

## Why do medical school applicants apply to particular schools?

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**Summary.** 5427 applicants to British medical schools indicated the importance of each of 22 specific reasons for applying to the five choices they had put on their medical school application. The 24852 applications were aggregated by medical school, and the profile of reasons analysed for each school. Factor analysis showed four clear dimensions, labelled as 'Reputation', 'Personal contact', 'Location' and 'Prospectus'; scores and rank order for each school on each factor are reported. Scrutiny of the pattern of ratings of individual schools suggested that although many of the applicants' perceptions were probably valid, there were some perceptions which appeared inconsistent with other evidence. Cluster analysis showed that in general the London schools clustered together as did the provincial schools of England and Wales, and the Scottish schools; Oxbridge and Belfast were perceived as very separate from the other schools.

**Key words:** students, med/\*psychol; \*choice behavior; \*schools, med; residence characteristics; curriculum

### Introduction

The selection of students by medical schools is preceded by an earlier stage during which applicants select those schools to which they will apply. Although a moderate amount is known about how schools select from those who have applied to them (McManus & Richards 1984a, b,

c, 1986; McManus *et al.* 1989), relatively little is known about why applicants apply to particular schools. Graduates of different schools show clear differences in career preference (Ellin *et al.* 1986) and in their likelihood of taking up a research career (Evered *et al.* 1987); although such differences may reflect different training at the schools, it may also be the result of 'differential application' (McManus 1985), whereby applicants apply to schools which they perceive as most appropriate for their particular needs. The number of applicants to individual schools is known to vary quite widely over periods of half a decade or so, individual schools apparently swinging in and out of fashion (McManus & Richards 1987). Since it is unlikely that schools themselves change so rapidly, the implication is that applicants' perceptions of the desirability of schools is changing. In this paper we describe the perception of United Kingdom medical schools by applicants for admission in October 1991, and we provide a profile of each school's image from the perspective of its applicants.

### Methods

During the autumn and winter of 1990-91 we surveyed applicants to five United Kingdom medical schools: St Mary's Hospital Medical School (SMHMS), the United Medical and Dental Schools of Guy's and St Thomas's (UMDS), and University College and the Middlesex School of Medicine (UCMSM) in London, and the Medical Schools of the Universities of Sheffield and of Newcastle upon Tyne. All applicants who applied for admission

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**Table 1.** Percentages of applicants to each medical school who indicated that a particular feature was important to them in their choice of application. '+', '++' and '+++', indicate that a school is in the top or bottom 30% of schools, and '+++' and '---', that it is in the top or bottom 10% of schools

	Number	Looked around	Open day	Recommended by school	Discussed with staff	Reputation for					Recommended by current student
						Medical research	Sports	Music/theatre	Teaching	Education research	
Cambridge	505	35 +	52 ++	54 ++	66 ++	61 ++	33 ++	32 ++	66 ++	28 ++	49 ++
Oxford	292	44 ++	56 ++	52 ++	66 ++	57 ++	36 ++	31 ++	60 ++	29 ++	43 ++
CXWSM	1065	30 +	22	31	31	21 -	14	7 -	34	12 +	31
KCSMD	691	31 +	23	31	30	39 +	12 -	11 +	42 +	17 +	29
LHMC	838	30 +	24 +	25 -	32 +	23	13	9	34	10	25 -
RFHSM	889	27 +	19	30	31	27	9 --	7 -	31	10	25 -
SBHMC	698	30 +	22	29	24 --	31 +	18 +	13 +	44 +	11	29
SGHMS	978	33 +	29 ++	28	31	19 -	13	7 -	32	11	32 +
SMHMS	1657	25	16	34 +	27 -	35 +	22 +	11 +	40 +	15 +	27 -
UCMSM	2318	22	15 -	31	27 -	27	13	11 +	34	13 +	27 -
UMDS	1034	38 ++	27 ++	33 +	32 +	42 +	14	9	49 ++	17 +	38 +
Birmingham	1002	29 +	24 +	26 -	28	20 -	18 +	11 +	31	9 -	32 +
Bristol	775	26	28 ++	32	32 +	24	14	10	36	9	24 --
Leeds	1296	21	19	28	24 --	21 -	12 -	8	29 -	9 -	25 -
Leicester	756	18 -	13 -	25 -	27 -	19 -	10 --	4 --	28 --	8 -	21 --
Liverpool	972	25	22	27 -	27 -	22	14	10	29 -	8 -	30
Manchester	1158	24	22	26 -	26 -	25	13	17 +	31	10	30
Newcastle	1332	21	11 --	34 +	28	26	13	10	36	10	34 +
Nottingham	1362	21 -	11 --	30	22 --	27	14	8	34	10	32 +
Sheffield	1620	16 --	13 -	32	27 -	23	22 +	9	31	11	29
Southampton	895	24	23	29	28	16 --	13	6 -	33	8 -	28
UWCM	683	25	20	33 +	37 +	20 -	18 +	7 -	30 -	10	36 +
Aberdeen	203	18	9 --	25 -	35 +	19 -	11 -	3	25 --	8 -	28
Belfast	122	53 ++	63	61 ++	49 ++	44 +	18 +	9	40 +	21 ++	69 ++
Dundee	441	11 --	7 --	24 --	30	15 --	11 -	3 --	21 --	10	24 --
Edinburgh	641	24	16	40 +	30	45 ++	15	21 ++	46 +	13 +	31
Glasgow	429	20 -	18	24 --	33 +	28 +	11 -	20 +	30 -	10	29
St Andrews	200	17 --	14 -	33 +	34 +	14 --	14	6 -	34	8 -	37 +

