The interview was unfair to male candidates.**

Strongly agree	Moderately agree	Tend to Agree	Tend to disagree	Moderately disagree	Strongly disagree

26. **The interview helped candidates to understand what a good orthodontist is.**

Strongly agree	Moderately agree	Tend to Agree	Tend to disagree	Moderately disagree	Strongly disagree

Please make any comments you wish about your interviewing experience (continue overleaf if required).

Appendix 2: Interviewees' Questionnaire-Phase I

QUESTIONNAIRE for INTERVIEWEES

Please put a cross in the box where appropriate ☒

1. How old are you? [ ][ ] years

male   female

2. Are you male or female? [ ]   [ ]

N/A

3. What is your NHS grade? [   ]   [   ]

4. What is your interviewee number? [ ][ ]

5. Which year did you obtain your primary dental qualification e.g. BDS? [ ][ ][ ][ ]

6. From which university did you qualify? [   ]

Yes   No

7. Is English your first language? [ ]   [ ]

Yes   No

8. Have you had experience of multi-station interviews before? [ ]   [ ]

9. I was well informed about the interview process.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

10. I found the multi-station interview helpful to me.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

11. I was given adequate information on arrival.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

12. The questions were easy to understand.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

13. I felt well prepared for the types of questions asked.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

14. I thought the overall format was fair.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

15. I prefer this format to a traditional panel interview.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

16. I thought that the multi-station interview was fairer than a traditional panel interview.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

17. The interview process was well organised.

Strongly agree	Moderately agree	Tend to agree	Tend to disagree	Moderately disagree	Strongly disagree

Please make any comments you wish about your interview experience

Appendix 3: Trainers' Questionnaire-Phase II

Appendix 4: Trainees' Questionnaire-Phase II

Appendix 5: Trainers' Questionnaire-Phase III

Appendix 6: Trainees' Questionnaire-Phase III