

## Personality assessment of future doctors: discussion paper

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Considerations of personality have now come to assume a major place in the training of doctors. The concern with personality in the context of medical education is of course an extremely direct and practical matter. It is given particular prominence in the Programme and Strategy for World Action in Medical Education, which the World Federation for Medical Education is undertaking. The programme is a worldwide assessment of all stages in the training of doctors, to result in the compilation of major recommendations for making medical education more congruent with the needs of contemporary societies and with the health goals of communities. The aim is to achieve adoption of an internationally agreed approach in medical education, subscribed to by institutions responsible for the training of medical doctors, and the framing of an influential and generally accepted policy about the tasks and responsibilities for which future doctors must be trained.

A foremost component in the programme is the planning and conducting of a World Conference to take place in Edinburgh on 8–12 August 1988. Prior to this, National Conferences will be held in all countries, followed during 1987 by Regional Conferences in Africa, the Americas, Europe, the Middle East, South-East Asia and the Western Pacific.

The National Conferences will be asked to address six themes, set out in preparatory papers compiled by a Planning Commission<sup>1</sup>: (1) educational priorities for medical schools; (2) educational strategies for medical schools; (3) supporting resources needed for the education of doctors; (4) admissions – numbers entering and admission procedures (including medical manpower); (5) educational linkages/continuities between basic, postgraduate and continuing medical education; and (6) integration of medical education with the health service system.

In all the thematic papers, questions are framed which are to be addressed by the National Conferences, and the questions relevant to considerations of personality in medical education in connection with Theme 4 include the following:

- 4.1 Should medical school admission policies in a country reflect national (or regional) needs for doctors?
- 4.2 Is open admission (in contrast to entry by selection, or 'numerus clausus') still a reasonable practice?
- 4.3 Are academic performance data still appropriate as the sole, or the major, criterion for selection or retention of medical students?
- 4.4 If additional criteria should be employed, which are the most important?

Answers to these questions are of pressing importance in dealing with the serious problems in training

doctors and improving health care services, to which excessive medical school intake and overproduction of doctors contribute considerably.

### Personality

For purposes of this discussion, personality will be defined as an inexact term for the sum total of a person's actions and reactions, characteristic of the person's behaviour, differentiating one individual from another. Traditionally three separate components of mind, as an aspect of personality, are differentiated: (1) cognition, the function of thinking; (2) emotion, the function of feeling; and (3) conation, the function of drive or motivation.

### Intellectual ability

Most medical students, and hence doctors, enter the medical profession on grounds of intellectual ability, as expressed in school-leaving examination results and academic performance data. In countries with *open entry*, any school-leaver with specified examination passes has the right to study medicine. That has led to very serious social consequences, the disastrous overproduction of doctors worldwide, so that Italy has 30 000, Spain 20 000 and Holland 4000 unemployed doctors, to cite some countries only. Mexico has a vigorous National Union of Unemployed Physicians, with a membership exceeding 50 000. A single medical school in Europe – Naples – admits over 7000 entrants each year.

Countries which do not permit open entry, and instead practice *selection*, do so – again – on the basis of school-leaving examination results. Adoption of school examination achievement is the simplest system of selection for entry to medical school in operation, based on the intellectual component of personality (the cognitive aspect). All applicants to medical schools are ranked according to their scores in high school examinations, and medical school vacancies are filled according to this ranking, preference given to the best examination results. In many countries, specified subjects contribute most to the aggregate score (e.g. physics, chemistry or mathematics), or applicants are required to have taken specified subjects during schooling.

There is most widespread and remarkable endorsement by policy-makers, medical educators and the public of this exclusive attention to intellectual attributes, as indicated by school-leaving examination results. A special advantage is that it is easy to administer. Another claim in its favour is the notion that it is fair, in that the entry criterion is regarded as clearly established and known to everybody, parents and young people, for whom medical training is of profound concern. The top 3% of school-leavers (if

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they have the proper subjects) know they can get accepted for medical school if they apply: they may also need to meet some additional requirements to be considered subsequently.

However, the popular wisdom about fairness of entry of school-leaving examination marks is mistaken. Students from private schools disproportionately often are accepted by medical schools, and a smaller proportion from the public schools. A Canadian investigation<sup>2</sup> comments that applicants are remarkably homogeneous for being male, single, residing in urban areas, and having parents with high social status.