Table 1. Continued

	Attended sixth-form conference	Recommended by graduate	Family connection	Reputation for friendliness	Friends trained there	Been a patient	Location	Close to home	Long way from home	Cost of living	Prospectus	Quality of clinical training
Cambridge	10 +	20 +	5	32 -	22 +	0	40 -	7 -	13	8	57 -	31 -
Oxford	10 +	19 +	5	26 -	19	1	43 -	9 -	13	8	56 -	38
CXWSM	5 -	13 -	4	35	20 +	2	47	23 + +	8 -	5 -	52 -	39
KCSMD	7	15	4	32	19	1	55 + +	23 + +	10 -	7 -	63	48 +
LHMC	7	13 -	5	39	16 -	1	48 +	22 +	10 -	6 -	52 -	38
RFHSM	6 -	15	4	41 +	15 -	1	52 +	22 +	8 -	5 -	62	38
SBHMC	6 -	20 +	6 +	34	16 -	1	53 + +	23 + +	7 -	4 -	63	52 +
SGHMS	6 -	15	3 -	46 + +	19	1	45	22 +	9 -	8	62	39
SMHMS	7	17	4	45 + +	16 -	1	47	19	9 -	5 -	67 +	48 +
UCMSM	8 +	14 -	4	35	17	0	45	20 +	10 -	4 -	59	40
UMDS	6 -	26 + +	7 +	31 -	23 + +	2 +	50 +	23 + +	8 -	4 -	60	60 + +
Birmingham	7	15	3 -	32	18	0	39 -	14	14	29 +	72 + +	43
Bristol	8 +	14 -	2 -	20 -	16 -	0	42 -	9 -	15	9	63	38
Leeds	7	12 -	2 -	33	15 -	1	44 -	12	16 +	38 +	63	41
Leicester	5 -	9 -	2 -	32	13 -	0	43 -	15	14	30 +	66 +	36 -
Liverpool	11 + +	16	4	43 +	18	1	45	14	15	42 + +	66 +	37 -
Manchester	8 +	14 -	3 -	33	19	0	46	17	14	35 +	57 -	39
Newcastle	6 -	20 +	4	47 + +	18	1	48 +	8 -	21 +	42 + +	71 + +	55 + +
Nottingham	16 + +	16	2 -	30 -	15 -	0	47	11	15	26	63	49 +
Sheffield	7	15	2 -	41 +	16 -	0	47	12	13	35 +	71 + +	44
Southampton	6 -	15	2 -	32	14 -	0	48 +	12	16 +	18	64 +	46 +
UWCM	10 +	19 +	5	40 +	21 +	3 +	45	14	16 +	29 +	58	38
Aberdeen	7	14 -	5	36	17	0	36 -	4 -	23 + +	24	53 -	32 -
Belfast	26 + +	45 + +	20 + +	42 +	49 + +	4 +	66 + +	54 + +	5 -	40 + +	52 -	50 +
Dundee	6 -	11 -	4	30 -	16 -	0	32 -	4 -	20 +	27	52 -	31 -
Edinburgh	6 -	23 + +	6 +	27 -	19	0	46	5 -	24 + +	20	62	54 + +
Glasgow	7	17	7 +	41 +	22 +	1	48 +	7 -	20 +	29 +	56 -	38
St Andrews	6 -	22 +	8 +	45 + +	27 + +	0	44 -	3 -	29 + +	27	63	29 -

through the Universities Central Council on Admissions (UCCA) before the closing date of 15 December, and who had a postal address within the European Community, were sent a 16-page questionnaire, along with a pre-paid addressed envelope. Non-respondents were sent reminders and additional copies of the questionnaire after 5 weeks and 9 weeks. All respondents who replied by 31 May 1991 were included in the analysis.

