Editorials

Selection methods in medicine: a case for replacement surgery?

With myopic faith the medical profession persists in using systems of selection at all levels that have for more than 70 years revealed no signs of reaching more than a minimum level of predictive validity. Several pleas have appeared regularly for the use of more scientific methods. Three major publications during the past ten years have demonstrated the validity of psychological assessment, in particular using a multi-method approach. The NHS, however, blessed with a sense of omniscient divinity, continues to depend on application forms, references and large, untrained, and consequently fairly incompetent committees. Over the past 10 years the authors have been able to validate a multi-method selection procedure for junior anaesthetists, to apply a personality questionnaire to 129 medical students and follow-up their performance and behaviour, to collect personality data on 150 senior registrars in all disciplines, and on some 275 trainees and consultants in anaesthesia. The findings from the latter cast serious doubt on the effectiveness of current selection policies.

Medical schools have for a long time been able to attract above five applicants for every place available, although demographic changes may alter this dramatically. The prime determinant for entry is a level performance, a minimum of 2 Bs and an A being usually required. Some schools interview candidates, but the lack of a specification and lack of trained interviewers make this more an expensive public relations exercise than a serious selection method. A literature search over the past decade, has unearthed no UK validation studies of medical student selection, despite several from other countries.

In 1988 we invited 129 final year students (some of whom had been interviewed) to undergo a personality evaluation using Cattell’s 16PF questionnaire and this year we examined their overall performance during their undergraduate training and during their house officer posts. The group contained 66 males and 63 females - 92% of those taking their final examinations. The mean personality profile conformed to the mean for British undergraduates on 11 of Cattell’s 16 personality factors. The remaining factors revealed that they were less intelligent, less conscientious, more insecure, less stable and more tense. Just over 50% (66) demonstrated some degree of psychological disability. The most prevalent traits were neuroticism and anxiety. Certain combinations of factors revealed below average interpersonal contact capacity, above average extraversion and low levels of creativity.

Forty-two (33%) performed well, having more than satisfactory results; 33 (25%) performed satisfactorily and 54 (42%) performed unsatisfactorily. Sixty-five per cent of the latter group had resits and 20% failed finals or were deferred. Of the best and worst groups, 31% of those who did particularly well and 64% of those who did poorly had psychological disabilities. This was a statistically significant difference ($\chi^2$ test, $P<0.02$) indicating the negative effects of disabling characteristics. A first-year group, who had all had a pre-selection interview, revealed an almost identical personality profile; a slightly higher percentage showed signs of psychological ill health.

These findings are far from encouraging. The implication is that at least one in three of our newly qualified graduates has serious psychological disabilities, and will carry these into medical practice. Equally disturbing was the evidence of inadequate application of ability. The correlation coefficient between ability and academic performance was no better than 0.2, due not only to personality problems but lack of drive and motivation.

What happens to these graduates later? The data from the personality profiles of 150 senior registrars in all specialties provide suggestive evidence of similarities and differences. Perhaps the most interesting statistic is that the senior registrars contained much the same percentage (32%) of neurotic and anxious individuals as the ‘successful’ student group. The figures for different specialties ranged from 60% for general medicine to 12% for anaesthetists. The mean profiles revealed that the brightest tended to be anaesthetists, histopathologists, pathologists, haematologists and radiologists and the least bright were psychiatrists. The more introverted were the radiologists and histopathologists and pathologists; surgeons were markedly more dominant and aggressive than any other group and more shrewd and worldly; the most imaginative and sensitive were the psychiatrists; the most toughminded and practical were the anesthetists. The surgeons revealed markedly better interpersonal skills than the remainder whilst radiologists and pathologists scored lowest.

These generalizations accord pretty well with common perceptions about specialties. The selection system clearly fails to identify deviances early enough either to give help or to guide career choice. Whether the individuals concerned go into less risky specialties or not, it seems reasonable to suggest that they can be a danger to themselves and to their patients. They have less resistance to strains and stresses and are more likely to make mistakes and be difficult to work with. People can, if sufficiently insightful, control their less healthy tendencies; equally they can deteriorate and are more subject to finding ways of alleviating tension, anxiety and lack of confidence which will eventually be destructive. Data on abuse of drugs and alcohol, and suicide rates of doctors support this apparent tendency.

