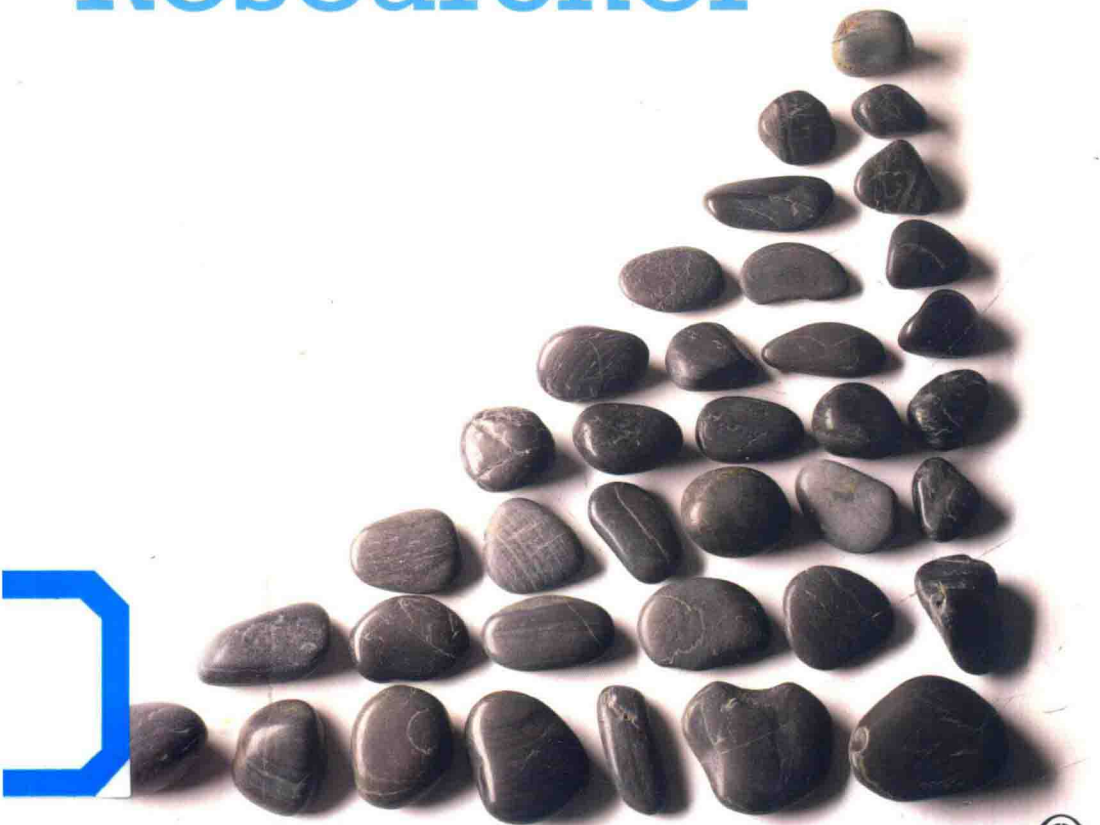


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Quantitative Research

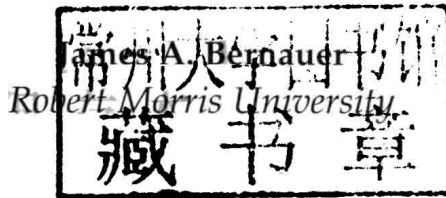
for the

Qualitative Researcher



Quantitative Research for the Qualitative Researcher

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Preface

Thank you for choosing to read *Quantitative Research for the Qualitative Researcher!* Our intention is to provide an introduction to quantitative research methods in the social sciences and education especially for those who have been trained in, or are currently learning, qualitative methods. This book might also be a useful supplement for courses in quantitative methods at the upper undergraduate or graduate levels. There are two important features of this book worth noting. The “Guidelines for Evaluating Research Reports” found in the Appendix can be used to extend understanding of any quantitative article by providing an organized way to examine essential features that are described in this book. In addition, we reference several quantitative articles on a companion website in appropriate sections of the book and allow readers to make immediate connections to the ideas being discussed. Using these articles in conjunction with the *Guidelines* and relevant sections of the text can provide an even deeper understanding of important ideas and concepts.