Another basis for supporting intellectual attainments as the sole or main personality attribute for entry to medicine is unawareness or disregard of the importance of the other aspects of personality in medical school performance, such as: interests, values, motivation, interpersonal skills and concern with people's problems. Policy makers are dogmatically prejudiced that performance in medical school depends mainly on intellectual attributes especially in science subjects; that other personal qualities cannot be objectively assessed; and that personality has no predictive value for later clinical competence. In the face of this firm prejudice it has now to be affirmed that high school scores do not reflect all the intellectual attributes, let alone the other personality attributes, essential in medical students.

Experts in measurement have not succeeded in conveying to medical teachers that while school-leaving examination results do correlate modestly with examination performance in preclinical subjects at medical school, this correlation falls sharply in the clinical years. Moreover, students who do poorly in the preclinical years may improve in performance in the clinical phase. It is proven that the predictive value of school-leaving examination results diminishes as students progress through medical school: 'it [high school aggregate] cannot be said to provide a really good guide to first year performance. It provides an even poorer guide to performance in the second year'<sup>3</sup>.

There are also more technical reservations to this widespread reliance on school-leaving academic performance. Inferences drawn from correlation coefficients may be misleading owing to restriction in range. Only the highest scorers having been selected, a reduction in variance lowers the correlation between high school scores and medical school performance. A 'ceiling problem' is encountered, in that a variable which possesses good predictive value in the middle ranges of its distribution loses this sensitivity in its upper portion<sup>4</sup>.

Not only does school-leaving academic achievement need to be reassessed, but the entire current emphasis on medical school examination results needs reconsideration. Conventional medical school examinations, used as criteria of achievement, are often suspect. They are not competency-based. That is one explanation for the fact that medical school academic achievement is unrelated to professional attainment in later professional life<sup>5</sup>.

#### **The Medical College Admissions Test (MCAT)**

A major consequence of the recognition that school-leaving examination results were inadequate as the criterion for entry to medical school was to develop a

screening test, devised not for the whole school-leaving population but specifically for applicants to medical school.

The old MCAT was designed to predict and exclude from entry those applicants who would fail basic science courses. Because correlations proved to be low between old MCAT scores and performance in medical school in the first two years, the new MCAT was constructed in 1977. Its subjects measure reading, quantitative skills, biology, chemistry, physics and scientific problem-solving ability. The evidence is now clear that the new MCAT does not predict grades in non-science courses and does not predict performance in clinical subjects. The recent and most authoritative publication of the Association of American Medical Colleges, the GPEP Report<sup>6</sup>, expresses the very general dissatisfaction with the instrument by which future doctors in the US enter medicine, despite its extensive restructuring. Intellect, academic achievement and scientific background are important, but are not exclusively useful as a basis for judging who is suitable to enter medicine.

#### **Augmenting intellectual ability**

There is now much experimental evidence in favour of a multifactorial explanation of performance in medical school. To summarize the evidence, intellectual ability accounts for about 35% of the variance, and addition of personality and motivation measures accounts for 75% of the variance. The present task is to establish how the non-intellectual attributes of medical students should be measured and monitored.

#### *The interview*

The interview is the most widely used method for assessing applicants. It is a popular method, valued by medical teachers because they have faith in their own judgment. Both interviewers and applicants clearly get satisfaction from interviews. They are good for public relations, and convey that concentrated individual attention is given to applicants.

However, the reliability of interviews has not been impressive. (The contrary has been reported from Newcastle, NSW, where an important admission experiment is in progress.) Agreement among interviewers after an applicant has been assessed is reduced by variation in content, different interviewers exploring differing attributes of the same applicant. Use of structured interviews clearly would elicit more uniform content.

The predictive validity of admission interviews has been disappointing: low and haphazard correlations have been found between interview data at the time of admission and different outcome measures such as clinical performance in medical schools. Until recently, the view was held that using interviews for selection does not improve prediction, and that much data attained from interviews can be obtained by other means such as biographical questionnaires.

More recently, the interview is being rehabilitated. It is a firmly ensconced part of the admission procedure at McMaster, Hamilton; at the Negev; and at Newcastle, NSW. A national survey in the United States of postgraduate residency programme directors found, as earlier studies did also, that the interview was the most important basis for selection<sup>7</sup>.

### *Letters of recommendation*

Letters of recommendation are very widely used. Those from head teachers form part of the UCCA form completed for all intending applicants to universities in the UK. Letters of recommendation also play a great part in later medical training and practice, because testimonials and referees' reports feature in all applications for posts or for funding of research.

Letters of recommendation have not been investigated as intensively as interviews. They have been found to be biased, too flattering to their subjects, and not good predictors of performance. Their reliability can be improved by clear specification of the information sought, but as customarily used their value is doubtful.