As a part of the questionnaire applicants were asked to indicate which five medical schools they had applied to, and then to indicate for each those of the 22 'features which made [them] choose to apply to particular schools'.

Data were analysed using the SPSS-X program suite (SPSS, 1988).

## Results

A total of 5872 applications were included in the study, of whom 5427 (92.4%) completed and returned their questionnaire. Respondents

described their reasons for applying for a total of 24852 applications to UK medical schools, an average of 4.58 per applicant. Applicants averaged 888 per school (range 122–2138; see Table 1), with more than 400 applications for all schools except Oxford, Aberdeen and Belfast.

Data were aggregated by medical schools. Table 1 shows the percentage of applicants to each school who indicated that each feature was important to them in applying to the particular school. Schools showed large differences on most of the characteristics, and the table indicates those schools which are approximately in the top and bottom 10% and 30% for each feature.

The interrelations between the 22 features were assessed by means of a principal component factor analysis of the 28 × 28 matrix of intercorrelations between schools, followed by Varimax rotation. A scree-slope criterion clearly indicated four orthogonal factors (Table 2), which accounted for 84% of the variance between schools. Factors 1, 2, 3, and 4 can be identified as 'Reputation', 'Personal contact', 'Location' and

**Table 2.** Loadings of the 22 features on the four factors identified by factor analysis. Numbers in parentheses indicate order of items on original questionnaire

	Factor 1: Reputation	Factor 2: Personal contact	Factor 3: Location	Factor 4: Prospectus
Reputation for teaching (18)	0.931	0.059	-0.206	0.150
Reputation for educational research (19)	0.898	0.243	-0.228	-0.102
Reputation for medical research (14)	0.895	0.203	-0.205	0.124
Reputation for music or theatre (17)	0.887	-0.060	-0.078	0.008
Reputation for sports (16)	0.880	0.054	0.048	-0.025
Discussed admission with staff of school (4)	0.820	0.285	0.040	-0.424
Recommended by your school or college (6)	0.762	0.575	-0.037	-0.004
Visited medical school for Open Day (1)	0.703	0.506	-0.288	-0.194
Friends training/trained there (21)	0.177	0.941	-0.026	-0.118
Family connection with medical school (8)	0.152	0.911	-0.090	-0.112
Recommended by doctor who trained there (7)	0.310	0.884	-0.058	0.182
Recommended by student there at present (5)	0.516	0.826	-0.000	-0.052
Attended sixth form conference (2)	0.195	0.803	-0.031	-0.047
Been a patient there (22)	-0.021	0.739	-0.428	-0.037
Reputation for friendliness (20)	-0.373	0.408	0.097	0.116
Long way away from parent home (11)	-0.110	-0.155	0.893	-0.083
Close to parental home (10)	-0.090	0.657	-0.700	0.080
Cost of living (12)	-0.315	0.404	0.694	0.147
Looked around medical school (3)	0.549	0.541	-0.551	-0.010
Geographical location (9)	-0.012	0.644	-0.505	0.406
Quality of clinical training (15)	0.063	0.213	-0.327	0.818
Impressed by prospectus (13)	-0.102	-0.256	0.242	0.795

**Table 3.** Factor scores (mean = 0, SD = 1) of schools on the four factors, and the rank order of each school on each factor compared with other schools