❖ PURPOSE OF THIS BOOK

Why should qualitative researchers want to learn more about the quantitative tradition? This question has been foremost in our minds as we developed the original idea for this book and as we formulated each chapter. We came to the realization early on that we view research in the social sciences as an exciting quest for discovery using disciplined inquiry, regardless of whether this inquiry is located in the qualitative or quantitative tradition. Our primary goal therefore in writing this book is to promote understanding and appreciation of the quantitative tradition in the social sciences especially for those who are most familiar with the qualitative tradition. By expanding their knowledge, skills, and appreciation of the quantitative tradition, we hope that our readers

will acquire an enhanced repertoire of tools for reading, evaluating, and conducting research. In addition, we hope that our readers will develop an appetite for collaborating with colleagues who pose interesting research questions that can be addressed across traditions.

While an increasing number of books present a balanced approach to quantitative, qualitative, and mixed methods (e.g., Gay, Mills, & Airasian, 2009; Johnson & Christensen, 2000; Springer, 2010), we think that our contribution is a digestible book that concisely conveys the fundamental concepts and skills underlying quantitative methods by identifying the commonalities that exist between the quantitative and qualitative traditions. These concepts, skills, and commonalities can then be used as a springboard for further learning in both traditions.

While this book is intended primarily for those practicing or aspiring researchers who are predisposed to use qualitative methods, it is intended neither to try to convert qualitative researchers to the quantitative tradition nor to make “mixed methods” researchers out of them. Rather, its central aim is to promote understanding and appreciation of the two traditions based on the fact that the complexity inherent in both people and phenomena are consistent with possessing such understanding and appreciation. It is with complete agreement with the sentiment attributed to Albert Einstein “many of the things you can count, don’t count. Many of the things you can’t count really count” that we undertook this book.

This book grew out of our experience in teaching research design, analysis, and statistics to undergraduate and graduate students in the fields of social science and education. Whereas James teaches qualitative research methods at Robert Morris University in Pittsburgh, Laura teaches quantitative methods at Boston College. Many of our doctoral students gravitate toward qualitative dissertations, and while this may reflect their true aspirations and predispositions, we think that this choice may sometimes be based on a sense of foreboding toward anything connected to that dreaded 10-letter word—statistics!

While this book is *not* intended to convince individuals to switch to a quantitative mind-set, it *is* intended to demonstrate that all research traditions (quantitative, qualitative, mixed) share the common goal of trying to discover new knowledge by using a systematic approach. By providing a clear description of concepts underlying quantitative methodology, we hope to promote openness to this tradition and the recognition that the appropriateness of using a particular method depends on the questions asked and not a “posture” that has come to characterize practitioners in each tradition (Guba, 1981). While some of us tend to ask questions that can best be answered by

“crunching numbers,” others ask questions that require “crunching words.” However, no matter what kind of crunching one may do, it is first necessary to have quality data that have been collected in a systematic and reflective manner. To put it another way, we hope that readers come to recognize that qualitative and quantitative approaches are not intrinsically antagonistic; in fact, we hope that by the time you have read this book that you understand why the two traditions are complementary.

We also want to demonstrate that good quantitative research is not primarily about statistics but rather about *problem quality*, *design quality*, *evidence quality*, and *procedural quality*. These criteria apply equally to qualitative research. Unfortunately, we have found that while most faculty consider the “paradigm wars” a thing of the past, mistrust or at least misunderstanding still exists in the ranks. Thus, another goal of this book is to promote a greater willingness to integrate quantitative and qualitative approaches in teaching, learning, and research.

