CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

ADVANCED RESEARCH METHODS FOR THE SOCIAL AND BEHAVIORAL SCIENCES

Written by an interdisciplinary team of global experts covering diverse research methods – including research design, research tools, and statistical techniques – this volume focuses on advanced research methods for anyone working in the social and behavioral sciences. The information needed to perform research in the laboratory, the field, or online is mapped out to provide specific applications and tools in applying each method. The issues surrounding reliability, validity, and obtaining consent are explained alongside detailed descriptions of the impact of preknowledge on participant behavior, the ways researchers unintentionally influence participants, and tips for administering suspicion probes and debriefings. The book then lays out biophysiological measures, eyetracking methods and technologies, the construction of questionnaires, and reaction time methodologies without assuming too much prior knowledge. The basics of Bayesian analysis, item response analysis, social network analysis, and meta-analysis are also summarized as the editors combine innovative methods and statistics to showcase how to perform quality research.

JOHN E. EDLUND is Associate Professor of Psychology at the Rochester Institute of Technology, USA, and serves as the Research Director of Psi Chi: The International Honor Society in Psychology. He has won numerous awards related to teaching and is passionate about the dissemination of psychological knowledge to the world.

AUSTIN LEE NICHOLS is the Director of Research for the Connection Lab in San Francisco, USA. Prior to this, he worked in various faculty positions around the world in both psychology and management. He has won awards for his teaching, research, and service from various international organizations.

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

ADVANCED RESEARCH METHODS FOR THE SOCIAL AND BEHAVIORAL SCIENCES

Edited by

JOHN E. EDLUND
Rochester Institute of Technology

AUSTIN LEE NICHOLS
Connection Lab

CAMBRIDGE UNIVERSITY PRESS

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of
education, learning, and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781108425933
DOI: 10.1017/9781108349383

© Cambridge University Press 2019

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without the written
permission of Cambridge University Press.

First published 2019

Printed in the United Kingdom by TJ International Ltd, Padstow Cornwall

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging-in-Publication Data
Names: Edlund, John E., 1978– editor. | Nichols, Austin Lee, 1984– editor.
Title: Advanced research methods for the social and behavioral sciences /
edited by John E. Edlund, Rochester Institute of Technology, Austin Lee Nichols,
Connection Lab.
Description: Cambridge, United Kingdom ; New York, NY : Cambridge University Press,
2019. | Includes index.
Identifiers: LCCN 2018045905 | ISBN 9781108425933 (hardback) | ISBN 9781108441919 (pbk.)
Subjects: LCSH: Social sciences–Methodology. | Psychology–Research–Methodology.
Classification: LCC H61 .A39325 2019 | DDC 001.4/2–dc23
LC record available at https://lccn.loc.gov/2018045905

ISBN 978-1-108-42593-3 Hardback
ISBN 978-1-108-44191-9 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy
of URLs for external or third-party internet websites referred to in this publication
and does not guarantee that any content on such websites is, or will remain,
accurate or appropriate.

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

Dedication

I dedicate this book to my awesome wife and children. Without you, all that I have and do would not be possible.

John E. Edlund

First, I would like to dedicate this book to the person who provided the greatest support for me through the editorial process, my wife. I would also like to thank the countless people who provided input or feedback along the way as well as my coeditor, John Edlund, for his persistence and patience throughout the process.

Austin Lee Nichols

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

Contents

List of Figures *page* ix
List of Tables xi
List of Contributors xii

Chapter 1 A Brief Orientation to Research Methods and Statistics for the Social and Behavioral Sciences 1
John E. Edlund and Austin Lee Nichols

Part One: Performing Good Research 19

Chapter 2 Reliability and Validity of Measurement in the Social and Behavioral Sciences 21
Michael F. Wagner and John J. Skowronski

Chapter 3 Performing Research in the Laboratory 38
Austin Lee Nichols and John E. Edlund