We have more data on anaesthetists who, throughout their professional lives, deal not only with predictable emergencies, but also unexpected situations in which a rapid and appropriate response is vital to a successful clinical outcome. Not every human being is equally able to stay calm and controlled and behave appropriately in an emergency. When other people’s lives are at stake the public expect the relevant authorities to...
ensure that those entrusted with the responsibility of functioning well in a crisis are as competent as can reasonably be ensured. Pilots are the obvious role model, but ships' captains and even bus and train drivers are other examples of occupations where one man's response in a crisis affects the chance of survival of others.

Various studies have used personality measures such as Eysenck's Introversion/Extroversion scale and these have shown that both neurotic introverts and neurotic extroverts have a statistically higher probability of having an accident than stable introverts and extroverts, albeit of different kinds. This has been observed in such disparate groups as RAF pilots and South African bus drivers. The introverts tend to have accidents in which they 'freeze' or react inappropriately when faced with a crisis, whereas the extroverts tend to have accidents because they take unrealistic risks. One must conclude that the typical personality of a group which needs to have a low accident rate ought to differ from that of the general population, whether achieved deliberately by selection or whether achieved by self-selection and deselection. Our studies confirm this for anaesthetists, insofar as the average personality profile of anaesthetists is different at least from University graduates in general and also from general practitioners.

Such generalizations are based on averages and the sample of anaesthetists on which they are based contained individuals who presented a quite different picture. This could mean that a variety of personalities, as assessed by questionnaire, are equally effective in this specialty. Evidence against this hypothesis, however, was provided in an initial study carried out in Cardiff in which 44 members of the anaesthetic department of all grades, but mostly trainees, completed Cattell's 16 PF questionnaire. Two experienced consultants independently rated all 44 as satisfactory or unsatisfactory. The independent ratings of these two consultants closely corresponded, and they identified 16 unsatisfactory individuals.

The questionnaire profiles were sorted independently on an arbitrary basis of scores above or below fairly extreme values on four of the sixteen factors which other work had indicated as associated with an unstable personality. This identified 12 as unstable, all of whom were contained in the unsatisfactory 16 pin-pointed by the two consultants. This degree of concordance was highly significant and supports the hypothesis that personality, as assessed from the Cattell questionnaire, correlates well with professional assessments of suitability for anaesthetic practice. As a result of this work a profile of what characteristics seemed to make a satisfied and successful anaesthetist was developed.

Selection by questionnaire is, by itself, not a satisfactory procedure. Such questionnaires can, however, be useful indicators to help a properly structured interview. Unfortunately, structuring is the last thing that takes place in an NHS interview. If one has to sit on numerous selection committees one soon comes across doctors who are not only unbelievably bad at interviewing but totally unaware of how bad they are. Some are naturally better than others, but everyone can improve with training. When a 'panel' is used, it is also absolutely essential that the members, however personally skilled, should be working as a team. This means that they have to work together on several occasions and analyse what they are doing and how well they are succeeding.

For the seven years 1980-1987 all appointments as SHO or registrar in Anaesthetics in Cardiff were based on a personality questionnaire, combined with an interview by two consultants who had had some special training. A psychologist was present to interpret the data and advise the interviewers but not to take part in the decisions. Follow-up has shown that there has been a significant fall in the proportion giving up the specialty compared with previous years. Furthermore, those selected in conformity with the indicative profile have progressed better than those selected against it.

To achieve this improvement it was necessary to persuade the Health Authority to allow no standard selection procedure for these appointments. This was possible because there were no statutory regulations to prevent it. This possibility is, however, about to be ended. The draft regulations for appointments to a career grade registrar post require a composition of the committees which will have the certain effect of enforcing all the worst features of the NHS appointments procedure. It will bring together people who will never have the chance to work together as a team. It specifies a minimum of five persons and specifies a lay chairman, the postgraduate dean or his nominee, a nominee of the relevant College, a nominee from the regional University and two consultants. Will the lay chairman, Postgraduate Dean or his nominee have any idea of the possibility that different specialties might require different psychological attributes? How can such a random medley hope to function as a team, even if they wished?

