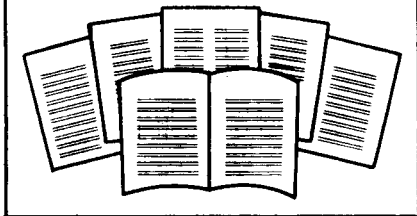


JOURNAL CLUB



Dr I. C. McManus, PH.D. MB, CH.B., Lecturer in Psychology as Applied to Medicine, Department of Psychology, Bedford College, University of London, and Department of Psychiatry, St Mary's Hospital Medical School, London, has selected six articles which he thought might be of interest to readers of Medical Teacher. His personal comments appear at the end of each review.

Thirty Years On

'Thirty years on: examination performance and career success of the 1950-1 intake of Cambridge medical students'

Wakeford, R. and Roberts, S.

British Medical Journal 1983; **286**: 1796-1798.

In the academic year 1950-1, 222 undergraduates matriculated in medicine at the University of Cambridge, and later took the Tripos examination (the equivalent of preclinical examinations), for which grades were awarded. One hundred and eighty-eight students were subsequently awarded a Cambridge medical degree, and these have been followed up, almost 30 years later, by consulting the *Medical register* and *Medical directory*, some 116 graduates being located. Measures of career success were in terms of higher medical degrees taken (for example, MD), specialist qualifications (for example, MRCP), publications (as reported in the *Medical directory*), award of FRCP (or equivalent), and the holding of a prestigious appointment (for example, hospital consultant or university senior lecturer). In addition, success in clinical examinations was recorded according to whether or not any of the examinations had required resitting. Tripos class (I, Ii, Iii, III) showed a correlation with success at clinical examinations (although 8 per cent of first-class graduates failed some clinical exams, and 58 per cent of

third-class graduates passed all their clinical exams at first sitting). Preclinical grades showed small but significant correlations with most of the measures of success, and in the non-significant cases, trends were in the expected direction. Similarly, clinical examination results showed modest correlations with indices of success. In their discussion the authors stress the "general positive but quite tenuous relation between performance in undergraduate student examinations and subsequent career success", and conclude that "examination results must not be seen as reliable predictors of potential, but as inadequate measures of past achievement".

Comment

This is a useful study, and undoubtedly there should be many more of this type. The major problem is in the assessment of 'success': do any of the criteria really indicate 'a good doctor', and would the patients of these doctors necessarily agree with the classification. The interpretation of the results is also difficult, particularly since some of the non-significant results would have been significant if a test of linear trend rather than an insensitive global test had been applied. Finally, should we be disappointed that the correlations are so low, pleased that their low value means that some apparently academically excellent candidates have gone into low-prestige careers, or merely suspicious that the correlations are self-fulfilling, 'good' degrees meaning that 'good' candidates are ones who are selected for the 'good' jobs?

HUMAN Simulation

'HUMAN: A comprehensive physiological model'

Coleman, T. G. and Randall, J. E.

The Physiology Teacher 1983; **26**: 15-21.

The authors suggest that whilst the concept of homeostasis is central to the understanding of physiology, the term rarely reflects the degree of complexity of the interactions involved in the process, and that is realized by most physiologists only after years of experience. Teaching the concept to undergraduates is particularly difficult, and whilst animal experiments should in theory help to teach the idea, in practice the restrictions of class-practicals, in terms of their inevitable emphasis upon surgical techniques, and the limitation on the number of variables that can be measured simultaneously,

mean that students rarely actually understand as much as they should. These practical constraints can be overcome by using microcomputers to simulate physiological processes, and their interactions, in as much detail as is required, or at a speed that an undergraduate can assimilate.

HUMAN is a comprehensive model which allows study of over 150 physiological variables, from the cardiovascular, pulmonary, renal and endocrine systems, as well as temperature control and metabolic balance. Each variable can be displayed at a predetermined time interval. Systems interact, for example, basal metabolic rate influences heat production which influences sweating (and hence sodium and water balance) and the cardiovascular system, via total peripheral resistance, and this is influenced by thyroid and sympathetic activity. A series of 20 'experiments' allows the student to investigate the effects of exercise or haemorrhage, and individual organ systems can be modified to simulate pathology, such as myocardial infarction, renal artery stenosis, or primary aldosteronism. In addition, a number of drugs such as digitalis, diuretics and noradrenaline can be administered.

Comment

It is difficult to assess a computer program (and particularly a teaching program) from a verbal description, but if this program is as good as its description implies, then it could be very useful indeed in medical education. I suspect that three hours of a student's time would be better spent in manipulating the cardiovascular system of HUMAN rather than that of a pithed frog. Finally, most important of all, the program is cheap (available at cost price) and runs on readily available microcomputers (Apple-II, with 64K RAM, a Z-80 interface card, and CP/M-80), as well as on mainframes running FORTRAN.

One Hundred Years Ago

'Medical education' (Anonymous editorial)

Medical Times and Gazette 1883; **2**: 263-265.