Chapter 4 Field Research 53
Sinikka Elliott

Chapter 5 Using the Internet for Research 68
Rosanna E. Guadagno

Part Two: Understanding Issues Present Throughout the Research Process 83

Chapter 6 Issues in Informed Consent 85
David S. Festinger, Karen L. Dugosh, Esther Choi, and Chloe Sierka

Chapter 7 Participant Preknowledge and Attitudes in Research 103
Elena C. Papanastasiou

Chapter 8 Experimenter Effects 115
David B. Strohmetz

Chapter 9 Suspicion Probes and Debriefing in the Social and Behavioral Sciences 129
Ginette C. Blackhart and Travis D. Clark

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

Contents

Part Three: The Social and Behavioral Scientist's Toolkit 145

Chapter 10 Physiological Measures 147
Eric J. Vanman and Michael C. Philipp

Chapter 11 Eyetracking Research 168
Jeff B. Pelz

Chapter 12 Questionnaire Design 191
Heather M. Stassen and Heather J. Carmack

Chapter 13 Reaction Time Measures in the Social and Behavioral Sciences: Speed Matters 209
Jeremy D. Heider and Jason T. Reed

Part Four: Emerging Issues in Social and Behavioral Science Research 227

Chapter 14 Replications and the Social and Behavioral Sciences 229
Courtney K. Soderberg and Timothy M. Errington

Chapter 15 Research Ethics for the Social and Behavioral Sciences 244
Ignacio Ferrero and Javier Pinto

Chapter 16 Interdisciplinary Research 258
Rachel Adams Goertel, James P. Goertel, and Mary G. Carey

Chapter 17 Cross-Cultural Research 274
Fons J. R. van de Vijver

Part Five: New Statistical Trends in the Social and Behavioral Sciences 287

Chapter 18 A Gentle Introduction to Bayesian Statistics 289
Milica Miočević and Rens van de Schoot

Chapter 19 Development and Applications of Item Response Theory 309
Clifford E. Hauenstein and Susan E. Embretson

Chapter 20 Social Network Analysis 328
Sebastian Leon Schorch and Eric Quintane

Chapter 21 Meta-Analysis: An Introduction 346
Gregory D. Webster

Appendix A Metafor Package R Code for Meta-Analysis Examples 365
Index 368

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

List of Figures

1.1 The normal curve 7
1.2 Positive and negative skew 8
1.3 Types of kurtosis 8
1.4 Type 1 and type 2 errors 9
10.1 Components of the skin conductance response (SCR) 151
10.2 An example of a facial EMG recording setup 154
10.3 A typical EEG waveform showing several ERP components 159
10.4 From stimulus to the BOLD response, as recorded by fMRI 161
11.1 Extraocular muscles 169
11.2 Directions of eye movements 170
11.3 Horizontal and vertical eye position as a function of time 171
11.4 Smooth pursuit eye movement with "catch-up" saccades 173
11.5 Vestibular-ocular response (VOR) eye movements 174
11.6 Five-second gaze orientation record 176
11.7 Remote eyetracker mounted below computer monitor (Tobii Pro Spectrum) 177
11.8 Remote eyetracker mounted below computer display (LC Technologies EyeGaze Edge EYEFOLLOWER) 177
11.9 Tower eyetracker (EyeLink 1000 Tower) 178
11.10 Wearable eyetracker (Positive Science) 179
11.11 Wearable eyetracker (Tobii) 179
11.12 Wearable eyetracker (Pupil Labs) 180
11.13 Frame of output video from wearable eyetracker (Positive Science) 180
11.14 Oculus Rift with integrated eyetracker (Pupil Labs) 181
11.15 Frame from virtual environment 181
11.16 View from scene camera 182
11.17 Average gaze location with 0° (left) and 2° (right) inaccuracy 183
11.18 Gaze locations with 0° average inaccuracy and high (left) and low (right) precision 183
11.19 Accuracy and precision in eyetracker data 184
11.20 Temporal order effects on precision measures 184
18.1 Proposed mediation model for predicting the delay in PhD completion 291
18.2 Diffuse normal prior assigned to intercepts and regression coefficients 294
18.3 Trace plots for parameters in the single mediator model 296
18.4 Posterior for the mediated effect with point summaries (mean and median), and interval summaries (equal-tail and highest posterior density credibility intervals) 297

