

# Reducing bias in trials from reactions to measurement: the MERIT study including developmental work and expert workshop

David P French,<sup>1\*</sup> Lisa M Miles,<sup>1</sup> Diana Elbourne,<sup>2</sup>  
Andrew Farmer,<sup>3</sup> Martin Gulliford,<sup>4</sup> Louise Locock,<sup>5</sup>  
Stephen Sutton,<sup>6</sup> Jim McCambridge<sup>7</sup>  
and the MERIT Collaborative Group<sup>†</sup>

<sup>1</sup>Manchester Centre for Health Psychology, University of Manchester, Manchester, UK

<sup>2</sup>Department of Medical Statistics, London School of Hygiene and Tropical Medicine, London, UK

<sup>3</sup>Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford, UK

<sup>4</sup>School of Population Health and Environmental Sciences, King's College London, London, UK

<sup>5</sup>Health Services Research Unit, University of Aberdeen, Aberdeen, UK

<sup>6</sup>Department of Public Health and Primary Care, University of Cambridge, Cambridge, UK

<sup>7</sup>Department of Health Sciences, University of York, York, UK

\*Corresponding author [david.french@manchester.ac.uk](mailto:david.french@manchester.ac.uk)

†The MERIT Collaborative Group are listed in *Appendix 1*.

**Declared competing interests of authors:** David P French was a member of the National Institute for Health Research (NIHR) Public Health Research Funding Board (2015–19). Andrew Farmer is Director of the NIHR Health Technology Assessment programme (2020 to present) and is an NIHR Senior Investigator. Martin Gulliford was a member of the NIHR Health Services and Delivery Research (HSDR) Funding Committee (2016–19). Louise Locock was a member of the NIHR HSDR Funding Committee (2014–19).

Published September 2021

DOI: 10.3310/hta25550

## Plain English summary

### The MERIT study

Health Technology Assessment 2021; Vol. 25: No. 55

DOI: 10.3310/hta25550

NIHR Journals Library [www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)

## Plain English summary

When people are asked to complete measures such as questionnaires in research studies this can produce changes in the behaviour or emotions of those people. For example, people who are asked to complete questionnaires about drinking alcohol have been found to drink slightly less, on average, than people who are not asked to complete questionnaires. Current established methods of research usually ignore these reactions to measurement.

The present research aimed to produce recommendations for how best to deal with reactions to measurement. The scope of these recommendations was limited to 'trials' used to test whether or not a treatment improves health.

To do this, we identified relevant research studies that have investigated various different aspects of whether or not measurement affects the people being measured. We then consulted 40 experts about what the current recommendations should consider and what was not within the scope of the current recommendations.

We then gathered 23 experts together for 2 days to produce a set of recommendations.

We found 43 research studies that have looked at whether or not being asked to complete questionnaires or being interviewed affects the behaviour of those people invited. In general, there were some effects of completing questionnaires, but the effects were not very consistent across research studies. There were few studies that have looked at the effects of using measures of behaviour other than questionnaires (e.g. blood pressure cuffs). We could find no existing recommendations for how best to deal with reactions to measurement in research studies that examine whether or not treatments improve health.

We have produced 14 recommendations for researchers to better take account of the issue of measuring affecting the people being measured. We hope that this will help future research produce more accurate answers. We also identified that there is a need for more studies of the effects of measures other than questionnaires.

ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 4.014

*Health Technology Assessment* is indexed in MEDLINE, CINAHL, EMBASE, the Cochrane Library and Clarivate Analytics Science Citation Index.

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) ([www.publicationethics.org/](http://www.publicationethics.org/)).

Editorial contact: [journals.library@nihr.ac.uk](mailto:journals.library@nihr.ac.uk)

The full HTA archive is freely available to view online at [www.journalslibrary.nihr.ac.uk/hta](http://www.journalslibrary.nihr.ac.uk/hta). Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: [www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)

## Criteria for inclusion in the *Health Technology Assessment* journal

Reports are published in *Health Technology Assessment* (HTA) if (1) they have resulted from work for the HTA programme or, commissioned/managed through the Methodology research programme (MRP), and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

## HTA programme

Health Technology Assessment (HTA) research is undertaken where some evidence already exists to show that a technology can be effective and this needs to be compared to the current standard intervention to see which works best. Research can evaluate any intervention used in the treatment, prevention or diagnosis of disease, provided the study outcomes lead to findings that have the potential to be of direct benefit to NHS patients. Technologies in this context mean any method used to promote health; prevent and treat disease; and improve rehabilitation or long-term care. They are not confined to new drugs and include any intervention used in the treatment, prevention or diagnosis of disease.

