# RESEARCH IN SPECIAL EDUCATION

Third Edition

# RESEARCH IN SPECIAL EDUCATION

## Designs, Methods, and Applications

*By*

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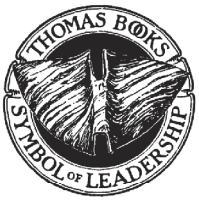


**CHARLES C THOMAS • PUBLISHER • LTD.**
*Springfield • Illinois • U.S.A.*

*Published and Distributed Throughout the World by*

CHARLES C THOMAS • PUBLISHER, LTD.
2600 South First Street
Springfield, Illinois 62704



ISBN 978-0-398-09316-7 (paper)
ISBN 978-0-398-09317-4 (ebook)

*First Edition, 2001*
*Second Edition, 2011*
*Third Edition, 2020*

Library of Congress Catalog Card Number: 2019045609

*With* THOMAS BOOKS c*areful attention is given to all details of manufacturing and design. It is the Publisher's desire to present books that are satisfactory as to their physical qualities and artistic possibilities and appropriate for their particular use.* THOMAS BOOKS *will be true to those laws of quality that assure a good name and good will.*

*Printed in the United States of America*
*MM-C-1*

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

Names: Rumrill, Phillip D., Jr. editor. | Cook, Bryan G., editor. | Stevenson, Nathan A., editor.
Title: Research in special education: designs, methods, and applications / By Phillip D. Rumrill, Jr., Kent State University, School of Lifespan Development and Educational Sciences, Center for Disability Studies, Bryan G. Cook, University of Virginia Department of Curriculum, Instruction, and Special Education and Nathan A. Stevenson, Kent State Univerity, School of Lifespan Develpment and Educational Sciences.
Description: Third edition. | Springfield; Illinois : Charles C Thomas, Publisher, Ltd., [2020] | Includes bibliographical references and index.
Identifiers: LCCN 2019045609 (print) | LCCN 2019045610 (ebook) | ISBN 9780398093167 (paperback) | ISBN 9780398093174 (ebook)
Subjects: LCSH: Special education—Research—United States—Handbooks, manuals, etc. | People with disabilities—Education—Research—United States—Handbooks, manuals, etc.
Classification: LCC LC3981 .RBS 2020 (print) | LCC LC3981 (ebook) | DDC 371.9/07/2—dc23
LC record available at https://lccn.loc.gov/2019045609
LC ebook record available at https://lccn.loc.gov/2019045610

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*For Amy; Chad, Cassidy, Stuart, Doug, Nate, and Connor;*
*Shirley and Phillip Sr.; and Rick and Brian . . . PDR*

*For Jean and Gary . . . BGC*

*For Jenny, Carter, and Lily . . . NAS*

# PREFACE

This third edition was written as a text and resource guide for graduate-level students, practitioners, and teachers in the fields of special education, disability studies, early intervention, school psychology, and child and family services. The primary purpose of the book is to offer a broad-based examination of the role of scientific inquiry in contemporary special education. As with the first two editions, which were published in 2001 and 2011, our aim was to provide a comprehensive overview of the philosophical, ethical, methodological, and analytical fundamentals of social science and educational research—as well as to specify aspects of special education research that distinguish it from scientific inquiry in other fields of education and human services. Foremost among these distinctions are the research beneficiaries, i.e., children with disabilities, their parents, and special educators; the availability of federal funds for research and demonstration projects that seek to improve educational outcomes for children with disabilities; and the historical, philosophical, and legislative bases for the profession of special education.

We are very pleased to add Dr. Nathan Stevenson of Kent State University as a coauthor of this third edition. This new edition represents a revision of more than 30 percent in comparison to the 2011 second edition. We added more than 250 new references and thoroughly updated every chapter with new developments in research topics, designs, and methods that have emerged over the past decade in the field of special education. We also added considerable text related to evidence-based practice, open science, and quality indicators for special education research in a design-specific context.

Like the 2001 and 2011 versions, this third edition is divided into ten chapters. Chapter 1 establishes the theoretical underpinnings of social scientific inquiry; provides a foundation in the philosophical, epistemological, and methodological considerations related to the design and execution of research in general and special education research in particular; and discusses the broad purposes of research in special education and disability studies. Chapter 2 addresses issues that are preparatory to designing and

evaluating special education research, such as sources of research ideas, translating research ideas into research hypotheses, identifying variables, and sampling issues. Chapter 3 discusses key measurement and statistical concepts used in the quantitative research tradition, including reliability and validity of measurement instruments; the purposes of descriptive, inferential, and nonparametric statistics in analyzing numerical data; and selected methods of statistical analysis. Researchers will note an expanded and updated section on the psychometric properties of educational and psychological instruments as well as updated text devoted to nonparametric and multivariate statistics. Chapter 4 reviews ethical issues and guidelines for the design, implementation, and reporting of research in special education. Chapter 5 addresses key criteria for evaluating the quality of special education research, drawing valid inferences from results, and generalizing findings from the research sample to the target population.

