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978-0-521-82868-0 - Measuring Behaviour: An Introductory Guide: Third Edition  
Paul Martin & Patrick Bateson  
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## Measuring Behaviour

### *An Introductory Guide*

This third edition of *Measuring Behaviour* has been largely rewritten and reorganised. As before, however, it is a guide to the principles and methods of quantitative studies of behaviour, with an emphasis on techniques of observation, recording and analysis. It provides the basic knowledge needed to measure behaviour, doing so in a succinct and easily understood form.

Aimed primarily at undergraduate and graduate students in biology and psychology who are about to embark upon quantitative studies of animal and human behaviour, this book provides a concise review of methodology that will be of great value to scientists of all disciplines in which behaviour is measured, including the social sciences and medicine. Principles and techniques are explained clearly in simple and concise language. Its most general points apply to many other biological sciences.

*Measuring Behaviour* has established itself as a standard text in its field. This third edition has been completely updated. The sections on research design and on the interpretation and presentation of data have been greatly expanded. Written with brevity and clarity, *Measuring Behaviour* is intended, above all, as a practical guide book.

DR PAUL MARTIN studied biology at Cambridge University, graduating in natural sciences and with a Ph.D. in behavioural biology. A former Harkness Fellow in the Department of Psychiatry & Behavioural Sciences at Stanford University in the USA, he has lectured and researched in behavioural biology at Cambridge, and was Fellow of Wolfson College, Cambridge.

PROFESSOR SIR PATRICK BATESON has been a highly esteemed lecturer in animal behaviour across the world, for nearly 40 years. He is a Fellow of the Royal Society, a former President of the Association for the Study of Animal Behaviour, Knight Bachelor and current president of the Zoological Society of London.

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## *An Introductory Guide*

THIRD EDITION

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## *PREFACE*

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We are pleased that many of the issues that were relatively novel in behavioural biology when we wrote the first edition (1986) of this book have now passed into the mainstream of methodological thought. Nevertheless, we believe that the principles are worth reinforcing.

In this edition we have changed the structure so that greater prominence is given to the non-experimental aspects of behavioural biology. Some behavioural research simply involves carefully watching an animal to see what it does next. Performing an experiment may seem more 'scientific' than open-ended observation but the yield may be less. Moreover, worthwhile experimental research almost invariably needs to be preceded by careful observation. Knowledge of the normal behaviour of animals, preferably in their natural environment, is an invaluable precursor to experimental research.

We have also expanded the section on research design because, more than ever, good design can make such a difference to how big the sample must be, the interpretation of data and the time taken to prepare results for presentation or publication when the moment arrives. We have eliminated the further reading sections at the end of each chapter, but have given advice on further reading at appropriate places in the chapters. Each chapter now ends with a summary. We have taken out the annotated bibliography that formed such a large part of the reference section in the two previous editions (1986 and 1993) because we felt that such material was not essential to the main purpose of the book. However, we have included some advice on statistics books in Appendix 3 and, since it contains many references to important papers on the methodology of measuring

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and analysing behaviour, we have put the annotated bibliography of the second edition on the following website: [www.cus.cam.ac.uk/~ppgb/](http://www.cus.cam.ac.uk/~ppgb/).

The second edition of this book was published in 1993 and many things have changed since then. Technology moves particularly rapidly. For that reason we have reduced the amount of material that is likely to pass out of date quickly and suggest to those planning a new project that you keep yourselves abreast of new technological developments. Much the same is true for statistical techniques where changes are also taking place. We have not tried to make this book so self-contained that no other source is needed. The underlying principles of measuring behaviour, however, do not change rapidly. We have focused on these principles in this new edition, as we did in the first two.

As before, we have given relatively few examples in the text. To do so would have made it much longer. We resolved to keep the book slim and reasonably priced. Above all we wanted it to remain what it always has been – an introductory guide to the basic problems and possibilities of measuring behaviour. For those who want more, the second edition of Philip Lehner's (1996) *Handbook of Ethological Methods* is filled with excellent examples, as is J. D. Paterson's (2001) second edition of *Primate Behavior*, aimed at primatologists working on behaviour.

Inevitably in such a short book, we have dealt with many complex and contentious issues rather briefly, and in some cases the advice we offer is based on opinions that are not universally shared. We hope you will note our cautions and, where necessary, explore the issues in greater depth than is possible here. We also hope that, if you are coming to this book for the first time, you will read the first two chapters. These chapters set the scene for anybody proposing to start research involving the measurement of behaviour of animals – including the human animal.

In preparing this new edition we were helped by our researchers Elizabeth Pimley and Guy Martin and we thank them for their work. Thanks to the efforts of Tracey Sanderson, our Cambridge University Press editor at the time, 20 anonymous referees provided us with comments on the second edition and made many helpful suggestions for improvements in the third. Three graduate students, Chris Bird, Anne Helme and Amanda Seed, read through the full text of the new edition

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with fresh eyes, and gave us much encouragement and good advice. We also received expert help on particular issues from Alan Grafen, Hanna Kokko, Peter Lipton and Marc Mangel. Finally, Martin Griffiths, our current Cambridge University Press editor, has been enthusiastic about what has become a largely new project and generously accepted the long delays in preparing this third edition. To all of these people we are greatly indebted.