

Medical Education

Audit of admission to medical school: II—Shortlisting and interviews

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Abstract

Analysis of shortlisting of applicants for interview at St Mary's Hospital Medical School showed that factor analysis could reduce the selection criteria to three independent scales—"academic ability," "interests," and "community service"—all of which contributed to the interview decision. Early applicants scored more highly on all three factors but were still at a greater advantage in selection for interview than would have been predicted. The dean's judgment of priority for interview from the UCCA form was found to predict a candidate's chance of acceptance at other medical schools besides St Mary's.

Analysis of interviewing showed high correlations among interviewers in their assessments, although there was evidence of influence by the chairmen. Factor analysis showed three major factors—academic suitability, non-academic suitability, and health—of which non-academic suitability was the major determinant of interview success. Non-academic suitability was related to personality (high extraversion and low psychoticism) and to the choices made on the UCCA form.

The system of admission interviews enabled greater emphasis to be put on broader interests and achievements than if selection had been on the basis of UCCA application form alone.

Shortlisting study

Of the 1361 applicants to St Mary's Hospital Medical School in 1980, 338 (24.8%) were interviewed. Shortlisting is the first hurdle that an applicant must clear and in those schools that do not interview it is the only hurdle, apart from gaining the requisite A level grades.

Methods

Shortlisting was the responsibility of the dean (PR). This is not necessarily thought to be desirable but it has long been the practice at this and several other medical schools for one person to shortlist. We have recently widened the responsibility, primarily to cope with a substantial increase in the number of applications.

For the present study the dean completed a form after reading each UCCA form, with reference to the following, as defined below:

"*Interests*—assessed primarily on their range of interests in this section of the UCCA form.

Contribution to school—(1) as a contributor to non-academic activities. (2) academic contribution.

Achievement—either special achievement in any activity or all round achievement.

Contribution to community—evidence of practical concern for the welfare of others outside the school community.

Head teacher's confidential report—the head teacher's assessment of the applicant's ability and suitability for a training and career in medicine in the light of predictable competition, taken at its face value provided the opinion was supported by convincing evidence.

Potential—dean's assessment of potential based on: (1) details of head's report and applicant's statement of interests, noting especially evidence of enterprise, creativity, application, dedication, stability, staying power, and consideration for others; (2) academic achievement and expected performance taking into account the degree of advantage or disadvantage attributable to home background, type of schooling, and continuity (or otherwise) of schooling."

In addition to the above scales the dean also rated the O levels and A levels of applicants. Each of the eight scales had five values: poor, indifferent, moderately good, very good, and exceptionally good. Two additional items, courtesy interview and unsolicited information, were also explained in advance of the study:

Courtesy interviews—The traditional courtesy of offering an interview to children of graduates or employees of the school was continued if their record was not strong enough to secure an interview but nevertheless suggested that they would have a chance of an offer; a courtesy interview entailed no preferential treatment in consideration for the offer of a place.

Unsolicited information—Information from any source which added detail helpful in the consideration of an application was considered on its merits. Testimonials that the applicant or applicant's family was well connected were of no help. Nominations for interview were not accepted.

Results

Table I shows a clear linear relationship between the shortlisting decisions and the overall likelihood of acceptance in October 1981.

SPECIAL CIRCUMSTANCES

Fourteen individuals were given courtesy interviews; none was subsequently accepted by St Mary's, and their overall success rate was very low. Seven candidates had parents known personally to the dean; their overall success rate was high, although not at St Mary's. Unsolicited information had little effect on the likelihood of interview or acceptance. Eleven candidates were perceived as having educational or social disadvantage; their success rate was no different from that of non-disadvantaged applicants. Eleven candidates were noted as being unusual, generally being very young or having unusual qualifications; they did poorly at St Mary's and generally did not do well. Substantial health problems were volunteered by only three applicants; two were admitted to medical school, but not to St Mary's.