Chapters 6, 7, and 8 review the wide range of quantitative, qualitative, and integrative approaches to conducting research in special education, and they feature examples of these designs that we drew from the contemporary educational and disability studies literature. All three of these chapters have been completely updated with new examples and new text describing topic areas and research methods that are most commonly seen in the special education literature. Chapter 6 addresses intervention/ stimulus, nonmanipulation relationship and group comparative, and descriptive studies in the quantitative paradigm. Chapter 7 discusses qualitative research methods as they apply to special education. Chapter 8 examines and categorizes a variety of narrative literature reviews according to their purposes. Chapter 9 presents a published research article section by section; annotates the components and composition of a research report; and provides a protocol that students, practitioners, and educators can use to evaluate the technical soundness and scientific merits of published research articles. The final chapter of this text addresses future trends in special education research as they apply to a variety of stakeholders (e.g., administrators, policymakers, educators, researchers, children with disabilities, parents, funding agencies, consumer advocates).

Because this book was written as an introductory text for graduate students and practitioners in special education, we focus much of the information contained herein on the role of the reader as a "professional consumer" of research. In so doing, we not only orient the student or practitioner to the fundamentals of research design, we also introduce him or her to the professional literature in this dynamic field of inquiry. Like the companion text written by Phillip Rumrill and James Bellini, *Research in Rehabilitation Counseling* (Charles C Thomas, Publisher, 2018), this book provides the "basics" that one would need to begin conducting a research investigation,

but we would encourage that person to supplement this book with coursework in statistics and advanced research design before initiating an empirical study.

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# ACKNOWLEDGMENTS

We would like to express our sincere gratitude to the people who made this third edition possible. We begin by thanking our faculty mentors—Dr. Richard Roessler of the University of Arkansas, Dr. Mel Semmel of the University of California at Santa Barbara, and Dr. Cynthia Okolo of Michigan State University—who introduced us to research in disability studies, rehabilitation, and special education and whose work continues to inspire our teaching, research, and writing. We also express our gratitude to our friends and colleagues throughout the United States who have provided us with valuable opportunities to collaborate on research and writing projects: Dr. Kay Schriner of the University of Arkansas, Dr. Brian McMahon of Virginia Commonwealth University, Dr. Paul Wehman of Virginia Commonwealth University, Dr. James Bellini of Syracuse University, Dr. Michael Gerber of the University of California at Santa Barbara, Dr. Lynn Koch of the University of Arkansas, Dr. Mykal Leslie of Kent State University, Dr. Jian Li of Kent State University, Dr. Malachy Bishop of the University of Wisconsin, Dr. Fong Chan of the University of Wisconsin, Dr. Timothy Landrum of the University of Louisville, Dr. Melody Tankersley of Kent State University, Dr. Robert Fraser of the University of Washington, Dr. Shawn Fitzgerald of Antiock New England Graduate School, Dr. David Strauser of the University of Illinois, Dr. Chung-Yi Chiu of the University of Illinois, Dr. Timothy Tansey of the University of Wisconsin, and Dr. Deborah Reed of the University of Iowa.

We are indebted to Dr. Tricia Niesz of Kent State University, Dr. Lynn Koch of the University of Arkansas, Ms. Jennifer Davenport of the University of Arkansas, Mr. Stuart Rumrill of the University of Wisconsin-Madison, and Ms. Melissa Jones Wilkins of the University of Arkansas for contributing the chapter on qualitative research; to Dr. Jian Li of Kent State University for her contributions to the chapter on measurement and statistics; to Dr. Mykal Leslie and Mr. Zachary Strickler of Kent State University and Mr. Stuart Rumrill of the University of Wisconsin-Madison for their contributions to the chapter on research ethics; and to Dr. James Bellini of Syracuse University for allowing us to draw from his co-authored companion text to

this book, *Research in Rehabilitation Counseling* (Charles C Thomas, 2018). For their editorial and clerical assistance, we thank Mr. Nathan Rumrill, Ms. Aundrea Gee Cormier, and Mr. Christopher Konieczko, all of Kent State University.

Last, but certainly not least, we extend our appreciation to Mr. Michael Payne Thomas of Charles C Thomas, Publisher for the opportunity to complete this third edition. We look forward to many more cooperative writing and publishing endeavors in the years to come.