❖ THE AUTHORS

A little bit about ourselves: James’s background is rather eclectic; he taught in secondary education, special education, and, for a time, worked in banking and non-profit administration. Though initially trained in quantitative methods, James transitioned to the qualitative tradition several years ago and now considers himself primarily a qualitative researcher. At Robert Morris University, James teaches research methodology and educational psychology and his research interests include both K–12 education and higher education. Laura has spent most of her career in the academy. Although originally trained in applied physics, electronics, and geophysics, she made the switch to educational research more than 15 years ago. At Boston College, Laura teaches quantitative research methods and statistics, and her research focuses on the impact of school-based interventions on student and teacher outcomes, often technology based. We think that this strange admixture of backgrounds has helped us produce a book that will engage readers of a qualitative bent who are nonetheless open to make an overture to the “other side”. While this openness may be driven by a variety of motives, such as to fulfill a university requirement, supplement a qualitative course, increase self-efficacy, or simply satisfy curiosity, we have tried to write a book that readers will come to consider well worth their investment in time and treasure.

❖ INTENDED AUDIENCE

We would now like to be a little more explicit in regard to the content and intended audience for this book. As described earlier, our aim is to promote an appreciation and increased understanding of the fundamental structure and aims of quantitative methods primarily for readers who may have little or dated background in this area. Although “appreciation” is attitudinal and “understanding” is cognitive, we think that these two desired outcomes are intrinsically connected. If one learns a bit more about quantitative methods but still considers its practice akin to voodoo, then what have we gained? Rather, we hope that qualitative readers leave this sojourn feeling even better about their own preferred methodological leanings, with an appreciation that some problems of interest are more amenable to quantitative methods and that quantitative methods can complement qualitative perspectives in ways that they may not have envisioned previously.

Like most authors, we would like to think that people the world over will find this book so intriguing that they may take it to remote idyllic beaches to find pearls of wisdom; however, we have reluctantly accepted the fact that perhaps this vision may be a bit grand. We do think, however, that graduate students and upper-level undergraduate students will find that this book reinforces and perhaps expands what they are learning while offering additional insights. In addition, although this book could be used as a stand-alone text for an introductory course in quantitative research methods, it would probably be more useful as a complementary text to help build a bridge between the qualitative and quantitative traditions.

❖ ORGANIZATION OF THIS BOOK

This text is divided into 11 chapters, divided over four sections. We have interspersed definitions of key terms and concepts in all chapters and include a glossary at the end of each chapter. Starting in Chapter 3, we include a section at the end of each chapter that refers to published articles as examples of how quantitative research is conducted, described, and interpreted. In total, six published articles are described, two or three at the end of each chapter. We hope that these real-world research examples will help readers break down the components of quantitative research and galvanize their understanding of the concepts and methods covered in this text. An overview of the six articles

is provided in Table P.1, and the complete published versions are available at www.sagepub.com/odwyer. Also, to complement the text, we provide an appendix that contains guidelines for evaluating research reports (e.g., journal articles, dissertations, etc.). Although these guidelines are “slanted” toward quantitative research, we show parallels with qualitative research that are consistent with the theme of this book. At the end of each chapter, we have included discussion questions that have been designed not so much to arrive at precise answers but rather to promote creative thinking about the linkages between quantitative and qualitative research traditions.

Section I, titled “Research in the Social Sciences: Qualitative Meets Quantitative,” comprises Chapters 1 to 3. In these chapters, we provide an advance organizer in the form of a description of research in general—including its aims and methods. Our intent here is to first provide information about what constitutes “quality research.” Because it is our contention that there is a fundamental unity underlying all research, we next discuss the unifying concepts of research that apply regardless of whether one is examining problems through a quantitative

Table P.1 Summary of the Research Articles Referred to in This Text

Article No.	Reference	Research Design	Sample and Data
Article 1	Yang, Y., Cho, Y., Mathew, S., & Worth, S. (2011). College student effort expenditure in online versus face-to-face courses: The role of gender, team learning orientation, and sense of classroom community. <i>Journal of Advanced Academics</i> , 22(4), 619–638.	Non-experimental, cross-sectional study with descriptive and predictive objectives	Convenience sample of 799 college students at a midwestern university
Article 2	Clayton, J. K. (2011). Changing diversity in U.S. schools: The impact on elementary student performance and achievement. <i>Education and Urban Society</i> , 43(6), 671–695.	Non-experimental, longitudinal trend study with descriptive and predictive objectives	Purposive sample of 24 school districts with 56,056 fifth graders in Virginia