The journal is indexed in NHS Evidence via its abstracts included in MEDLINE and its Technology Assessment Reports inform National Institute for Health and Care Excellence (NICE) guidance. HTA research is also an important source of evidence for National Screening Committee (NSC) policy decisions.

## This report

This issue of the Health Technology Assessment journal series contains a project commissioned by the MRC-NIHR Methodology Research Programme (MRP). MRP aims to improve efficiency, quality and impact across the entire spectrum of biomedical and health-related research. In addition to the MRC and NIHR funding partners, MRP takes into account the needs of other stakeholders including the devolved administrations, industry R&D, and regulatory/advisory agencies and other public bodies. MRP supports investigator-led methodology research from across the UK that maximises benefits for researchers, patients and the general population – improving the methods available to ensure health research, decisions and policy are built on the best possible evidence.

To improve availability and uptake of methodological innovation, MRC and NIHR jointly supported a series of workshops to develop guidance in specified areas of methodological controversy or uncertainty (Methodology State-of-the-Art Workshop Programme). Workshops were commissioned by open calls for applications led by UK-based researchers. Workshop outputs are incorporated into this report, and MRC and NIHR endorse the methodological recommendations as state-of-the-art guidance at time of publication.

The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded under a MRC-NIHR partnership. The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, the MRC, NETSCC, the HTA programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, the MRC, NETSCC, the HTA programme or the Department of Health and Social Care.

Copyright © 2021 French *et al.* This work was produced by French *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. This is an Open Access publication distributed under the terms of the Creative Commons Attribution CC BY 4.0 licence, which permits unrestricted use, distribution, reproduction and adaptation in any medium and for any purpose provided that it is properly attributed. See: <https://creativecommons.org/licenses/by/4.0/>. For attribution the title, original author(s), the publication source – NIHR Journals Library, and the DOI of the publication must be cited.

## NIHR Journals Library Editor-in-Chief

---

**Professor Ken Stein** Professor of Public Health, University of Exeter Medical School, UK

## NIHR Journals Library Editors

---

**Professor John Powell** Chair of HTA and EME Editorial Board and Editor-in-Chief of HTA and EME journals. Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK, and Professor of Digital Health Care, Nuffield Department of Primary Care Health Sciences, University of Oxford, UK

**Professor Andrée Le May** Chair of NIHR Journals Library Editorial Group (HS&DR, PGfAR, PHR journals) and Editor-in-Chief of HS&DR, PGfAR, PHR journals

**Professor Matthias Beck** Professor of Management, Cork University Business School, Department of Management and Marketing, University College Cork, Ireland

**Dr Tessa Crilly** Director, Crystal Blue Consulting Ltd, UK

**Dr Eugenia Cronin** Senior Scientific Advisor, Wessex Institute, UK

**Dr Peter Davidson** Consultant Advisor, Wessex Institute, University of Southampton, UK

**Ms Tara Lamont** Senior Scientific Adviser (Evidence Use), Wessex Institute, University of Southampton, UK

**Dr Catriona McDaid** Senior Research Fellow, York Trials Unit, Department of Health Sciences, University of York, UK

**Professor William McGuire** Professor of Child Health, Hull York Medical School, University of York, UK

**Professor Geoffrey Meads** Emeritus Professor of Wellbeing Research, University of Winchester, UK

**Professor James Raftery** Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

**Dr Rob Riemsma** Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

**Professor Helen Roberts** Professor of Child Health Research, UCL Great Ormond Street Institute of Child Health, UK

**Professor Jonathan Ross** Professor of Sexual Health and HIV, University Hospital Birmingham, UK

**Professor Helen Snooks** Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

**Professor Ken Stein** Professor of Public Health, University of Exeter Medical School, UK

**Professor Jim Thornton** Professor of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University of Nottingham, UK

Please visit the website for a list of editors: [www.journalslibrary.nihr.ac.uk/about/editors](http://www.journalslibrary.nihr.ac.uk/about/editors)

**Editorial contact:** [journals.library@nihr.ac.uk](mailto:journals.library@nihr.ac.uk)