# CONTENTS

*Page*

*Preface* . . . . . ix

*Chapter*

1. INTRODUCTION TO RESEARCH IN SPECIAL EDUCATION . . . . . 3

2. GETTING STARTED IN SPECIAL EDUCATION RESEARCH-VARIABLES, RESEARCH QUESTIONS, AND HYPOTHESES . . . . . 17

3. MEASUREMENT AND STATISTICS IN SPECIAL EDUCATION RESEARCH . . . . . 36
   *Co-Authored by Jian Li*

4. ETHICAL ISSUES AND GUIDELINES FOR SPECIAL EDUCATION RESEARCH . . . . . 73
   *Co-Authored by Mykal Leslie, Zachary Strickler, and Stuart Rumrill*

5. RESEARCH VALIDITY . . . . . 95

6. QUANTITATIVE RESEARCH DESIGNS . . . . . 113

7. QUALITATIVE RESEARCH DESIGNS . . . . . 148
   *By Tricia Niesz, Lynn Koch, Jennifer Davenport, Stuart Rumrill, and Melissa Jones Wilkins*

8. NARRATIVE LITERATURE REVIEWS . . . . . 192

9. ANATOMY OF A RESEARCH ARTICLE AND GUIDELINES FOR CRITIQUE . . . . . 202

10. THE FUTURE OF SPECIAL EDUCATION RESEARCH . . . . 228

*Bibliography* . . . . . 247
*Index* . . . . . 279
*About the Authors* . . . . . 284

# RESEARCH IN SPECIAL EDUCATION

# Chapter 1

# INTRODUCTION TO RESEARCH IN SPECIAL EDUCATION

The purpose of this chapter is to establish practical and scientific bases for the special education research enterprise. We begin with an introduction to and overview of the professional practice of special education. We then discuss different ways that special education stakeholders come to know things, such as which instructional practices are effective and should be used, with special attention to the strength for using scientific research as a way of knowing. We then examine primary roles of research in special education, including building the professional literature base, theory building, and identifying effective practices; as well as consider challenges to research in special education.

## THE PROFESSIONAL PRACTICE OF SPECIAL EDUCATION

Special education is a multifaceted and extensive service delivery system. The Thirty-Ninth Annual Report to Congress (U.S. Department of Education, 2017) documents that, in 2015, over seven-million American infants, toddlers, children, and youth with disabilities received early-intervention and special-education services (7,172,125 infants, toddlers, children, and youth with disabilities to be exact). Individuals receiving services range from 0 to 21 years in age and are identified as having autism, deaf-blindness, developmental delay, emotional disturbance, hearing impairment, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment (including attention deficit hyperactivity disorder), specific learning disability, speech and language impairment, traumatic brain injury, and visual impairments. Because the characteristics of learners with disabilities vary dramatically, many different professionals are needed to provide special education services in many different settings. In 2014, approximately 380,000

full-time equivalent (FTE) special education teachers, 470,000 FTE paraprofessionals (including one-to-one tutors, instructional assistants, support providers, and translators), and more than 200,000 FTE providers of related services (e.g., speech-language pathologists, psychologists, occupational therapists, counselors, rehabilitation counselors, physical therapists, social workers, medical/nursing service staff, physical education teachers, and recreation and therapeutic recreation specialists) were employed in the delivery of special education services throughout the U.S. and outlying areas (U.S. Department of Education, 2017). Special educators provide services in homes, community-based settings, regular early childhood programs, separate early childhood classes, service provider locations (e.g., speech clinician's office), inclusive classrooms, resource rooms, separate special education classes in public schools, special schools, residential facilities, private schools, hospitals, correctional facilities, and other settings.

Although the majority of students with disabilities in the United States are now educated in inclusive settings in public schools, it is important to remember that a history of advocacy, court cases, and legislation was necessary to provide children with disabilities, especially those with severe disabilities, access to an appropriate education (Yell, Rogers, & Rogers, 1998). Historically, the common belief that people with disabilities are not capable of learning kept them out of educational settings. However, it is now widely recognized that students with disabilities can learn and are entitled to an appropriate education. Thus, one of the central functions of special education involves the development, identification, and application of instructional practices to effectively educate learners with disabilities. Furthermore, as Kauffman and Badar (2014) noted, the right to effective instruction is "an important civil and moral right of students with disabilities" (p. 13).

