



## Do UK Medical School Applicants Prefer Interviewing to Non-Interviewing Schools?

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**Abstract.** Medical schools select applicants; applicants who hold two or more offers also select medical schools. In this study we examine a large cohort of applicants applying for admission to UK medical schools in October 1991, and show that when presented with a choice, applicants are more likely to select an interviewing school over a non-interviewing school. Preferences for individual schools are examined in detail using the Bradley-Terry method for paired comparisons. The analysis shows that the preference for interviewing schools cannot be explained in terms of a preference for Oxford and Cambridge (which both interview), nor is it due to confounding by more non-interviewing schools being in the north of the UK. Nevertheless, interviewing status does not account for all the preferences expressed by applicants. The preference for interviewing schools is perhaps explained by applicants feeling closer and more involved with schools which they have visited, which have talked to them personally, and which have selected them individually, rather than on the basis of an impersonal application form.

The selection of medical students involves two separate processes. Firstly, medical schools choose the applicants to whom they wish to make offers. Secondly, students who receive two or more offers then choose which to accept. It could also be argued that there is a third, earlier, selection process when applicants decide to which medical schools to apply: for medical schools cannot select students if they do not apply. Although much has been written on selection of students by medical schools, little has been written on the selection of medical schools by students. Here we look at these processes, particularly in the context of asking whether schools which interview are perceived differently from schools which do not interview.

Although most medical schools in the UK interview applicants who are made offers, there is a substantial minority (8 out of 28 schools in 1991 (Richards, 1990)) which choose not to interview the majority of entrants. The division of schools into interviewing and non-interviewing is in contradistinction to the situation in the United States, where 99% of medical schools interview (Edwards et al., 1990). This variation in selection policy in UK medical schools is of great interest since it enables comparison between students applying to and selected by interviewing and non-interviewing schools. The present study resulted from

a realisation, mainly from talking to applicants themselves, that interviews served wider purposes than judgement of the broader, non-academic abilities of applicants. In particular, students reported that visiting for an interview also allowed them to meet some members of staff, to voice their own feelings and opinions, and to discuss the school with its current students, who often showed them around the school. Students subsequently holding two or more offers apparently used this information to make their decision, typically in favour of interviewing schools, of which they had experience, over non-interviewing schools, of which they had less or no experience. The present study aimed to look for statistical evidence of such processes in a large-scale study of applicants to UK medical schools in the autumn of 1990. Consideration of the immediate problem of comparing interviewing with non-interviewing schools also allowed a development and generalisation of the method to ask about overall perceived differences between schools.

### **Method**

The present study consisted of a large cohort of applicants who, in the autumn of 1990, had applied for admission in October 1991 at one of five medical schools, St. Mary's Hospital Medical School (now Imperial College School of Medicine at St Mary's), University College and Middlesex School of Medicine (now UCL Medical School), the United Medical and Dental Schools, and the medical schools of the University of Sheffield and the University of Newcastle-upon-Tyne. The applicants represented about 70% of all medical school applicants and entrants in 1991 (McManus et al., 1995). Other results from the study have already been published elsewhere (McManus et al., 1995, 1993), and a wide range of measures was collected. For present purposes we note only that information was provided by UCCA (Universities' Central Council on Admissions) concerning whether each applicant had received a formal offer from each of the schools to which they had applied, and their final destination. It should be emphasised that this information referred to *all* of the (then) 28 medical schools in the UK, and not just to those five schools which had participated in the study, since each applicant had typically applied to four or five medical schools in total, only one or two of which were participating directly in the study. Applicants with EC (European Community) postal addresses who applied before 15th December were also sent a comprehensive questionnaire, a part of which asked about their reasons for applying to each of their medical school choices, aspects of which have been published previously (McManus et al., 1993). Although the full 1991 cohort study considered applicants to both medical courses and pre-medical (1st MB courses), the present study only considers applications to first year of the medical courses proper. Non-interviewing schools as of 1991 were defined as Aberdeen, Belfast, Dundee, Edinburgh, Leeds, Manchester, St. Andrews and Southampton.