MAJOR CRITERIA

Factor analysis of the eight rating scales (using the PA1 option of the statistical package for the social sciences programs with pair wise deletion of

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TABLE I—Short-listing decision and applicants' final destinations

	No	Actually interviewed (%)	Destination (%)					Overall acceptances for medicine	
			Oxbridge	St Mary's	Other London	Non-London	Non-medical		Not accepted
Definite interview	150	98.0	13.3	29.3	23.3	15.3	1.3	17.3	80.7
Probable interview	215	76.3	26.3	16.7	26.5	12.6	12.6	27.0	60.0
Possible interview	193	4.1	10.5	2.6	26.4	20.2	10.4	38.3	51.3
Probably not interview	68	2.9	0.0	1.5	29.4	8.8	11.8	48.5	39.7
Definitely not interview	694	0.6	0.6	0.1	10.1	6.8	16.3	66.1	17.6
Total	1361	24.8	3.1	6.8	17.4	10.8	12.7	49.2	38.0

missing values and Varimax rotation),² suggested three factors which together accounted for 78.3% of the total variance: academic ability, interests, and community service (table II). A score was calculated for each candidate on each of the three dimensions.

TABLE II—Loadings of the eight judgments made by the dean on each of the three Varimax rotated factors

	Varimax factors		
	I Academic ability	II Interests	III Community service
O levels	0.784	0.193	0.112
A levels	0.902	0.062	0.009
Interests	0.216	0.845	0.132
Contribution to school	0.209	0.877	0.131
Achievement	0.716	0.472	-0.019
Contribution to community	0.087	0.164	0.958
Headteacher's report	0.573	0.481	0.322
Potential	0.712	0.482	0.284
Common variance (%)	45.9	35.8	18.3

Loadings greater than 0.25 are shown in bold.

MULTIVARIATE ANALYSIS

Since clearly the dean made three independent judgments on each UCCA form, and those judgments had different correlations with background factors, a two stage hierarchical multiple regression was used to ask how the judgments were used in making the interview decision, and whether other variables had an additional effect (table III). In stage I just the three judgments were entered and showed that interests and academic ability were of almost equal importance in determining the interview decision (and community service had a lesser but still highly significant independent prediction), the three items together giving a multiple correlation of 0.796. In stage II adding a further 30 background variables produced only a small but significant increase in prediction.

Discussion

This study is essentially an investigation of the psychology of one man's response to the difficult problem of dividing many complex

TABLE III—Hierarchical multiple regression of dean's interview judgment on the dean's factors (stage I) and on other variables (stage II)

Order	Variable	β	p
<i>Stage I</i>			
1	Higher score on factor II (Interests)	0.534	<0.001
2	Higher score on factor I (Academic ability)	0.545	<0.001
3	Higher score on factor III (Community service)	0.252	<0.001
<i>Stage II</i>			
4	Lower mean O level grade obtained	0.100	<0.001
5	Courtesy interview	0.071	<0.001
6	Educational disadvantage	0.069	<0.001
7	Early date of UCCA application	0.078	<0.001
8	Higher number of A levels obtained	0.061	<0.001
9	Smaller number of choices on UCCA form	0.064	<0.001
10	Male applicant	0.043	0.005
11	No medical problem	0.045	0.012
12	Public sector education	0.045	0.013

UK nationals only. Variable descriptions have been modified so that all β values are positive.

application forms into two groups. Two immediate problems of interpretation arise: are the judgments veridical—that is, do assessments of, say, community service truly relate to the candidate's actual community service—and are the judgments typical—that is, are they similar to those made by the hundred or so other people who are reading similar forms in other schools and colleges?

Verification of the validity of judgments is not easy, but the judgment of academic ability relates closely to mean O level grade and particularly to mean A level grade (despite the fact that most applicants had not taken A levels at the time of application).

Whether the dean's judgments are typical of those made by others assessing similar forms is almost impossible to say but it is clear from table I that his judgment of priority for interview accurately predicted the chance of acceptance by other medical schools.

