

Book Reviews

MR AVERAGE AND INDIVIDUAL DIFFERENCES

Environment and Human Efficiency. By E. C. POULTON. Charles C. Thomas. Springfield, U.S.A. 1970. Pp. 328. Price \$15.50.

Psychiatry and clinical psychology have had a long courtship. For some activities their separate contributions have merged so that they can no longer be identified. In research, the proportion of offspring produced by one independently of the other has become less. What has each brought to consummation of the marriage and the rearing of its offspring?

Psychiatrists are responsible for providing care of individual people who are mentally ill. They have had the opportunity to observe patients in many settings and from many viewpoints, all of which have changed throughout the ages. Unfortunately many psychiatrists have been blinkered by allegiance to their own training, and few have been sufficiently mature to make observations unfettered by prejudice. But psychiatrists have developed sensitive skills for detecting a particular patient's needs and for assessing how best to alleviate his distress.

Clinical psychologists are developing scientific skills for measuring the kaleidoscope of human feelings and behaviour. Measurement involves numbers, and the use of statistical methods has been extended by psychologists far beyond original horizons. Psychologists have introduced science to psychiatry, but so far hardly more than a beginning has been made in our understanding of all the intricacies of psychopathology; and with particularly faltering steps in the setting where the therapeutic art is practised—helping the *individual* patient.

Except for cognitive function, psychologists have produced tests used more often in the assessment of *groups* of people than of a single case. The validity of many tests does not seem to have been ascertained for the individual person contained in the group, e.g. Eysenck Personality Inventory (1). Where effective tests suitable for measuring an aspect of a single case have been devised (2, 3, 4, 5 and 6), widespread application has been limited so far by the amount of time and skill required for their use. That this is so is unfortunate for the suffering patient, because it means that the psychiatrist has to select his treatment in ignorance of its real effectiveness in

someone of exactly that type. Rarely is he able to judge the significance of any change in comparison with natural expectation or an alternative treatment. Even if he is aware that a particular treatment produced a response in half of a previous sample of similar patients, he can only say with limited confidence what will happen to the patient now before him.

This preamble is prompted by reflection that the same argument holds if 'change in the environment' is substituted for treatment, 'task performance' for response, and 'someone in the changed environment' for patient.

Dr. Poulton's book describes how man performs a variety of abstruse tasks in environments which threaten his comfort and sometimes his very existence. The effects of personal threat, isolation, prolonged vigilance, bursts of speed, simultaneous tasks, sleep disturbances, physical exercise, heat, cold, decompression, compression, acceleration, deceleration, weightlessness, motion sickness, vibration, noise, poor visibility, radiation, drugs, poisons and old age are all considered in separate chapters under these titles. Some problems in measurement are discussed beforehand, with brief reference (7 pages) to the complex notion of arousal, and at the end to paired combinations of environments (16 pages).

The author, who is both a medical doctor and a psychologist, is eminent in this field, having contributed much to our knowledge about task performance. Hence I welcomed the opportunity to review this book in the hope that it would be concerned with the intimate relationship between behaviour of human beings and factors which can modify it. But the author does not seem to be writing about human beings (or even chemistry, as the editor persists falsely in telling us in the Foreword to each volume in this series (7), but rather about experimental subjects who are tacitly assumed to have been devoid of feelings and personalities—neuter people whose individual variation appears only to have been tolerated as an undesirable statistical intrusion superimposed on the responses of 'Mr. Average'. By neglecting variability, the author fails to convey that the whole field is charged with fascination of a grander order, nor that variability is the essence of significance. The reader is told of experiment after experiment in which the mean percentage of errors differed by such and such a degree of statistical

significance when the subjects were exposed to such and such a threat. The reader is rarely invited to examine the reasons for the variation in efficiency other than by direct reference to the physical nature of the environment; nowhere are we told what the subjects felt about performing the task or about the unusual environment.

Discussion is at a disappointing level on how attitudes, moods and meanings might have affected psychological and physiological functions, not to mention the effect of such changes on task performance, e.g. p. 23: 'The average level of arousal varies from person to person. Introverts tend to have a high level of arousal. An excitement which simply arouses an ordinary person may make an introvert too highly aroused. Extraverts tend to have a lower level of arousal, unless they are being stimulated. They need an environment which is arousing to keep them going...'. p. 25: 'Arousal produces dilation of the capillaries which carry the blood to the skin.' This is a factual error. Increase of arousal produces vasoconstriction in the skin and vasodilatation in muscle; this leads to decreased skin and increased muscle, e.g. forearm blood flow—but with wide individual variation (8 and 9). p. 49: 'Personal threats increase the level of arousal. They may produce overarousal and impair the efficiency of performance. A prolonged combination of personal threats can produce schizophrenia. Severe personal threats are better avoided when possible'. p. 59: 'As soon as a person is arrested for political reasons in a totalitarian country, he knows that he may be executed. As an alternative, he may be sentenced for life to a labour camp where the average person survives only a few years... threats of this kind reduce a person's efficiency'.

But it would be unfair to continue quoting in this fashion, because the author reports faithfully much excellent research which has been published in reputable psychology journals in the past decade. The results of such research should be important to the designers of protection against potentially adverse environments on land, at sea, in air and space; and to work-study experts advising employers, trade unions and everyone else interested in how efficiently man can work. It is a pity that knowledge on limits of tolerance receives no emphasis; I would have expected this to be of more value than only knowing how a mythical, and presumably a rather uninteresting, 'Mr. Average' performed.

Unfortunately, the results of this kind of research are virtually useless to the psychiatrist or his patient. The results cannot help anyone responsible for the individual person entering these environments, for they ignore the clinical significance of individual

variation, and hence the interaction between the person and the environment and how he related to 'Mr. Average.' The author of the book is not alone in adopting this rather narrow viewpoint. In two leading articles, the *British Medical Journal* considered the aetiology of sleep disturbance, weight loss and hypotension in the astronauts on Apollo 13 (10), and here only factors in the environment were considered relevant. What was already known about the contribution from possible mood disturbance and the psychophysiological accompaniments of altered arousal was totally ignored. It was as if factors responsible for individual variation were beneath consideration (11).

But the matrimony of psychology and psychiatry is less contentious than this book and those who bellow loudly in defence of certain gods would have us believe. There are many who know that salvation lies in the intimacy of the relationship, leading to conception of offspring to be reared in mutual respect, individuality and generality complementing each other. Valid psychological assessment must be brought to the individual person, so that simultaneously the factors within each one are studied in addition to those in his environment, since both are responsible for his feelings and his behaviour; and certainly for those with physical symptoms, where, in addition to physician and biochemist, psychiatrist and psychologist join the team. Only then will fact separate from fantasy and pride from prejudice, and a real understanding of man in any environment emerge. This book makes it clear that no sensible clinical psychologist or psychiatrist need fear redundancy.

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