### *Biographical data*

Biographical data are often requested, as on UCCA forms in the UK, but their full potential for selection and prediction has not been utilized sufficiently. Some questions asked in a biographical inventory have been shown to relate to particular outcomes. The reliability of answers obtained in biographical inventories has been shown to be stable on separate occasions<sup>8</sup>. Validity has been less intensively investigated.

At the Negev in Israel the relationship of age and life experience to clinical performance has been investigated<sup>9</sup>. The oldest, most experienced group of entrants did no better than the youngest, least experienced group. But the middle group, aged 21 or 24 on entry, who completed their military training as officers and majored in science at high school, gained the highest clinical ratings and grades in medical school. The conclusion was that an interest/motivation factor was responsible for this superior clinical performance. This is the attribute which the Negev researchers advocate should be systematically identified in interviews, letters of recommendations, and from biographical data.

Further research can be expected to be fruitful. Already biographical inventories have been shown to contribute to the prediction of specialty choice and subsequent practice location. They have yet to be used properly in medical school admission procedures.

### *Interest inventories, value scales and personality tests*

Interest inventories, such as the Strong Vocational Interest Blank (SVIB), personality tests, and studies of values have been shown to contribute significantly to such outcomes as clinical performance ability and to career choice. Personality attributes found in different studies to correlate with superior clinical ratings include: a need to achieve, dominance, tolerance, sociability-extroversion, and benevolence.

### **Attitudes**

Attention to attitudes has also been fruitful in medical education research. 'Attitude' usually refers to feelings, moods, ideas and opinions which predispose the individual to behaviour. Attitudes may be considered true psychosocial variables in that their development, maintenance, and change is dependent on both psychological and social forces. Attitudes are modifiable, in other words. An attitude has content (e.g. 'alcoholics are wicked', 'mental illness is incurable'); it has direction, either positive or negative; and it has intensity, being weak or strong.

Those attitudes which have been most studied are: cynicism; dogmatism and authoritarianism; liberal attitudes; and responses to patients (emotional illness, suicidal behaviour, terminal illness, alcoholism, chronic illness, and geriatrics).

Leadership quality has also been investigated, with two styles being differentiated – bureaucratic and egalitarian. Self-ratings by doctors of their own leadership style have been compared with ratings of the doctors' effectiveness made by nurses who worked with them<sup>10</sup>.

Personality measures have been found to be related to medical career choice, to attitudes to medical practice, and to income earned – all assessed 20 years after graduation. Academic achievement does not predict these outcomes.

While many studies demonstrate the value of personality tests mainly in the prediction of clinical competence, the magnitude of these relationships is generally not sufficiently high for individuals, only for groups. Therefore personality test scores need to be combined with other methods of assessment to obtain a more reliable measure of those personality traits which make a difference in clinical performance ratings.

### **Clinical performance**

Performance in the latter phase of medical school training, as emphasized earlier, is not predicted by cognitive ability as measured at entry by academic achievement. Three components have been differentiated in clinical potential: skill with patients; ability actually to apply knowledge appropriately in the clinical setting; and competence. These constituents of clinical potential are related to a series of personality attributes, measured by a range of methods and tests. These attributes include a sense of well being, responsibility, self-control, tolerance, achievement, nurturance, affiliation, and deference.

In the investigation and prediction of clinical ability, tests of personality and measures of values and of attitudes show much promise. Clinical criterion measures, however, also need to be refined and better developed. Criterion measures of clinical performance have included ratings carried out by teachers and clinical grades achieved. Ratings are often unreliable and have limited validity. Grades are determined to a large extent by the ability to memorize facts, and clinical examinations are usually unacceptable as measuring instruments. Their validity is suspect: they are not competency-based. The World Federation for Medical Education at Ottawa in 1985 reviewed new developments in the 'Assessment of Clinical Competence', and considerable advances are being made<sup>11</sup>.

### **Conclusion**

What now must be undertaken, therefore, is exactly the requirement defined for itself by the AAMC Task Force which scrapped the old and developed the new – sadly still unsatisfactory – MCAT: that is, to develop and implement methods to assess in applicants the relevant personal characteristics needed in doctors, which determine ability for clinical application of medical knowledge.

The challenge before medical teachers and medical education research is that despite the low acceptability of personality tests and investigations of

attitudes and values, they have been shown to forecast how students are likely to perform during the clinical years (which measures of intellectual ability do not). The task is now to determine the best combination of personality tests and interest and attitude inventories for the investigation of professional competence, at medical school and in later professional life.

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