



Myers and medicine



CHRIS MCMANUS gave the C.S. Myers Lecture at the Annual Conference in Manchester.

CHARLES MYERS (1873–1946) had a formidable range of talents. After a double first in natural sciences at Cambridge, and then graduating as a doctor at Bart's, he went on an expedition to the Torres Straits where he was one of the first practitioners of ethnomusicology (Clayton, 2000). He wrote one of the first textbooks of experimental psychology, helped found the *British Journal of Psychology* and the Experimental Psychology Laboratory in Cambridge, described the syndrome of 'shell shock' while working as a psychiatrist in the First World War, and afterwards set up and directed the National Institute of Industrial Psychology. As T.H. Pear, the founding Professor of Psychology in Manchester, said so eloquently:

Myers was unusually many-sided: doctor, anthropologist, musician, Alpinist, traveller. Few psychologists had seen so many places. Though a fine experimentalist, he never believed that the most important things in life could be experimentally investigated or measured. There would never have been any need to remind him that all human psychology is social psychology or that

society is made up of individual persons. (cited in Costall, 2001, p.191)

I cannot help but feel an affinity with Myers. Like Myers I originally studied medicine and qualified as a doctor, although an intercalated psychology degree (in the Cambridge department which Myers had founded) moved my primary interest from medicine to psychology. With him I share an interest in experimental aesthetics, in left-handedness, and in statistical methods, and we have both been presidents of the Psychology Section of the British Association. Although I also share his love of travel, I do regret not having his 'ready acquisition of foreign languages'.

After the First World War, when Myers could readily have continued in academia for the rest of his life, he instead chose to leave Cambridge and the university to set up the National Institute for Industrial Psychology in London, which was devoted to addressing psychological problems arising from work and employment. Myers would have seen rich research pickings in modern medicine, and he would have well appreciated that this would not only benefit psychology as a scientific discipline, but would also have beneficial, practical

aspects for medicine itself, and through medical practice, for patients. Myers did not believe in an artificial distinction between pure and applied science, and wrote: 'I came to share Pasteur's view – "*Il n'y a pas des sciences appliqués; il y a les sciences et les applications des sciences*" [There are not applied sciences;



there are only sciences and the application of sciences]' (Costall, 1998).

In 1933 Myers gave the distinguished Bradshaw Lecture at the Royal College of Physicians in London with the title 'A psychological regard of medical education', and I have taken this as my inspiration. Much of my own professional life has been spent using the techniques of psychology to study medicine, and in particular to study medical students and medical practitioners themselves. The work has covered many areas, from student selection, undergraduate training, career choice, and postgraduate assessment, to the effect of the stress and anxiety experienced by junior doctors on duty in the night on operative performance. I hope to give you an overview here.

A neglected practice

If this article has a single, clear message I hope it is the realisation that medical practice has been neglected by psychologists. By that I am not referring to any lack of work or interest in clinical psychology or health psychology, for both disciplines have made superb progress in the past three decades, to the great benefit of patients. Instead I mean a neglect of the study of medical practitioners themselves. The doctor-patient relationship is at the core of much medicine, but while patients are studied in depth there is little study of the other half of the equation. And yet doctors and medical students are potentially a wonderful group for eliciting and answering a wide and rich range of

issues for psychology: not only clinical questions, but also educational, social and cognitive issues.

Each year in the UK about 6000 medical students enter universities. They have remarkably similar entry qualifications, they have a remarkably homogeneous course (overseen by the General Medical Council), they mostly practise for a monopolistic employer, the National Health Service, they have their postgraduate and continuing education overseen by Royal Colleges (who administer carefully standardised examinations), and most doctors stay within the NHS for their entire working lives. Doctors' jobs within the NHS are complex and varied, with wide-ranging technical skills, as in surgery or interventional radiology. Roles involve complex, multidisciplinary teamwork, and complex cognitive tasks, such as diagnosis,

'None of these measures of workload correlated with stress levels'

often coupled with extensive research skills. Doctors' jobs also require subtle and empathic communication with patients, sometimes in difficult, life-threatening situations, which inevitably impose stresses upon the doctors themselves. Doctors, in other words, are the perfect model for studying professions and professionalism in all their manifestations, from tyro through to expert.

Almost everything in which psychologists are interested – social, cognitive, educational and occupational – can be found happening in medicine at a high level of performance and on a daily basis. For an educational psychologist there are rich pickings indeed, allowing assessment of the nature of student selection, the short- and long-term impact of education, differences in attitude towards learning, the validity of examinations, and the effects of different universities, of different departments, of different courses, and indeed of different teachers upon students. Compare that with the problems of studying psychology students (which I have sometimes been asked to do). Psychology students enter university with many different qualifications and for many different reasons, they study different modules throughout their much shorter

courses, the majority do no postgraduate study, there are no common examinations, and at the end of their courses they scatter to the four winds into a myriad different employments where it is nigh on impossible to follow them up.

