

**Essentials of Research  
Methods in Human Sciences**

# **ELEMENTARY BASICS**

**JARI METSÄMUURONEN**

**VOLUME 1**



# A comprehensive "all-in-one" guide for research in human sciences

"One of the most comprehensive  
guides on SPSS ... easier to read ...  
much more informative."

**Lisa Jo Elliott**  
Missouri Western  
State University, USA

"A tremendous  
job in bringing basic  
and advanced methods together,  
offering an extensive toolbox to  
researchers and students."

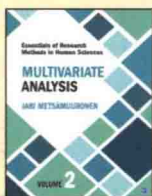
**Jimmie Leppink**  
Maastricht University,  
The Netherlands

"If you are an SPSS user  
looking for a how-to book on  
this matter, this would be an  
obvious choice."

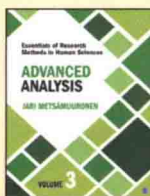
**Jacob Brauner**  
University of Copenhagen,  
Denmark

This three-volume set helps in practical understanding of basic research methodology and its tools as well as numerous possibilities of analyzing a dataset, in both qualitative and quantitative research. *Volume 1: Elementary Basics* leads beginners into the basics of research as a process, test construction, qualitative research, statistical description, and inference, as well as into the basics of futures studies.

## Other volumes:



**Volume 2**  
Multivariate Analysis



**Volume 3**  
Advanced Analysis



**Jari Metsämuuronen** is Adjunct  
Professor and Special Evaluation  
Expert at Finnish Education  
Evaluation Centre, Helsinki, Finland.

PART OF A SET. NOT TO BE SOLD INDIVIDUALLY.

**MEETSÄMURONEN**

# **ELEMENTARY BASICS**



**Essentials of Research  
Methods in Human Sciences**

**VOLUME 1**

**ELEMENTARY  
BASICS**

**JARI METSÄMUURONEN**

 **SAGE**

Los Angeles | London | New Delhi  
Singapore | Washington DC | Melbourne

Copyright © Jari Metsämuuronen, 2017

All rights reserved. No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system, without permission in writing from the publisher.

*First published in Finnish by International Methelp Oy., Finland, as Tutkimuksen tekemisen perusteet ihmistieteissä [Handbook of Basic Research Methods in Human Sciences] (1st edition 2002, 2nd edition 2003, 3rd edition 2006, 4th edition 2009)*

*This edition published in 2017 by*



**SAGE Publications India Pvt Ltd**  
B1/I-1 Mohan Cooperative Industrial Area  
Mathura Road, New Delhi 110 044, India  
[www.sagepub.in](http://www.sagepub.in)

**SAGE Publications Inc**  
2455 Teller Road  
Thousand Oaks, California 91320, USA

**SAGE Publications Ltd**  
1 Oliver's Yard, 55 City Road  
London EC1Y 1SP, United Kingdom

**SAGE Publications Asia-Pacific Pte Ltd**  
3 Church Street  
#10-04 Samsung Hub  
Singapore 049483

Published by Vivek Mehra for SAGE Publications India Pvt Ltd, typeset in Minion Pro 10.5/12.5 pts by Zaza Eunice, Hosur, Tamil Nadu, India and printed at Chaman Enterprises, New Delhi.

### Library of Congress Cataloging-in-Publication Data

Name: Metsämuuronen, Jari.

Title: Essentials of research methods in human sciences / Jari Metsämuuronen.

Description: New Delhi, India : Sage Publications India, Pvt., Ltd, 2016- |

Includes bibliographical references and index.

Identifiers: LCCN 2016048488 | ISBN 9789386042965 (hardback : alk. paper : v. 1)

Subjects: LCSH: Mathematical statistics. | Multivariate analysis. | Research—Methodology.

Classification: LCC QA276 .M43345 2016 | DDC 001.4/22—dc23

LC record available at <https://lcn.loc.gov/2016048488>

**ISBN:** 978-93-860-4296-5 (HB) (set of 3 volumes)

---

**SAGE Team:** Shambhu Sahu, Sandhya Gola, Apeksha Sharma and Rajinder Kaur

**SAGE** was founded in 1965 by Sara Miller McCune to support the dissemination of usable knowledge by publishing innovative and high-quality research and teaching content. Today, we publish over 900 journals, including those of more than 400 learned societies, more than 800 new books per year, and a growing range of library products including archives, data, case studies, reports, and video. SAGE remains majority-owned by our founder, and after Sara's lifetime will become owned by a charitable trust that secures our continued independence.