	Factor 1: Reputation	Factor 2: Personal contact	Factor 3: Location	Factor 4: Prospectus
Cambridge	3.25 1	-0.28 16	0.59 9	-1.04 24
Oxford	3.17 2	-0.34 21	-0.03 16	-0.89 23
CXWSM	-0.52 20	-0.18 11	-1.53 28	-1.22 26
KCSMD	0.17 8	-0.31 19	-1.29 24	0.75 9
LHMC	-0.57 22	-0.30 18	-1.31 25	-1.15 25
RFHSM	-0.66 25	-0.29 17	-1.26 23	-0.14 14
SBHMC	0.07 9	-0.31 20	-1.37 26	1.12 4
SGHMS	-0.54 21	-0.08 8	-0.94 22	-0.38 19
SMHMS	0.21 6	-0.37 23	-0.67 19	1.11 5
UCMSM	-0.22 12	-0.55 25	-0.77 21	-0.31 17
UMDS	0.43 4	0.25 7	-1.49 27	1.07 6
Birmingham	-0.04 10	-0.36 22	0.53 10	0.77 8
Bristol	0.18 7	-0.91 28	-0.20 18	-0.37 18
Leeds	-0.59 23	-0.27 15	0.42 11	0.18 12
Leicester	-0.77 27	-0.75 27	0.14 15	-0.02 13
Liverpool	-0.61 24	0.39 5	0.79 8	0.26 11
Manchester	-0.27 15	-0.15 10	0.24 14	-0.28 16
Newcastle	-0.24 13	0.43 4	1.43 2	2.11 1
Nottingham	-0.24 14	-0.12 9	0.37 12	0.90 7
Sheffield	-0.13 11	-0.25 14	0.82 6	1.32 3
Southampton	-0.37 17	-0.51 24	-0.05 17	0.51 10
UWCM	-0.50 19	0.72 2	0.33 13	-0.70 22
Aberdeen	-0.75 26	-0.22 12	1.06 3	-1.66 27
Belfast	0.26 5	4.68 1	0.75 20	-0.26 15
Dundee	-0.86 28	-0.60 26	0.92 5	-1.94 28
Edinburgh	0.98 3	-0.24 13	1.02 4	1.35 2
Glasgow	-0.33 16	0.28 6	0.82 7	-0.49 20
St Andrews	-0.47 18	0.72 3	2.16 1	-0.56 21

'Prospectus'. Factor 1 is dominated by items concerned with the reputation of the school, both academic and non-academic, and is the principal basis of recommendations by schools and colleges. Factor 2 is principally concerned with personal contact with the school, be it by visits, recommendations of students there at the present, having friends or relatives who trained there, or having been a patient there; in so far as personal contact is necessarily determined in part by geographical location, that also loads on factor 2. Factor 3 is principally concerned with the geographical location of the school, both in terms of its closeness or distance from home, and hence its convenience, but also in the attractiveness of its location within the UK, or within

London. Factor 4 contains two apparently disparate items, the quality of the prospectus and the quality of clinical training; since the latter cannot readily be assessed veridically by applicants it is probable that it is assessed indirectly from the prospectus. Factor scores were calculated for each school on each factor, and these are shown in Table 3, along with the rank ordering of each school on each factor.

The similarities between schools were assessed using a cluster analysis, distance coefficients being calculated as Euclidean distances, and hierarchical clustering being by the method of average linkage between groups (Everitt 1974). Figure 1 shows a dendrogram indicating the perceived similarity between schools. There are

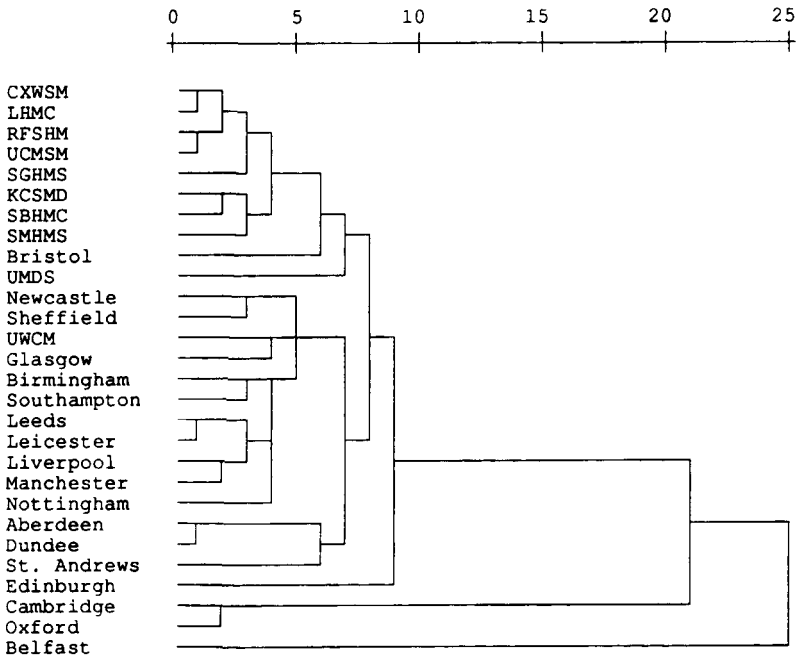


Figure 1. Dendrogram of the results of the cluster analysis.

two large clusters, one containing all of the London schools plus Bristol, and the other containing all of the other provincial schools in England and Wales plus Glasgow; four Scottish schools, Aberdeen, Dundee, St Andrews and Edinburgh, form a third cluster. The two schools comprising Oxbridge form a very distinct cluster, much removed from other schools, as also does Belfast, the only school in Ulster, which clusters very distinctly from all other schools.