"Every year, as October comes round, the thoughts of a large proportion of the profession are turned towards the subject of medical education . . ." Much of this editorial, published almost exactly a century ago, could well have been published today, with equal force. "Year by year a feeling of uneasiness spreads and

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deepens . . . as the number of subjects increases of which medical students have to show a competent knowledge, and as the amount of acquaintance with each subject which is considered as competent knowledge comes to be measured by a higher standard . . . We do not blame the examiners for this . . . they give effect to the general feeling . . . that the continued advance of the general stock of knowledge . . . shall be reflected . . . in the knowledge from each individual who is licensed to treat the sick . . .". Mr Hutchinson (whose eponymous syphilitic teeth are today his greatest memorial), suggested that the main remedies were, "an extension of the period of study, a well-considered limitation of its subjects, and lastly, a careful development of its methods"—views with which few educationalists would disagree today. The editorial also discusses the problem of compulsory attendance at lectures.

Comment

This editorial is intriguing in that so many of the problems still exist today (a rare exception being the problem of personation in examinations). It is well worth study by everyone interested in modern medical education, and is an excellent source of quotations.

The Examiner's Meeting

'Arrow's theorem and examination assessment'

Vassiloglou, M. and French, S.

British Journal of Mathematical and Statistical Psychology 1982; **35**: 183-192.

Examinations usually contain a number of separate papers, and a pass in the examination overall is dependent upon an adequate performance in all sections, with some form of weighting and compensation included for near-miss failures. Invariably it is felt that some candidates have been 'lucky' or 'unlucky', and that the particular rules of the examination have worked for or against them. The question therefore arises as to whether a fair system of combination of assessments can be arrived at. This paper draws upon an important theorem described in 1963 by Arrow, a Nobel-prize winning economist, in which he showed that it is not possible to devise a collective decision-making rule which will satisfy all of six apparently reasonable postulates (for an excellent introduction, see 'Rational Collective Choice', by D. H. Blair, and R. A. Pollak, *Scientific American*, August 1983, pages 76-83). In the context of

examinations it is shown that the same restrictions apply.

Comment

This is a very important theoretical paper which helps to explain how, as it was put in the editorial of 1883 (see above), "scarcely an examination is held without its happening that some of the rejected are known to be superior to some of the passed".

Clinical Assessment

'Comprehensive assessment of final-year medical student performance based on undergraduate programme objectives'

Feletti, G. J., Saunders, N. A. and Smith, A. J.

Lancet 1983; **2**: 34-37.

In November 1982 the first cohort of students at the medical school of the University of Newcastle, New South Wales, completed their final-year assessment. This assessment was very different to that of other schools, and was the result of a series of radical policy decisions by the faculty. Although final-year clinical teaching was based around clerkships in medicine, surgery, general practice, and psychiatry, the assessment was not based on these subjects, but rather, they were the "backdrop for comprehensive assessment of the undergraduate programme objectives". These objectives were "Evaluation of own learning; scientific method of critical thinking; clinical diagnosis, investigation and management; professional attitudes and personal characteristics; community medicine; and doctor-patient relationship". Each domain was assessed both by particular examinations (which often contained novel methods of assessment), and by continuous assessment (of the objectives, not the specialty) throughout the year, these latter being an explicit attempt to assess "willingness to demonstrate competence". The paper describes the use of this form of assessment, and shows that scores in the individual domains were sufficiently independent to suggest that they were indeed assessing different skills. A factor analysis of the various instruments suggested three separate components to a student's score: willingness to demonstrate ability; problem solving skill; and interpersonal skill and initiative.

Comment

This paper is typical of the innovative work that we are growing to expect from the University of Newcastle. The system

they describe is "educationally sensible" (my emphasis), unlike many final year assessment schemes which seem determined to allow each specialty to assess solely whether a student is a good mini-consultant in its own field, with little attempt at educational or medical integration, and frequently assessing no other intellectual skills than memory. If indeed "students, assessor and external evaluators all considered the assessment to be fair, acceptable and challenging" (and no actual evidence is provided for this), then that is a substantial achievement. This is a paper to be read carefully by all involved in clinical assessment.

Career Choice

'Who's for psychiatry? United Kingdom medical schools and career choice for psychiatry, 1961-75'

Brook, P.

British Journal of Psychiatry 1983; **142**: 361-365.

Medical schools differ in the career choices made by their graduates, a finding that has been well-documented in the series of studies of newly-qualified graduates by Parkhouse et al. (see *Health Trends* 1983; **15**: 29-35). Brook has carried the analysis a stage further in the career of the graduates by considering those who have committed themselves to psychiatry sufficiently to be taking the first part of the Royal College of Psychiatrist's membership examination.

Brook suggests that determinants of a high output of psychiatrists include: the selection policy of the school (particularly if it concentrates on high academic achievement and mature entrants); an emphasis within schools upon liaison psychiatry, and an active role played by psychiatrists in the general medical milieu; an emphasis upon psychiatry as being therapeutically effective (particularly if taught by a charismatic head of department); and finally, the effectiveness of the teaching during the psychiatric clerkships themselves.

Comment

This emphasizes that the assessment of the effects of medical education must continue beyond the day when the final examinations are passed, and must study the whole career of the doctor. However, the crucial question of the study is left unanswered; are the schools having any effect upon career decisions, or can all the differences be explained in terms of different types of students going to different medical schools?