Los Angeles | London | New Delhi | Singapore | Washington DC | Melbourne



## Advance Praise

---

“The author has done a tremendous job in bringing basic and advanced methods together in a coherent set of three volumes, offering an extensive toolbox to researchers and students. Furthermore, the work covers both quantitative and qualitative methods, making it very useful for the human sciences, where we definitely need both.... I am convinced that this work can help to bring quantitative and qualitative research practice closer together, something that is needed for the advancement of the human sciences.... This work can help to reduce particular misconceptions about either of qualitative and quantitative research and bring seemingly different ‘schools of thought’ closer together.”

—**Jimmie Leppink**, PhD, Maastricht University, The Netherlands

“From my experience there are a lot of books on the topic of experimental research, but you don’t see too many applied science books on the topic of experimental research, and especially not ones that give you such a comprehensive walkthrough of how to do the tests. If you are an SPSS user looking for a how-to book on this matter, this would be an obvious choice.”

—**Dr Jacob Brauner**, University of Copenhagen, Denmark

“Usually, statistics books gloss over the most important parts of the analysis process. These are things such as how to review the data for errors, which errors are important to which test, what to do about missing data, how to reverse scales, how to save the data, and keep multiple copies of the data organized. This series includes these very important issues. It will be a great timesaver for graduate mentors and a great help in improving the quality of analyses produced by graduate students.

This is one of the most comprehensive guides on SPSS. It includes how to format data for SPSS analysis, how to interpret the output, the logic and assumptions behind each test and with a copious number of screen shots. I liked that the author outlines when to use which approach, what choices are available to the researcher and guidance about what constraints would guide which choice.

These volumes are easier to read than the average statistics book and much more informative because of their conversational approach and well thought structure.... These would be excellent handbooks for an intermediate statistics course or reference books for graduate/professional level work.”

—**Lisa Jo Elliott**, Director of Human Factors and Usability Testing Graduate Program and Assistant Professor of Psychology, Missouri Western State University, USA





# **Essentials of Research Methods in Human Sciences**



Other volumes in the series *Essentials of Research Methods in Human Sciences* include:

Volume 2 *Multivariate Analysis*

Volume 3 *Advanced Analysis*

Thank you for choosing a SAGE product!  
If you have any comment, observation or feedback,  
I would like to personally hear from you.

*Please write to me at **contactceo@sagepub.in***

**Vivek Mehra**, Managing Director and CEO, SAGE India.

### **Bulk Sales**

SAGE India offers special discounts  
for purchase of books in bulk.  
We also make available special imprints  
and excerpts from our books on demand.

*For orders and enquiries, write to us at*

Marketing Department  
SAGE Publications India Pvt Ltd  
B1/I-1, Mohan Cooperative Industrial Area  
Mathura Road, Post Bag 7  
New Delhi 110044, India

*E-mail us at **marketing@sagepub.in***

### **Get to know more about SAGE**

Be invited to SAGE events, get on our mailing list.

*Write today to **marketing@sagepub.in***

This book is also available as an e-book.