Studying stress and burnout

A growing research interest for me in recent years has been the effectiveness and the happiness of doctors. Everyone, patients and doctors alike, wants doctors to be effective and happy. However some doctors are ineffective, some are unhappy, and a few are both ineffective and unhappy. The question is why, and what can be done about it. My emphasis here will be almost entirely on the issue of happiness, and its obverse of stress and burnout. Perhaps the only important thing to say about effectiveness is that the main predictor of effectiveness – at least conceptualised as the ability to pass examinations and acquire a high level knowledge of modern clinical medicine – is A-level grades. But A-level grades in particular and academic performance in general do not predict stress, burnout or happiness in doctors. There is simply no support for the idea that some doctors are unhappy because they are too clever, too able or too thoughtful for the sometimes mundane realities of daily life as a physician (McManus *et al.*, 2003). The brightest, the best and the most knowledgeable of doctors can always find much to learn from patients, even in the seemingly most routine of cases.

Understanding the careers of doctors requires longitudinal data if it is to be successful; and such longitudinal data can only be acquired over long periods of time. Needless to say, it is not easy to persuade funding bodies to commit large sums of money over long periods of time, when their primary interests are short term, and their financial base insecure. Over the past 25 years we have carried out the only three large-scale, prospective studies of medical student selection and training in the UK (McManus & Richards, 1984; McManus *et al.*, 1989; McManus *et al.*, 1995). The most recent started in autumn 1990 and provided data on thousands of people throughout the subsequent 12 years of their medical careers, including data from nearly 40 per cent of our cohort on their performance in the exam for membership of the Royal Colleges of Physicians in the UK.

The scope for linking in other data sources as this cohort progresses through



their careers is enormous. Like any cohort study, the dataset is complex, with not all individuals completing all assessments at all occasions. But the potential for answering difficult, important and interesting psychological questions is unparalleled, not least because it is only longitudinal data that ultimately can provide answers to questions about causality.

Consider the issue of stress and burnout. In our study we measured stress levels using the GHQ-12, and burnout with an abbreviated version of the Maslach Burnout Inventory, at the end of the pre-registration house-officer (PRHO) year. All doctors know that PRHO posts are a gruelling, hard year (and one of my first medical education studies – McManus *et al.* (1977) – looked at it using a mixture of quantitative and qualitative techniques), yet it was clear that there was a wide range of responses. Some doctors were indeed very stressed, very emotionally exhausted, very depersonalised, and had little sense of personal accomplishment; but many were not. Why?

If asked, most doctors will say that it is the workload of the PRHO posts that is stressful. And yet in our study we had asked about working hours, the number of patients admitted, the hours of sleep obtained when on call, and so on. None of those measures of workload correlated with stress levels. That result was so surprising that a major medical journal rejected our study on the basis of, as an editor asked, 'How can it not be the case that stress is related to working conditions?'

The fact that stress was not related to working conditions in our data was confirmed using multilevel modelling, for data such as these are inherently multilevel. PRHOs work for a particular team of consultants; the consultants are grouped together in hospitals; the hospitals are grouped together into trusts; and the trusts are overseen by postgraduate deaneries. Because of the large number of doctors in our study, many had done the same PRHO posts, and we could therefore partition the variance in levels of stress between doctors, consultant firms, hospitals, trusts and deaneries. The result was very clear:

PAULA SOLLOWAY (PHOTOGRAPHY)

Is stress primarily a characteristic of doctors rather than of jobs?

there was simply no variance in reported stress or burnout due to consultant firms, hospitals, trusts or deaneries. That was not because of a lack of statistical power (and indeed we readily found effects of consultant firms and hospitals for many other aspects of the posts), but those levels of variance simply did not affect stress or burnout. To put it at its simplest, two doctors doing exactly the same PRHO post were no more similar in their stress levels than two doctors working for different consultants, in different hospitals, in different trusts and under different deaneries. The variation in stress is mainly a function of differences between doctors and not in differences in working conditions (McManus, Winder & Paice, 2002).

Stress has long been known to be related to personality, and in particular to the personality dimension of Neuroticism. We soon found that the same was true of our PRHOs. An abbreviated Big Five personality measure showed that those with the highest stress and burnout measures had higher neuroticism scores, were more introverted, were less conscientious and were less agreeable. Exactly the same correlations were found when we looked at the stress levels of the same group of doctors, five or six years later in 2002/3 (and we had also found it in an entirely different set of more mature doctors – McManus *et al.*, 2003). Of particular interest was a high correlation between stress levels as PRHOs and the stress levels in 2002/3, when the doctors

were in entirely different jobs. Unless one wishes to believe that stressed doctors keep choosing unsatisfactory jobs, then the most reasonable interpretation is that stress is primarily a characteristic of doctors rather than of jobs.