It is important that the date of UCCA application was a significant factor in determining overall selection: not only did early applicants score more highly on each of the three factors (because they were above average applicants) but they were also more likely to obtain interviews than their merits alone would have predicted.

Interview study

In 1980-1 21 out of the 31 British medical schools interviewed most entrants,³ as did most United States medical schools.⁴

Method

PROCEDURE

Four interview sessions were held each week from mid-October to December with a few more early in the New Year. Interviews lasted about 15 minutes and were conducted by a chairman and two interviewers, the latter usually consisting of one non-clinical and one clinical member of staff chosen from a panel of 16 of each. The role of the four chairmen was to give the interviewing board an idea of the overall standard of the day's interviewees relative to previous weeks.

Morning interviews were followed at 13.00 by a tour of the school conducted by students, and afternoon interviews were preceded by the tour, which is seen as an informal opportunity to meet and question students and thus to make a more informed choice of medical school.

Interviews are as informal as possible, and are used to amplify details on the UCCA application form and to see whether applicants have thought for themselves about their intended career and can reason in discussion. Candidates are also invited to ask questions about the course and the school.

THE STUDY

Before discussing the candidate among themselves the chairman and interviewers completed a simple form, which asked them to rate the candidate on each of five scales (health, academic ability, personality, potential contributions to the school, and potential as a doctor), and to make a recommendation in one of four categories, A: definitely accept; B1: take if possible; B2: waiting list; and C: reject. We do not regard the scales on the form as optimal, and in a repeated study would modify them. Having made their individual recommendations, the board members then discussed their joint recommendation with the chairman. In the rare event of being undecided the decision was left to the dean in consultation with the chairman of the board. Each chairman routinely met the dean within a short time of the interviews to review the applications and to elaborate on recommendations.

As described in our previous article,¹ interviewees completed a second series of questionnaires (Q2), in addition to those completed by all applicants (Q1). Half the interviewees completed Q2 before their interview and the other half after their interview.

Results

Interviewers showed good agreements in their ratings (γ statistics⁵ of 0.99, 0.76, 0.78, 0.63, 0.61, and 0.74 respectively for health, academic ability, personality, potential contribution, potential, and recommendation). The two interviewers tended to agree more closely than did either interviewer with the chairman, although the difference was small.

Although the interviewers made independent assessments, a board of interviewers might develop its own "personality," which would affect how interviewers made judgments and would most likely stem from the personality of the chairman. Not only did the recommendations of the chairmen differ significantly: the interviewers' recommendations also differed according to the identity of the chairman and these differences were maintained in the final recommendation. A series of analyses failed to show differences among interviewees according to the chairman's identity.

Factor analysis (as described above) of assessments on the five scales and the recommendation, suggested three factors, academic suitability, non-academic suitability, and health, which accounted for 85% of the variance (table IV). Separate factor analyses for the interviews chaired by each of the

TABLE IV—Factor analysis of the averaged scores of the three interviewers, after Varimax rotation

	Factor		
	I Non-academic suitability	II Academic suitability	III Health
Health	0.074	0.058	0.994
Academic ability	0.210	0.953	0.160
Personality	0.823	0.062	0.189
Potential contribution	0.877	0.079	0.088
Potential	0.770	0.427	-0.017
Recommendation	0.846	0.398	0.053
Common variance (%)	55.3	24.9	19.8

The three factors together explain 84.6% of the total variance.

chairman suggest that the emphasis put on academic ability depends in part on the chairman, the loadings of the final recommendation on academic suitability being 0.221, 0.412, 0.565, and 0.627 for the four chairmen. Different interviewers used academic suitability to differing extents in making recommendations, the loading being 0.471 for those from preclinical departments, 0.300 for those from pathology departments, and 0.288 for those from clinical departments, and medically qualified interviewers putting less weight on academic factors (loading = 0.337) than non-medically qualified interviewers (loading = 0.426).