## Results

6901 applicants in total applied to the five participating schools, representing about 70% of the total applicants to UK medical schools in that year. 5316 (77.0%) applicants applied to five medical courses (i.e. excluding pre-medical courses), 823 (11.9%) to four schools, and 609 (8.8%) to three or less, the remaining 153 (2.2%) applying only to pre-medical courses. It should be noted that some applicants applied to both pre-medical courses and first year of medical courses. 3694 (53.5%) applicants received no offers for medicine courses; of those receiving offers, 1100 (15.9%), 876 (12.7%), 646 (9.4%), 443 (6.4%), and 142 (2.1%) received 1, 2, 3, 4, or 5 offers respectively. Since many offers were conditional upon A-level results, not all those holding offers were admitted to a medical schools. Overall 2905 (42.1%) applicants were admitted to first year medicine courses at UK medical schools in October 1991 (or in a few cases allowed to defer entry to October 1992).

*Preference for interviewing over non-interviewing schools.* Applicants can only express a preference for one school over another if they hold two or more offers, and achieve the necessary grades to meet the school's requirements. Those candidates holding only one offer must necessarily go to that school which made the offer. In order to assess whether candidates have a preference for interviewing schools (ISs) over non-interviewing schools (NISs), they must hold at least two offers of which at least one is of each type, IS and NIS. Table I shows the extent to which those candidates holding an offer chose to enter either an IS or a NIS, according to the number of offers they held from ISs and NISs. Consider the simplest informative case of a candidate who holds two offers, one from an IS and one from an NIS. Each school has made the candidate an offer, and therefore each regards them as acceptable, and it can be assumed that a place is available at each school. All other things being equal between the schools, we would expect half of the candidates to enter one of the schools and half to enter the other, so that if candidates express no preference for ISs over NISs then 50% should enter the IS and half the NIS. Similarly if a candidate holds three offers, of which one is to an IS then one third of candidates should enter the IS; and so on for other combinations. Table I shows clearly that in every single comparison, the proportion of candidates entering the IS is higher than that expected by chance alone; the differences of the observed from the expected proportions are highly significant statistically ( $\chi^2 = 65.04$ , 9 df,  $p < 0.001$ ). Candidates clearly therefore prefer interviewing schools to non-interviewing schools when given the opportunity to express a preference.

*Preference of candidates for individual medical schools.* The analysis of the previous section makes a strong case that applicants holding offers prefer interviewing to non-interviewing schools. However the analysis has its limitations. There is a potential problem that interviewing schools may differ systematically from non-interviewing schools on some important characteristic (and an obvious concern is that both Oxford and Cambridge interview, and it is highly likely given their

*Table I.* For all applicants holding at least one offer, the proportion choosing to go to an interviewing school, in relation to the number of offers held from interviewing schools. Note: In a few cases applicants hold offers from one set of schools and then go to a school from which they did not originally hold an offer

Number of offers received	Number of offers from interviewing schools	Number of candidates	Number (%) going to an interviewing school	Expected percent to interviewing school by chance
1	0	203	1 (0.5%)	0%
	1	599	596 (99.5%)	100%
2	0	57	0 (0%)	0%
	1	258	166 (64.3%)	50%
	2	452	451 (99.8%)	100%
3	0	13	0 (0%)	0%
	1	93	43 (46.2%)	33%
	2	273	208 (76.2%)	67%
	3	245	245 (100%)	100%
4	0	2	0 (0%)	0%
	1	30	12 (40.0%)	25%
	2	101	64 (63.4%)	50%
	3	181	150 (82.9%)	75%
	4	117	117 (100%)	100%
5	0	0	–	0%
	1	0	–	20%
	2	11	6 (54.5%)	40%
	3	39	28 (71.8)	60%
	4	48	45 (93.8%)	80%
	5	41	41 (100%)	100%

pre-eminent place in UK higher education that most candidates would prefer Oxbridge over any other schools). In fact the analysis given in Table I is almost identical if restricted to schools other than Oxford and Cambridge, but that result will not be shown here since instead we wish to develop a more general method of handling the data which will allow analysis of that and other such cases. In particular, it would be useful to be able to construct a set of scaled scores for each medical school which showed the likelihood that candidates would prefer that school to another, given that they held offers from each.