# Preface and Acknowledgments

---

## Preface

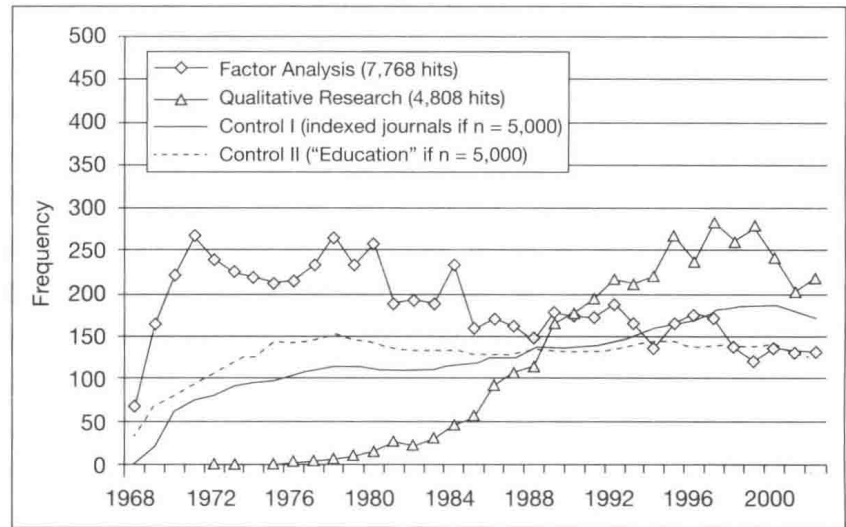
---

### Concern of Deterioration of Methodological Knowledge

In the Journal of the Finnish Educational Research Association (FERA), *Kasvatus* [Education], issue 2/2008, was dedicated to quantitative methods and their need in educational research. The articles and reviews openly lamented the deterioration and fading of the methodological knowledge and the ability of quantitative research methodology among university students, as seen by the lecturers and professors in several universities. On the basis of empirical evidence, the leading educators of the field noted that even the basic methods are not mastered at the adequate level (Rautopuro, Väisänen, & Malin, 2005), students seem unable to discriminate between the basic concepts of *significant* and *remarkable*<sup>1</sup> (Rautopuro & Väisänen, 2004; Rautopuro, Väisänen, & Malin, 2007), the orientation of avoidance in the courses of quantitative methodology is higher than in other courses (Murtonen, 2005; Väisänen & Pitkäniemi, 2008; Väisänen & Ylönen, 2004), and that students *are not interested* in these matters (Murtonen & Lehtinen, 2003; Murtonen, Lehtinen, & Olkinuora, 2008). Students, and maybe sometimes the lecturers, seem not to be motivated toward research methods. The topic of a presentation given by Rautopuro and Väisänen at the FERA conference (2003) may be illustrative: “Incapables teaching unnecessary for unwilling ones?” Rautopuro and Malin (2008) see that some terms related to the quantitative research tradition seem to become *dysphemism*, creating negative

---

<sup>1</sup> In the Finnish language, these two words—that is, *merkitsevä* and *merkitävä*, respectively—are very similar, which may partly explain the confusion among students.



**Figure P.1** Long-term Trends of the Selected Indicators of Quantitative and Qualitative Research

images among students. In the Finnish context, the same phenomenon has also been noticed in sociology (Alastalo, 2008; Uusitalo, 2003). Discussions about the matter have been published in the journal of the Finnish Association of Psychology (*Psykologia*, Metsämuuronen, 2005, 2006b), too. This worry is actually not only a Finnish one, but in several countries, lecturers are wrestling with the same challenges (see, Murtonen, Lehtinen, & Olkinuora, 2008; Murtonen, Rautopuro, & Väisänen, 2007).

In the background of the deterioration of methodological knowledge, some researchers (e.g., Luoma, Karjalainen, & Reinikainen, 2006, 453; Rautopuro & Malin, 2008) have seen a phenomenon called the *war of paradigms* used in Tashakkori and Teddlie (1998, 4–5) or the *battle of paradigms* used in Rautopuro and Malin (2008) referring to the rise of qualitative research at the expense of quantitative research. On the basis of the long-term trends of selected key words found in the Educational Resource Information Centre (ERIC) database with more than one million publications, it really is evident that the amount of articles with the key word “*qualitative research*” have increased remarkably, while some clear indicators of quantitative research—such as correlation, regression analysis, or factor analysis—have decreased mildly, though notable (see Figure P.1).<sup>2</sup>

<sup>2</sup> For showing the trend, the timeline in Figure P.1 is purposefully selected to end in 2002, after which the amounts of quantitative indicators have rocketed.