**Discussion**

The data of this study clearly show that medical schools are perceived differently by applicants. The quality and the validity of the data are suggested by a number of detailed features. To take a couple at random, applicants are probably correct in rating St Mary's high on friendliness (a similar finding to another study [Wakeford 1984] which asked students themselves about their medical school), and in assessing the cost of living as probably less of a problem at St George's than at other, more centrally located,

London schools. Oxford and Cambridge score highly on many scales, although this is not entirely indiscriminate, Cambridge's low rating on quality of clinical training probably reflecting the relatively recent introduction of its clinical school. In an attempt to assess validity more systematically we may note that, as might be expected, factor 1, 'Reputation', shows a high correlation with the University Grants Committee's ratings (Richards 1989) of the quality of clinical research ( $r = 0.665, P < 0.001$ ) and of basic science research ( $r = 0.543, P = 0.011$ ) in schools; factors 2, 3 and 4 show no significant correlations with either clinical ratings ( $r = -0.195, -0.156, -0.065$ ) or basic science ratings ( $r = -0.316, 0.186, -0.296$ ). However, it should also be noted that the significant correlation with factor 1 is principally due to the inclusion of Oxford and Cambridge; their removal reduces the correlations with factor 1 to non-significant values of 0.193 and 0.147.

In interpreting these results it must be emphasized that the data represent the *perceptions* of applicants, and applicants are often far from fully

conversant with all of the finer details of the distinctions between medical schools. A clear example can be seen in the item 'Education research'. The Universities of Dundee and Southampton both have good reputations for this within the medical education community in the UK, and yet they score poorly on that scale in this study. It must be presumed, in this and similar cases, that the schools in question have not projected those particular strengths, and therefore applicants are not aware of them.

Although our data seem to give generally accurate insights into applicants' perceptions, it should be noted that in its present form, the first in which the questionnaire has been used, there are several ambiguities which should be corrected in subsequent versions. In particular, although we intended the item 'Discussed admission with staff of school' to refer to the medical school, we suspect that in many cases applicants have interpreted it as meaning the school or college they are attending. Similarly 'Geographical location' confounds desirability of location and convenience of location, and 'cost of living' should more explicitly refer to low cost of living. It could also be argued that there are other aspects of schools which could be assessed using this method, and should be included in future studies; possible examples include quality of accommodation, the nature of the course, and the range and number of hospitals and patients available for teaching.

The clear factorial structure, with four orthogonal and interpretable factors, confirms that applicants are assessing the schools to which they apply on a multidimensional schema; and it is possible that with additional items included then further factors might emerge. In ranking schools on these factors we are not intending to produce league tables, but instead we give the ranks as a guide to interpretation by individual schools. They also provide a convenient baseline for assessing change in future years.

Cluster analysis also provides a clear picture, the details of which will be interesting to individual schools. Of general interest is that geography is the principal determinant of the clusters, being seen in the separation of the London schools from other schools in Britain. The two outlying groups are of particular interest. Oxford and Cambridge are a distinct and individual part of

British higher education, and it is not surprising that they are perceived as clearly separate from other schools. That Belfast is also clearly distinct from other schools probably reflects its geographical separation from the mainland of the UK, coupled with it being the only medical school in Ulster and one which attracts strong local loyalty.

In interpreting these data their strength and a possible weakness comes from the fact that they reflect judgements made only by individuals *who have applied to them*. Since it might be thought to be difficult to make a judgement that (1) one has applied to a school and (2) it does not have what might be perceived as desirable features, then the differences to be found in the perceptions of the schools might be less than would be found by studying *all* applicants, irrespective of whether they have applied to the school in question. Nevertheless, in interpreting our results it could also be the case that schools have a particularly strong reputation *only* among those who choose to apply (and perhaps apply for that reason) and that other applicants are unaware of those characteristics and choose not to apply. The extent to which numbers of applicants at schools are related to the characteristics described here is not clear at present, and requires further investigation.

Higher education in Britain is about to enter a more 'consumer-oriented' phase of development, in which medical schools will find it necessary to attract applicants more positively particularly in the face of overall declining numbers of applicants and suggestive evidence of a decline in quality of applicants (McManus & Lockwood 1992). The data provided in this paper will help schools to recognize their own 'institutional profile' as seen through the eyes of applicants.

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