The data in the present study technically are paired comparisons (David, 1963). A candidate holding an offer from schools A and B expresses a preference that A is preferred to B,  $A > B$ . More generally a candidate holding offers from schools A,

B, C and D, and entering school A, expresses three preferences,  $A > B$ ,  $A > C$  and  $A > D$ . Note that in the latter case, no information is available for that candidate for their preferences between B, C and D. Paired comparison designs in statistics typically analyse a preference matrix of each item with all other items, where usually each subject has expressed many preferences for some or even all of the combinations. However similar data can be obtained if each subject expresses a small number of preferences, but each subject expresses that preference for a different combination of items, as in the present case. The Bradley-Terry model for paired comparisons (Bradley and Terry, 1952) analyses such data on the assumption that they are distributed along a linear continuum, each item having a separate score, and with greater distance between scores indicating a greater probability of choosing one item over the other. The data in a paired comparison model can be analysed by any program which carries out logistic regression (each comparison being a binary preference for one item over another), as long as the item comparisons are coded appropriately (Critchlow and Fligner, 1991). In addition it is possible, just as in multiple regression, to ask whether differences between items can be explained in terms of other measured co-variables.

*A Bradley-Terry model for choice of medical school offers.* A  $28 \times 28$  paired comparison matrix was generated from all of the preferences expressed by candidates holding two or more offers (with candidates holding N offers expressing N-1 preferences). Data were modelled by the LOGISTIC REGRESSION program in *SPSS for Windows*, and differences between items were expressed as a series of covariates. It should be noted that, as recommended (Critchlow and Fligner, 1991), the model was fitted so that it went through the origin (i.e. there was no constant term). Figure 1 shows the scaled coefficients for the 28 UK medical schools, along with their standard errors. Since preferences are relative to other items, then one school has to be chosen, quite arbitrarily, as a base-line, and we have chosen to use St Mary's, since a large number of applicants applied there and it was the main school from which the selection survey was organised. The preferences are on an odds-ratio scale, plotted logarithmically, and can be interpreted such that if school X has an odds-ratio of 2, then a candidate given the choice between X and St Mary's, is twice as likely to choose X. Since odds-ratios are multiplicative, then if school Y has an odds-ratio of 6, relative to St. Mary's, then school Y is also  $6/2 = 3$  times more likely to be chosen over school X. Formal statistical testing can be carried out using the chi-square goodness of fit statistics calculated by the program. Overall there are highly significant differences between the 28 schools (Chi-square = 1158.2, 27 df,  $p < 0.001$ ). It is clear from Figure 1 that indeed Oxford and Cambridge are very much preferred to all other schools. However if Oxford and Cambridge are entered into the model first, followed by the other schools, there are still highly significant differences between the schools (Chi-square = 511.6, 25 df,  $p < 0.001$ ). Figure 1 also shows, for each school, whether it is an interviewing or a non-interviewing school, and it is apparent

that the non-interviewing schools are generally much less preferred than the interviewing schools, mostly being in the lower half of the distribution. A formal test of the role of interviewing can be carried out by fitting a model in which the difference in interviewing status between schools is fitted firstly into the model; this is highly significant, with candidates being  $1.760\times$  (95% CI: 1.578 to 1.963) more likely to choose an IS over a NIS; the effect is also significant after preferences for Oxford and Cambridge after taken into account ( $1.404\times$ ; 95% CI = 1.253–1.572). However interviewing status alone does not entirely account for remaining differences between schools (Chi-square = 476.64, 24 df,  $p < 0.001$ ). We therefore assessed the role of other perceived factors by fitting a model using the 22 reasons for applying to particular medical schools, which we assessed in a previous paper (McManus et al., 1993), and the HEFCE ratings of quality of basic medical sciences and clinical sciences in the 1992 research assessment exercise. Interviewing school, and Oxford and Cambridge were first entered into the model and then remaining variables were entered into the model in a stepwise, forward entry manner, with a criterion of  $p < 0.001$  for entry since multiple variables were being considered. The most important predictor was the quality of teaching at the school, followed by being a long way away from home, being recommended by the school or college, not having been a patient at the hospital, having looked around the school, having a reputation for good clinical teaching, having high HEFCE ratings for clinical research, being recommended by a doctor who trained at the school, not being close to the parental home, and having a reputation for music and theatre; no other variables were significant predictors.