We also examined the relation of interviewers' assessments to background variables, both those used in the earlier study¹ and the four personality scores derived from the Eysenck personality questionnaire,⁶ the state anxiety score derived from the state-trait anxiety inventory,⁷ and two vari-

TABLE V—Hierarchical multiple regression of the interviewers' first two factors

Order	Variable	β	p
<i>Dependent variable = factor I (Non-academic suitability)</i>			
1	Higher mean O level grade obtained	0.196	<0.001
2	Higher EPQ extraversion score	0.179	0.005
3	Oxbridge application on UCCA form	0.219	0.003
4	Lower EPQ psychoticism score	0.136	0.024
5	No previous UCCA application	0.133	0.035
6	Higher number of London medical schools on UCCA form	0.135	0.027
7	Not a courtesy interview	0.113	0.047
<i>Dependent variable = factor II (Academic suitability)</i>			
1	Higher mean O level grade obtained	0.413	<0.001
2	Not a courtesy interview	0.294	<0.001
3	No unsolicited information with UCCA form	0.179	<0.001
4	Higher mean A level grade obtained	0.257	<0.001
5	Mature applicant	0.142	0.019
6	No previous application to UCCA	0.137	0.004
7	Biology A level taken	0.090	0.046

UK nationals only. Variable descriptions have been modified so that all β values are positive. EPQ = Eysenck personality quotient.

ables indicating whether a candidate completed Q2 before or after interview, and the interaction of that latter variable with state anxiety.

A hierarchical multiple regression, in which the interviewers' assessments were related to all of the background variables, was carried out, at each step that variable being chosen which provided the best additional prediction of the dependent variable over and above those already in the analysis (table V). High scorers on factor I (non-academic suitability) were extraverts with low psychoticism scores, high mean O level grades, applications to Oxbridge and to a high proportion of London medical schools, without previous applications to UCCA, who were not having courtesy interviews. High scorers on factor II (academic suitability) had high O and A level grades, had biology A level, and were mature applicants not having a courtesy interview, did not have unsolicited information with the UCCA form, and had not previously applied to UCCA.

Given that the interviewers were making three major separate assessments, we investigated whether other background variables also entered into the recommendation. A two stage multiple regression of the board's recommendation showed that non-academic suitability was the major determinant of success, that academic suitability was of lesser importance, and that health (which was almost invariably good) was of no significant effect. The addition of all the remaining background variables in stage II did not result in a significant improvement in fit, and we may conclude that the interviewers' recommendation was based entirely on the individual components of their assessment.

ENTRANTS TO INTERVIEWING AND NON-INTERVIEWING SCHOOLS

Not all medical schools interview most of their entrants. A crucial question therefore in assessing the role of the interview in student selection is whether entrants to interviewing schools differ from those entering non-interviewing schools. To attempt to answer this question we have considered all applicants in our survey who entered non-London, non-Oxbridge medical schools in England and Wales, dividing them into those going to interviewing schools (n=83) and those going to non-interviewing schools (n=28).

Despite the small sample size, a hierarchical discriminant analysis distinguished entrants to the two types of school, on the basis of all of the background variables used in the previous study¹ and all of the variables extracted from the dean's assessment of the UCCA form—a total of 33 variables. The criterion for entry into the discriminant function was a significant improvement ($p < 0.05$) in Rao's V. Four variables provided a significant discrimination; entrants to non-interviewing schools scored significantly lower on the dean's assessment of interests ($p = 0.006$) and significantly higher on the dean's assessment of academic ability ($p = 0.002$) and were more likely to have unsolicited correspondence with their UCCA application forms ($p = 0.009$) and to come from the north of Britain ($p = 0.009$). Unfortunately, insufficient St Mary's interviewees were admitted to these medical schools to allow useful comparison of the contents of Q2.

Conclusions

By giving greater weight to non-academic factors the system of admission interviews enables greater emphasis to be put on broader interests and abilities than would happen if selection were made simply on the basis of the UCCA form alone. Entrants to non-interviewing schools differed from entrants to interviewing schools by having better assessments of academic ability but lower ratings of interests.

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