What comes after stress?

Stress and burnout are not merely outcome measures in longitudinal studies such as these. They are input measures too – being stressed or burned out today will affect how an individual does things tomorrow.

Although the terms stress and burnout are mostly used interchangeably (and there is little doubt that they are highly correlated statistically), they are separable conceptually, with the main thrust of burnout being that it relates specifically to the job itself. Stress is a more generic condition in which individuals have a higher risk of depressive or anxiety disorders, conditions which influence the whole of mental life. The causal relation between stress and burnout is not easy to tease apart in cross-sectional studies, but longitudinal studies allow causality to be inferred. Path analysis of longitudinal data from our study suggests that the main engine driving stress is emotional exhaustion; emotional exhaustion makes doctors stressed and stress makes doctors emotionally exhausted. More controversial are the effects of depersonalisation. Depersonalisation, the treating of patients as objects rather than people, seems to decrease subsequent stress. Depersonalisation, while bad for the

WEBLINK

McManus *et al.* (2004) *BMC Medical* article:
www.biomedcentral.com/1741-7015/2/29

patient, can nevertheless be seen as a response that for the doctor is adaptive, reducing the immediate likelihood of stress responses. Likewise, a sense of personal accomplishment, while correlated with lower stress in cross-sectional studies, in longitudinal data is correlated with higher stress. A sense of achievement is good for a doctor but it is potentially bought at the price of greater risk of emotional exhaustion and stress (McManus, Winder & Gordon, 2002).

Although stressed doctors are unhappy (and also, as we will see later, regret having become doctors, get little personal pleasure from being doctors, and frequently think of leaving medicine for another career), they also continue to work as doctors. We need to know how their approach to work, to learning through work, and to working with colleagues is affected by stress and by other variables. The full complexity of the longitudinal data is presented elsewhere (McManus *et al.*, 2004 – see weblinks), but here I want to describe the relationship between stress, the Big Five personality measures mentioned earlier, and the learning and working styles of doctors.

Approaches to learning matter for doctors, as they do for all professionals who must continue to develop themselves professionally throughout long and busy working lives. Much learning occurs on the job, and doctors differ in their approaches to work, and how they perceive their working environment. Recent work by Dianne Delva and her colleagues in Canada (Delva *et al.*, 2002) has developed effective questionnaires for assessing both approaches to work and learning, and the workplace environment. Learning styles have also been much studied in undergraduates, and our work has adapted the typology of Biggs (Fox *et al.*, 2001), with its measures of surface, deep and strategic learning.

The interrelations between these measures are complex; but then to expect that social phenomena would be simple would be simplistic. We have developed a path model for the relationships between personality, learning styles, stress, approaches to work and the work environment (McManus *et al.*, 2004). Here is a summary of the key relationships.

- Extraversion, and particularly Openness to Experience, drive a deep learning style at university, which drives a deep approach to work – integrating different

areas and new ideas, seeking personal understanding. That results in choice and independence in the working environment – control over what one does and how one does it.

- The effect of Conscientiousness is to encourage a strategic approach to learning at university – using whatever methods are successful, even if this results in patchy understanding. A surface approach to learning at university (which in part is a maladaptive strategy to examination failure – Tooth *et al.*, 1989) can result in either a surface-rational approach (a liking for order, detail and routine) in the workplace in those with high conscientiousness, or a surface-disorganised approach (overwhelmed, with poor time management and little understanding) if conscientiousness is low, with the latter then driving a perceived high workload.
- Neuroticism's effect is to drive stress, which then goes on to produce a surface-disorganised approach to work, a high perceived workload, less choice-independence, and a less supportive-receptive work environment.
- The effect of Agreeableness is simple: agreeable individuals report that they find their working environment more supportive and receptive than those who are less agreeable. That is hardly unexpected, but it makes much sense.

Room for all

I like to think that Myers, some time a doctor and always a psychologist, would have found much to excite and stimulate him in studies such as these, but he would also have found much about which to be careful. In particular, he would not have jumped to the easy conclusion that some have taken from our results, that medical school selectors should merely choose doctors with low N and high E, C, A and O. Medicine is a broad church, and needs many personality types. A better response to data such as ours is probably to help individuals to be aware of their own personality strengths and weaknesses, and to have careers which develop those strengths and avoid the weaknesses. Physician, know thyself!

■ *Chris McManus is Professor of Psychology and Medical Education at University College London. E-mail: i.mcmanus@ucl.ac.uk.*

DISCUSS AND DEBATE

Should personality measures be used in the selection of medical students?

How important is diversity of personality in a profession such as medicine?

How well can different personalities learn to respond better to stressful environments?

Have your say on these or other issues this article raises. Send letters to psychologist@bps.org.uk or contribute to our online discussion forum via www.thepsychologist.org.uk.

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