*Geographical factors.* A potential confounding factor in our analyses is that a disproportionate number of non-interviewing schools are located in the North of Britain, in Scotland and in Northern Ireland. Since candidates may well prefer to go to a school in relatively easy reach of their home town, and since more applicants in our study were from the southern part of the UK, this may result in confounding of preference for interviewing schools with a preference for universities closer to home. We investigated this problem by dividing candidates on the basis of their home town, as provided on the UCCA application form, into those from 'the north', defined as Scotland, Northern Ireland, and the Northern, North West and Yorkshire regions of England, and 'the south', comprising Wales and all other regions of England. The effect of an interviewing school was then fitted as the only factor in a Bradley-Terry model, separately for the two groups. Applicants from the south showed a relative preference of 2.050 times (95% confidence interval 1.905–2.206) for interviewing schools, and those from the north showed a relative preference of 1.376 times (95% confidence interval 1.263–1.499) for interviewing schools. Given their 95% confidence intervals, both preferences are highly significant ( $p < 0.001$ ), although it is also the case that the preference is expressed less strongly in applicants from the north. In part the effects reflect that the specific attractivity of Oxford and Cambridge have not been

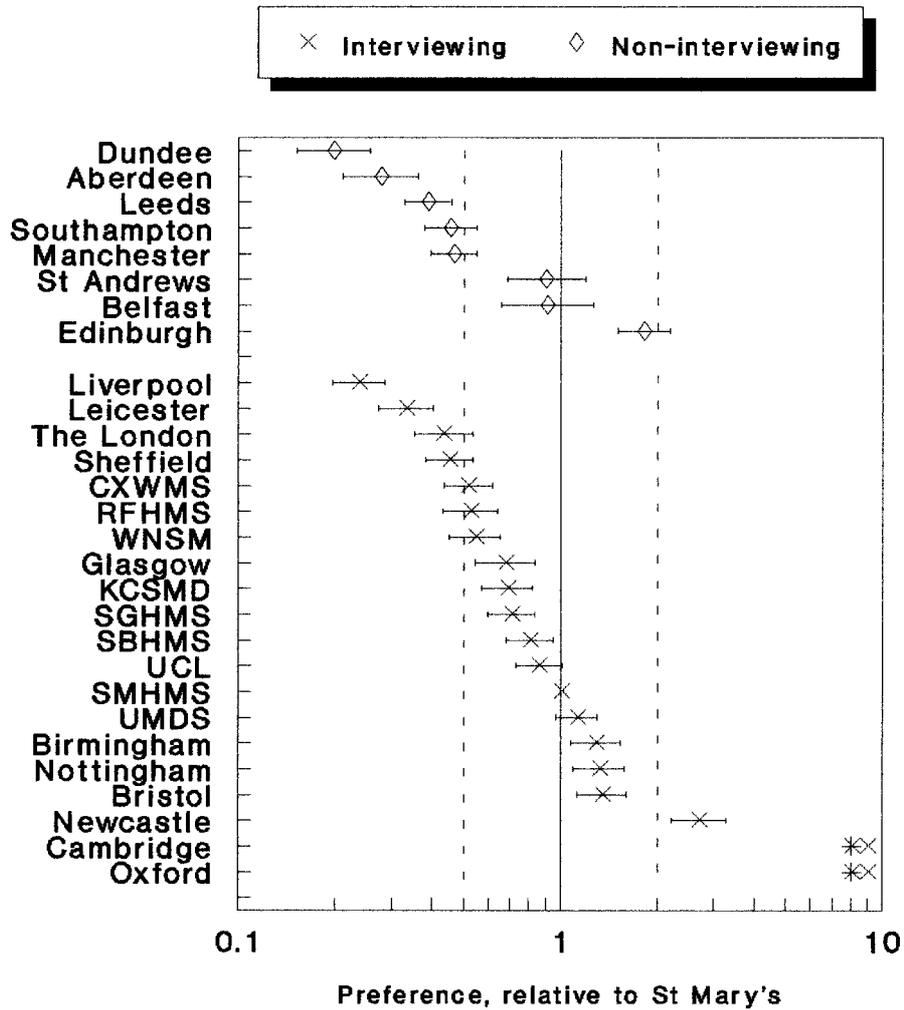


Figure 1. Shows the preference for each medical school, expressed as an odds ratio relative to St Mary's,  $\pm$  one standard error. St Mary's does not have a standard error estimate. The solid vertical line indicates schools which are equal in preference to St Mary's, and the two vertical lines indicate schools twice as likely to be chosen over St Mary's or half as likely to be chosen over St Mary's. The median for interviewing schools (excluding Oxford and Cambridge) is 0.69 and for non-interviewing schools is 0.46 i.e. overall interviewing schools are  $0.69/0.46 = 1.5$  times more popular.