Article No.	Reference	Research Design	Sample and Data
Article 3	Porfeli, E., Wang, C., Audette, R., McColl, A., & Algozzine, B. (2009). Influence of social and community capital on student achievement in a large urban school district. <i>Education and Urban Society</i> , 42(1), 72–95.	Non-experimental, cross-sectional study with descriptive and predictive objectives	Purposive sample of 80 elementary schools from an urban school district in the southeast
Article 4	Núñez, A, Sparks, P. J., & Hernández, E. A. (2011). Latino access to community colleges and Hispanic-serving institutions: A national study. <i>Journal of Hispanic Higher Education</i> , 10(1), 18–40.	Non-experimental, cross-sectional study with descriptive and predictive objectives	Stratified random sample of first time, first year college students available in a nationally representative BPS:04 data set
Article 5	Van Voorhis, F. L. (2011). Adding families to the homework equation: A longitudinal study of mathematics achievement. <i>Education and Urban Society</i> , 43(3), 313–338.	Quasi-experimental, longitudinal panel study with non-random assignment to treatment and control conditions	Convenience sample of 135 third-grade students in four elementary schools in a southeastern urban school district, followed over 2 years.
Article 6	Booksh, R. L., Pella, R. D., Singh, A. N., & Gouvier, W. D. (2010). Ability of college students to simulate ADHD on objective measures of attention. <i>Journal of Attention Disorders</i> , 13(4), 325–338.	True experimental cross-sectional study with random assignment to treatment and control conditions	Convenience sample of 110 undergraduates enrolled in a psychology course at a southern university.

Note: BPS:04, Beginning Postsecondary Students Longitudinal Study 2004.

or qualitative lens. We also try to explicate the difference between “problem finding” and “problem solving” and how these differences also help traverse the qualitative–quantitative continuum. However, we also give some background about the “paradigm wars,” highlighting that while there is a fundamental unity between the traditions, differences remain, some of which are significant. We conclude Section

I by explicating the purposes, philosophical assumptions, methods, and further conceptions of the “quality” of qualitative research, followed by a similar treatment of quantitative research. The sequence of qualitative followed by quantitative discussion is not accidental, but rather, it is based on the assumption that most of our readers are qualitatively inclined. Our sequencing of the content is designed to help those readers transition from thinking qualitatively to thinking quantitatively. In Chapter 3, we begin to include sections called “Connections to Qualitative Research.” These sections are designed to help our readers gain a better understanding of the quantitative tradition by pointing out salient concepts, terminology, and perspectives that “connect” to the qualitative tradition.

In Section II, titled “The Sine Qua Non for Conducting Research in the Quantitative Tradition,” we engage readers with the essentials of conducting research in the quantitative tradition. In Chapters 4 through 6, we provide an overview of the sampling and external validity, instrumentation and measurement, and internal validity, respectively. Our coverage of these topics is purposefully presented prior to our coverage of the most common quantitative research designs and data analysis procedures. We organized the text this way because we believe that our readers will be able to develop a more complete understanding of quantitative research designs if they understand the common principles that underlie all quantitative research. By continuing to make connections in Section II between the terms used in both traditions, we hope to prompt readers to recognize that they may already have a solid platform for understanding quantitative methods. The “Connections to Qualitative Research” found in each of these chapters were sometimes easy to formulate, but at other times, it made us realize that, while the two traditions are complementary and in pursuit of the same common goal, there are indeed important differences. In these sections, we pull together and reaffirm the complementary nature of quantitative and qualitative research by stressing their shared empirical and systematic components, as well as by celebrating their differences. In the end, we hope that readers will come to agree with our conclusion that these differences provide the basis for an even more powerful methodology.

Section III, titled “Research Design and Data Analysis in the Quantitative Tradition,” comprises Chapters 7 through 10. Chapters 7 and 8 introduce readers to the most common non-experimental and experimental research designs used in the social sciences, respectively. In each chapter, we describe the essential characteristics of the design, the steps undertaken during implementation, the strengths