This trend seems not only evident in the lower level theses but also in the volumes of doctoral-level theses in many domains of science in Finland (Alastalo, 2005, 2008; Kivirauma, 1997, 1998; Mäkelä, 1996).<sup>3</sup> Though the *war* has been quite mild in American research literature because of the pragmatic approach (see, e.g., Fuchs, 2001, 47; Krauss, 2005, 761–762; Luoma, Karjalainen, & Reinikainen, 2006, 453; Sayer, 1992, 241–257), in Finland, it has led to strict schools where the users of statistical methods have been seen as laughing stocks—positivist behaviorists performing useless technical tricks (see for concern Atjonen, 2001; Rautopuro & Malin, 2008; Töttö, 2000, and for the blame, e.g., Eskola, 2005). Thus, no wonder why the chairperson of the Special Interest Group of quantitative methods in the FERA, Professor Päivi Atjonen (2008), groans in her editorial note that users of numerical datasets seem to be cast into marginal as *happy-clappy measurers*.

When it comes to the *war* between qualitative and quantitative research, it is evident that qualitative research has come as an integral part of the research methodology toolbox during the 1980s and the 1990s. However, qualitative research does not threaten quantitative research in any way when it comes to the released articles in the ERIC database. On the basis of a systematic review of the methodological key words in the publications (see *Introduction*), approximately 20 percent of the themes with a rising trend are related to qualitative research and 80 percent to quantitative. This is to say, even though some qualitative methodological themes show an increasing trend, at the same time, there are 5 times more rising themes of quantitative methodology in the ERIC database. Thus, the real *war of paradigms* does not exist.

Supposedly, the most heated discussions between the qualitative and quantitative research paradigms are over by now. In any case, this material avoids deepening the split between the two approaches. Instead, both are taken as part of the repertoire of an enlightened researcher. Therefore, both approaches are introduced in this volume. However, perhaps disappointingly to a heavy user

---

These trends are elaborated upon in the *Introduction*.

<sup>3</sup> In the international research literature, there are a surprisingly low number of writings about the systematic surveys of trends in research methodology—taking into account that the key word trend can be found more than 20,000 times in the ERIC database. An interested reader may, however, find these trends in, for example, Grenfell and James (2004), Crawford and Cornett (2000), Grankvist (1992), and Mitter (1992). None of these handle the differences between qualitative and quantitative methodology. In sociology, Platt (1996), Bechhofer (1996), and Payne, Williams, and Chamberlain (2004) include the analysis of trends in research methodology. The rise of qualitative research has been noticed as an obvious trend.



of qualitative methodology, the proportion of qualitative methods is kept at the same lower level as seen in international publications.

### *Characteristics of the Material*

No doubt, there is always a need for study material to assist the next generation to learn essential matters in research methodology. Since 1925 from Sir Ronald A. Fisher's Classic *Statistical Methods for Research Workers*, there has been a growing need to socialize the students and researchers to the world of research practices. According to Arrow and Lehmann (2005), Harold Hotelling brought these ideas of Fisher from Britain to USA, began to educate his students and "[d]uring the 1930s and early 1940s, Hotelling nearly single-handedly brought American statistics into the modern age and laid the foundation for the extraordinary development of the subject after the Second World War."

It is worth noting that in the process, the seminal *book* of Fisher was in a central role. According to Arrow and Lehmann (2005):

Hotelling's role as an educator may be said to have begun when [—] he reviewed the first edition of Fisher's [book], for the *Journal of the American Statistical Association* (JASA). His review ended by noting that "*the author's work is revolutionary and should be far better known in this country.*" Hotelling considered the task of making American statisticians aware of Fisher's work so important that he went on to review the next six editions of the book, as well as the first two editions of Fisher's *The Design of Experiments*.

Since Fisher's work in 1925, myriads of methodological books have been published. How does this material differs from the others? First, compared to many other books for the same purpose, this material is uniquely wide when it comes to its contents. Second, it is purposefully constructed so that it serves several scientific domains; according to an Internet survey, the Finnish version was used as a textbook in 26 *different* domains including education, psychology, sociology, nursing, marketing, statistics, military, and sports. In 2007, the third edition received a grant by the (Finnish) Committee for Public Information. Third, specific attention is given to the pedagogical features of the material:

1. The text is kept simple and no previous studies of methodology are needed to understand the subject.
2. The text is full of mnemonic tools for understanding, structuring, and memorizing difficult topics: side comments, lists, outlines, models, and graphs.
3. Though the text is easy to start with, it leads to extensions far beyond the traditional level of teaching in the faculties of human sciences.