\*Note that points for Oxford ( $95.9 \pm 1$  SE 34.7–264.6) and Cambridge ( $124.5 \pm 1$  SE 68.8–225.3) are not plotted at their true position since their inclusion would restrict the range of the other points.

included in the model. When preference for them is entered before the effect of interviewing, candidates from the south still show a highly significant preference for interviewing schools (1.698 times, 95% confidence interval = 1.575–1.832), whereas the effect of interviewing school is non-significant in the candidates from the north (1.064 times, 95% confidence interval = 0.962–1.155). The highly significant presence of the effect in candidates from the south confirms that it is not an artefact of geographical preference, although clearly some such effect is present.

*Candidates holding unconditional offers.* A potential problem with the analyses reported so far is that the vast majority of candidates are holding conditional offers, and hence they must also take into account the required A-level grades which they have been asked for as a part of their offer. Since interviewing schools tend to ask for slightly lower A-level grades (see discussion) then it is possible that offered A-level grades are confounded with a preference for interviewing schools. This problem can, in principle, be circumvented by looking only at candidates holding unconditional offers. However of the 6901 applicants, only 509 held at least one conditional offer, and of those, 91 also held one or more conditional offers, and of the rest 225 held only a single unconditional offer. That therefore leaves 193 who held only two or more unconditional offers, and of these, only 62 were informative since they held offers at both interviewing and non-interviewing schools (excluding Oxford and Cambridge). However, of those 62, 37 chose to go to an interviewing school, compared with an expected number of 30.4 (Chi-square = 2.811, 1 df,  $p = 0.094$ , two-tailed,  $p = 0.047$  one-tailed; odds ratio = 1.48 times), a result which is compatible with this very specific group of applicants also preferring interviewing schools to an extent equal to the rest of the medical school applicants.

*A-level grades offered in interviewing and non-interviewing schools.* A-level grade offers made by schools, which are important in candidates with conditional offers, must also be taken into account, since it is in a candidate's interest to hold at least one offer with as low an A-level grade as possible, as an 'insurance choice'. Scoring A-level grade offers as A = 5, B = 4, C = 3, D = 2, E = 1, for the normal three subjects, then offers as reported in the official compendium (8) tend to be slightly lower at interviewing schools (mean = 11.44, SD = 0.856,  $n = 18$ ; Oxford and Cambridge excluded) than at non-interviewing schools (mean = 12.13, SD = 0.64,  $n = 8$ ), although the result does not quite reach statistical significance ( $t = 2.00$ , 24 df,  $p = 0.056$ ). The difference in achieved grades, considering just candidates with three A-levels in our study, is somewhat smaller, and not statistically significant, being 12.68 points (SD = 1.809,  $n = 1368$ ) for candidates entering interviewing schools, compared with 12.99 points (SD = 1.70,  $n = 437$ ) for candidates entering non-interviewing schools, a difference of only 0.31 points, compared with a difference of 0.69 points in the offers made. Although it is possible that some part of the preference we have found for interviewing schools results from this effect, we

should also emphasise that the preference for interviewing schools is also found to the same extent in that albeit small group of candidates who hold two or more *unconditional* offers, and in whom A-level grade offers are of no consequence. We therefore conclude that the effect overall is unlikely to be driven by lower offers in interviewing schools.

## Discussion

We have found statistically highly significant evidence that applicants offered a place at more than one medical school, choose to enter an interviewing school rather than a non-interviewing school. Before it can be concluded that applicants do indeed *prefer* the interviewing school, other possible explanations must be considered. We have already shown that the effect cannot be explained away in terms of a preference for Oxbridge over all others (although there is no doubt about that enormous preference), nor can it be accounted for by more non-interviewing schools being in the Northern half of the United Kingdom. However, candidates from the north do not show the same overall preference. This difference may reflect the fact that northern applicants preferring an interviewing school are then compelled of geographical necessity, to prefer a more distant medical school. A preference for interviewing may then be in opposition to a preference for a closer school. Non-northern applicants would not experience the same dilemma. The important point however is not that the effect is absent in northern applicants but that it is clearly still present in non-northern applicants, so that the effect is not an artefact of geographical confounding.