Entry to the career registrar grade is going to be the key point at which the future composition of any specialty is going to be determined. To do the job properly in the face of this official obstructionism will require the employment of a parallel and unofficial selection system such as has been in use with varying degrees of sophistication for consultant selection over the years. What is needed is conscious appreciation of what needs doing, and why.

Bad selection is not only a waste of time and money, but in the field of anaesthesia it sows the seeds of future tragedy which may be a disaster for a patient and very expensive for the medical community. Organizations which have to meet the cost of their mistakes, take the subject of selection very seriously. Now that 'value for money' has become a key criterion in the NHS perhaps the profession can be persuaded to replace hunch and intuition with scientifically proven methods.

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The homeopathic conundrum

The so-called Benveniste affair left neither homeopaths nor the editor of Nature unscathed. In many ways Benveniste and his co-researchers have benefited by improving and developing their technique and we can, I believe, expect further publications from this group. The editor of Nature, however, has probably had his scientific reputation permanently tarnished by the bizarre way in which he directed Nature to publish and then destroy (with the aid of a magician?) a paper published in his journal.

Perhaps it might be wise to now draw breath in an attempt to take the politics and emotions out of the homeopathic debate so that we can begin to evaluate some of the more recent research. It is quite clear that the underlying mechanism of homeopathy is poorly understood and difficult to investigate. However, a number of excellent clinical trials have been published over the last few years, and these are worthy of consideration as they raise important issues.

The paper by Taylor Reilly et al. is a carefully constructed study which analyses the effect of a homeopathic potency of pollen, versus placebo, in hay fever. The study is entitled 'Is homeopathy a placebo response?'. Its aim is to use a very simple homeopathic approach to the management and control of hay fever. Adequate numbers of patients were entered and both the statistics and study model were very carefully conceived and effect. The study is unequivocal in its conclusion; it demonstrates that homeopathy is having an effect greater than that of a placebo. The homeopathic medications used in this study were so dilute that no molecule of medication could possibly have been present in the real treatment given to the patient. While the English may debate the validity of French studies on animal and plant models used to validate and support homeopathy, this study is both English and conducted in a carefully controlled situation. It raises the first, and perhaps most important, question that conventional medicine must address: is homeopathy a placebo or are Taylor Reilly’s results valid?

A similar question has been posed by Ferley et al. Ferley’s study was carried out in France and attempted to evaluate the real clinical effects of France’s best selling common cold remedy, the homeopathic preparation oscillococcinum. Patients were entered on the basis of clinical signs and symptoms of ‘flu’; unfortunately no immunological tests were used. Approximately 480 patients were entered and randomly allocated to those receiving placebo or homeopathic medication. Subsequently the recovery rates within the first 48 h were assessed, comparing these two blindly-treated groups. The homeopathic treatment produced a significant improvement in recovery compared with the placebo. This again suggests that not only can homeopaths launch large, properly constructed studies, but that these studies appear to indicate that homeopathic preparations, which have no material medicine present, have greater than a placebo effect.

The third study, published by Fisher et al., evaluated the effect of homeopathic preparations on primary fibromyalgia. Similarly, this study suggested that homeopathic preparations were having a significant effect on the illness. However, the study model is of particular interest here. Patients were initially selected if they had an agreed conventional diagnosis of primary fibromyalgia and then a further selection process occurred where a homeopathic diagnosis was made. The study was set up to evaluate the effectiveness of a single homeopathic remedy, so the patient not only had to fulfil the criteria of a conventional diagnosis but also that of a homeopathic diagnosis. Consequently both conventional and homeopathic diagnostic criterion were fulfilled for each patient. The cry that many homeopaths have made over the years is that you cannot effect clinical