

Statistics and experimental design in psychology

Donald Laming

The Numbers Game. By J.G. Snodgrass. Pp.467. (Oxford University Press: Oxford, 1979.) £5.95. *Experimenting in Psychology.* By R. Gottsdanker. Pp.352. (Prentice-Hall: Hemel Hempstead, UK, 1979.) £9.45.

IN teaching statistics and experimental design to psychology students there is always the problem of maintaining the students' interest. Here are two very different approaches to this problem.

The Numbers Game is a conventionally ordered introductory text. It begins with four chapters on descriptive statistics and then proceeds to an exposition of the standard normal-variate tests; non-parametric procedures are presented in the final three chapters. The writing of individual chapters reflects a great deal of thought and experience in teaching students who may have but little mathematical background. The presentation is conceptually oriented, with important mathematical arguments placed in supplements at the ends of chapters, and the concepts are illustrated with examples. In its concern for communicating with the student *The Numbers Game* is to be commended. But, because of the conventional ordering of the material, the student must work as far as chapter 10 before he is able to appreciate in its entirety even the simplest experiment. As Gottsdanker puts it in his preface to *Experimenting in Psychology*: "... to treat various 'topics', such as *measures of behavior, subjects, experimental designs, and treatment of data* in separate chapters. When that is done, there can be no comprehensive knowledge about any kind of experiment until the last chapter is covered."

Experimenting in Psychology employs a completely different approach. It is organised around a graded sequence of example experiments. These experiments are not used to illustrate previously stated principles (as in *The Numbers Game*); rather, they "carry" the exposition. Each experiment presents a practical problem which is worked through in the text, and the solution to this problem exemplifies the principle which the author wishes to present. In the early chapters the experiments are necessarily simple, mostly concerned with applied problems. Regrettably some of these are artificial, made-up examples, which are never as interesting as real ones. But in the later chapters dealing with the more complex problems of design, the experiments are all recently published examples drawn from a

wide range of psychological subject matter. The reader thereby obtains some appreciation of the complexity of experiment needed in contemporary research and of why its design is important; in addition, as a by-product, the book encourages a catholic interest in scientific psychology.

Of these two books, I am confident that the second will hold the students' interest the more readily. From the outset it demonstrates the importance of experimental design in psychological research and provides the student with a motive for studying its technicalities. Dr Gottsdanker is to be commended for developing this new approach. But, at the same time, he has bent over backwards trying not to alienate those with a distaste for mathematics. The main text is entirely devoid of algebra and only a very little statistical theory is included, set in a series of statistical supplements placed at the end

of each chapter. The author has, by intention, written a book on experimental design alone, virtually without statistics. But the criterion of good experimental design is that the data can readily be analysed with respect to the questions of interest; so that the possibilities for design are dominated by the analytical techniques. Dr Gottsdanker could have slipped in much more about data analysis than he has; it is a pity — it would have made the book more widely useful.

There remains the possibility that these two books, so very different in approach, might actually complement each other and be successfully used in tandem. They will provide an attractive combination for any psychologist who teaches chiefly the use of normal-variate procedures. □

Donald Laming is a Lecturer in Experimental Psychology at the University of Cambridge, UK.

Establishing psychology

O. L. Zangwill

Introduction to Psychology. By E. Hilgard, R. A. Atkinson and R. C. Atkinson. Seventh edition. Pp. 653. (Harcourt Brace Jovanovich: New York and London, 1979.) Hardback £10.35; paperback £7.75. *Basic Writings in the History of Psychology.* By R. I. Watson. Pp. 420. (Oxford University Press: New York and Oxford, 1979.) £5.95. *Psychology Survey, No. 2.* Edited by K. Connolly. Pp. 288. (George Allen and Unwin: London and Boston, 1979.) Hardback £7.50; paperback £3.95. *Brain Behaviour and Evolution.* Edited by D. A. Oakley and H.C. Plotkin. Pp.237. (Methuen: London, 1979.) Hardback £9; paperback £4.95.

THESE four books, two British and two American, are all concerned in one way or another with the teaching of psychology at University level. It is, however, virtually impossible to compare them directly on account of the very real differences that exist between the British and American systems of higher education. While the American texts are designed to meet the needs of College students taking an introductory course in psychology who may or may not wish to proceed further with the subject, the British texts are intended for second- or third-year students taking psychology as a main subject in an Honours Degree course in a British university. Although the teaching of psychology in Britain makes extensive use of American texts and journals, it cannot

be said that either of the two American volumes under review is likely to prove obviously appropriate for use in this country. This is not, however, to say that they are both without educational value or do not merit sympathetic consideration.

The Hilgard, Atkinson and Atkinson text, originally published in 1953 and already fairly well known in Britain, now appears in its seventh edition. As in the earlier editions, the authors explain that they have tried to write an introductory text for students who in their experience are more likely to be interested in what they consider to be "relevant to their lives, futures and the problems confronting society" than in the preoccupations of professional psychologists. This fashionable demand for "relevance" they have attempted to meet "without sacrifice of scientific rigour or scholarship". In fact, the book consists very largely of the standard stuff of contemporary academic psychology enlivened by some reference to topics such as hypnosis, psychotherapy and the effects of psychotropic drugs, which students are presumably expected to deem "relevant". In spite of this somewhat patronising attitude to supposed student interests, it must be said that the authors have produced an attractive text that presents the subject matter of experimental psychology intelligently and well. It may be surmised that it owes much to Dr Hilgard's admirable good sense and solid judgement and to his fortunate choice of collaborators.

Dr Watson's compilation of *Basic Writings in the History of Psychology* at all events makes no compromise with "relevance", as it might be supposed that few American students of introductory psychology would dissent from the celebrated judgement of Henry Ford. The book consists of some fifty extracts from