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

18.5 Plots of weakly informative and informative priors for the regression coefficients *a*, *b*, and *c*' 301
18.6 Posteriors for the coefficient *c*' with different prior precisions tested in the sensitivity analysis 304
19.1 Example item characteristic curves derived from the Rasch model 312
19.2 Item information function for a Rasch item plotted alongside the item characteristic curve 313
19.3 Test information function and standard error of measure 313
19.4 Example item characteristic curves derived from the 2PL model 315
19.5 Example item characteristic curves derived from the 3PL model 316
19.6 Example category response curves derived from the GRM 318
19.7 Example category response curves derived from the PCM model 319
19.8 Log-likelihood function (with respect to θ) 321
20.1 Social network research map 329
20.2 Network data in matrix format 334
20.3 A network graph 335
20.4 Triad isomorphism classes 338
21.1 Proportion of meta-analysis articles published in *Psychological Bulletin* (top) and *JAMA* (bottom), 1980–2017 347

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE
Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

List of Tables

2.1 Example of a multitrait-multimethod correlation matrix from Mount 31
18.1 Summaries of marginal posteriors from the analysis with uninformative priors 298
18.2 Summaries of marginal posteriors from analyses with weakly informative and informative priors 302
18.3 Results of the sensitivity analysis 304
18.4 Abbreviated form of the WAMBS checklist by Depaoli and Van de Schoot (2017): When to Worry and how to Avoid the Misuse of Bayesian Statistics 305
19.1 Comparisons of measurement properties between CTT and IRT 310
21.1 Self-esteem instability correlations, alphas, corrected correlations, and moderators 355

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE
Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

Contributors

Rachel Adams Goertel – Roberts Wesleyan College

Ginette C. Blackhart – East Tennessee State University

Mary G. Carey – University of Rochester Medical Center

Heather J. Carmack – University of Alabama

Esther Choi – Public Health Management Corporation

Travis D. Clark – Valley City State University

Karen L. Dugosh – Public Health Management Corporation

John E. Edlund – Rochester Institute of Technology

Sinikka Elliott – University of British Columbia

Susan E. Embretson – Georgia Institute of Technology

Timothy M. Errington – Center for Open Science

Ignacio Ferrero – University of Navarra

David S. Festinger – Philadelphia College of Osteopathic Medicine, Public Health Management Corporation

James P. Goertel – State University of New York at Brockport

Rosanna E. Guadagno – Alliant International University

Clifford E. Hauenstein – Georgia Institute of Technology

Jeremy D. Heider – Southeast Missouri State University

Milica Miočević – Utrecht University

Austin Lee Nichols – Connection Lab

Elena C. Papanastasiou – University of Nicosia

Jeff B. Pelz – Rochester Institute of Technology

Michael C. Philipp – Massey University

Javier Pinto – Universidad de Los Andes

Eric Quintane – Universidad de Los Andes

Jason T. Reed – Empirisoft Corporation

Sebastian Leon Schorch – Universidad de Los Andes

Chloe Sierka – Public Health Management Corporation

John J. Skowronski – Northern Illinois University

Courtney K. Soderberg – Center for Open Science

Heather M. Stassen – Cazenovia College

David B. Strohmetz – University of West Florida

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

Rens van de Schoot – Utrecht University, North-West University

Fons J. R. van de Vijver – Tilburg University, University of Queensland, North-West University

Eric J. Vanman – University of Queensland

Michael F. Wagner – Northern Illinois University

Gregory D. Webster – University of Florida

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-108-42593-3 — Advanced Research Methods for the Social and Behavioral Sciences
Edited by John E. Edlund , Austin Lee Nichols
Frontmatter
More Information

© in this web service Cambridge University Press www.cambridge.org