Enacted to provide an appropriate education for students with disabilities, the Individuals with Disabilities in Education Act (IDEA, originally the Education for All Handicapped Children Act) mandates that an educational team formulate an Individualized Education Plan (IEP), which stipulates the annual educational goals, services, and placements for each identified student with a disability. However, there is no guarantee that the individuals comprising a student's IEP team (e.g., general and special-education teachers, specialists such as speech therapists, school administrators, and parents) will decide on goals, services, and placements that will produce optimal outcomes for the student. Further, IEPs serve only as a loose guide for day-to-day student-teacher interactions. Teachers typically have a great deal of freedom in how they interact with and instruct their students. Thus, the determination of what instruction students with disabilities receive is largely made by teachers who strive to do their best, but who often have not received sufficient training and do not have enough time or resources to optimally meet

the diverse needs of their students. Furthermore, especially since the advent of the internet, teachers are inundated with information regarding recommended, best, promising, and evidence-based practices (see Cook & Farley, 2019). Some of these practices have merit, some are well-intended but untested, and occasionally some come from individuals who intentionally mislead educators trying to make a buck. Unfortunately, most educators do not have the training to critically evaluate the research (or lack of research) supporting the effectiveness of recommended practices. It is little wonder, then, that interventions known to be effective are frequently not implemented, whereas some interventions that have been shown to be relatively ineffective are commonly used (i.e., the research-to-practice gap; Cook & Farley, 2019).

It is seldom a simple and straightforward process to determine what instructional practices are most likely to improve outcomes for learners with disabilities. Indeed, if selecting appropriate and effective teaching practices for students with unique and often problematic learning needs were simple, there would likely be little or no need for special education. Research is one way—we argue it is the most reliable and valid way—for determining the educational effectiveness of instructional practices. In fact, special education pioneers such as Jean Marc Gaspard Itard and Elizabeth Farrell have used research, in one form or another, to inform effective policy and practice since the inception of the field (Kode, 2002; Lane, 1979). The continued influence of research is evident in contemporary reforms such as evidence-based practice and data-based individualization. Despite the benefits of making decisions based on sound research, many educators lack the requisite knowledge and skills to critically evaluate the research base, and instead use other, less reliable, ways of knowing to determine which instructional practices to use. We hope the content of this text detailed in the following sections and chapters will enable special education stakeholders to use research as a means to better understand the enterprise of special education and identify effective instructional practices, with the ultimate goal of improving outcomes and quality of life for learners with disabilities.

## WAYS OF KNOWING

Although science provides a relatively objective method for "knowing," it is not the preferred method of many policymakers and teachers for making decisions about what happens in special education classrooms. Many educators prefer "flying by the seat of their pants" (Landrum & Tankersley, 1999, p. 325) and relying on anecdotal information from colleagues and the internet (e.g., Hott et al., 2018; Landrum, Cook, Tankersley, & Fitzgerald,

2007) to using research findings as the basis for pedagogical decisions. We review three of the most prevalent methods that special educators use to make decisions regarding the effectiveness of instructional practices—personal experience, expert testimony, and science—in the following subsections.

## Personal Experience

Personal experience involves relying on one's previous experiences or the experiences of others in a similar situation as the basis for one's beliefs. For example, if a teacher perceives that using a whole language approach resulted in improved reading for one student with a learning disability (LD), she may decide to use whole language techniques for all students with LD whom she has in her class in subsequent years, because she has come to believe that this practice works based on personal experience. Alternatively, if a teacher does not have relevant personal experience on an issue, she may talk with fellow teachers in the faculty lounge or read teachers' blogs on the internet in order to access the personal experiences of other teachers.

Use of personal experience has many advantages for educators. First, and most obviously, it is very easy to access; all one has to do is remember one's past or ask someone else with relevant experience. Similarly, the information provided is likely to be perceived as "usable" (see Carnine, 1997, for a discussion of the accessibility, usability, and trustworthiness of educational information). That is, if teachers themselves or their colleagues have already successfully used a practice, it is likely that the information can be readily used by others. Also, because the information derived from personal experience comes from sources typically perceived as "battle-tested" and reliable (Landrum, Cook, Tankersley, & Fitzgerald, 2002), it is likely that teachers consider the information to be trustworthy.

However, personal experience is highly fallible, and using it to determine what and how to teach may result in students receiving less than optimal instruction. For example, just because an intervention works with one student in one situation does not mean that it will work if implemented for other students in other contexts. Furthermore, human perceptions are prone to multiple biases, which can cause people to perceive situations inaccurately. For example, if a teacher strongly believes that a particular instructional practice is going to work, agrees with the philosophy or theory behind the practice, and has devoted a lot of time and energy to implementing the practice, he or she is likely to evaluate the practice as more effective than it actually has been (i.e., confirmation bias; Nickerson, 1998). Similarly, people often fail to perceive objects and events that are unexpected (e.g., inattentional blindness; Simons & Chabris, 1999). For example, if a teacher is not expecting an instructional practice to work, he or she may overlook indica-