Some of the non-interviewing schools in the study hold Open Days (i.e. a time when applicants can visit and look around the school and meet teachers, but no selection as such takes place). It is unlikely that our conclusions are modified by some schools having Open Days. We have reported data on this elsewhere (McManus et al., 1993), and we also note that when this factor was entered into the model (see earlier), along with the other 22 factors measured, it was not a significant predictor of preference.

Given that the preference for interviewing schools is unlikely to be an artefact of other confounding variables, what is its likely explanation? One possible and highly likely explanation involves the psychological relationship which is set up between an interviewee and an interviewing school. In going to a school to be interviewed, a candidate firstly has to travel to the school, thereby putting effort (and cost) into their application. On arrival at the school they are typically shown around it by the current students, whom they realise are individuals similar to themselves, and they therefore feel at home in it. The interview is necessarily stressful to some extent but, like all stressful events accomplished successfully, the result is a feeling of a challenge overcome, and hence is rewarding. In terms of the theory of cognitive dissonance (Aronson and Berkowitz, 1969; Eiser, 1986), we can readily predict that candidates will prefer the more stressful and the more difficult of two choices, once

they have been made offers at each. The second important aspect of interviewing is best interpreted through attribution theory (Eiser, 1986; Hewstone et al., 1988; Hewstone, 1989). People continually make attributions about the causes of events, and an offer at a medical school is precisely such an event with a cause. After being interviewed it is straightforward for a candidate to explain an offer in terms specific to themselves and their own character, personality and aptitudes; “they liked *me* specifically”. In contrast, applicants made offers from non-interviewing schools, by return of post as it were, find it difficult to believe that the offer is really made to them specifically; “they just give an offer of ABC to any applicant who applies, and they don’t know me as a person at all”. The logic is that of the fundamental error of attribution in attributing motives to actors and observers: when an applicant is interviewed they are an actor, and privy to the specific inner workings of the process of selection, whereas when they are not interviewed, they are not privy to the process, and therefore attribute its mechanism to some non-specific process. The result is that a preference is likely for the school at which the applicant feels they have been chosen *specifically* rather than just *generically*. Finally, it must be said that interviews may also have other beneficial effects for schools, not the least of which is that the teachers in that school, who have themselves been involved in interviewing and selecting, all feel some form of ownership over the selection process. They cannot disown the future students, cannot claim that they have just been thrust upon them, and cannot claim therefore that they are not good students when they enter the medical school. Hence there is likely to be a better bond between students and staff in interviewing schools. These three hypotheses are all empirically testable, and it is hoped they will be investigated in future studies.

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### References

- Aronson E, Berkowitz L, editors. *Advances in experimental social psychology*, volume 4. New York: Academic Press, 1969; The theory of cognitive dissonance: A current perspective, pp. 1–34.
- Bradley RA, Terry ME. The rank analysis of incomplete block designs. I. The method of paired comparisons. *Biometrika* 1952; 39: 324–345.
- Committee of Vice-Chancellors and Principals. *University Entrance 1993: The official guide*. London: Association of Commonwealth Universities, 1992.
- Critchlow DE, Fligner MA. Paired comparison, triple comparison, and ranking experiments as generalised linear models, and their implementation on GLIM. *Psychometrika* 1991; 56: 517–533.
- David HA. *The method of paired comparisons*. London: Charles Griffin, 1963.
- Edwards JC, Johnson EK, Molidor JB. The interview in the admission process. *Acad Med* 1990; 65: 167–176.

- Eiser JR. *Social psychology: Attitudes, cognition and social behaviour*. Cambridge: Cambridge University Press, 1986.
- Hewstone M, Antaki C. Hewstone M, Stroebe W, Codol J, Stephenson GM, editors. *Introduction to social psychology*. Oxford: Blackwell, 1988; Attribution theory and social explanations, pp. 111–141.
- Hewstone M. *Causal attribution*. Oxford: Blackwell, 1989.
- McManus IC, Richards P, Winder BC, Sproston KA, Styles V. Medical school applicants from ethnic minorities: identifying if and when they are disadvantaged. *Brit Med J* 1995; 310: 496–500.
- McManus IC, Winder BC, Sproston KA, Styles VA, Richards P. Why do medical school applicants apply to particular schools? *Med Educ* 1993; 27: 116–123.
- Richards P. *Learning medicine* 1991. London: British Medical Association, 1990.