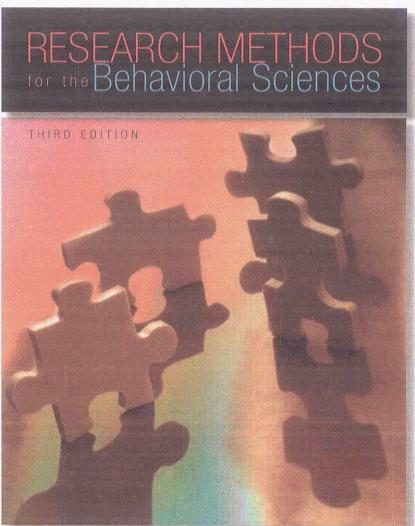
INTERNATIONAL STUDENT EDITION



Frederick J Gravetter | Lori-Ann B. Forzano

Forzano Sale in the Sale in th

Contents

PREFACE xv		Step 4: Select a Research Strategy 31			
	AUTHOR BIOGRAPHIES xxi		Step 5: Select a Research Design 32 Step 6: Conduct the Study 32 Step 7: Evaluate the Data 32 Step 8: Report the Results 33		
С	HAPTER 1		Step 9: Refine or Reformulate Your Research Idea 33		
	NTRODUCTION, ACQUIRING COUNTRING COU	СНА	PTER SUMMARY 34		
SCIENTIFIC METHOD 1		KEY WORDS 34			
CHAPTER OVERVIEW 1		EXE	EXERCISES 35		
1.1	INTRODUCTION TO RESEARCH		IER ACTIVITIES 35		
	METHODOLOGY 2 Why Take a Research Methods Course? 2 Other Reasons for Taking a Research Methods Course 3	WEE	RESOURCES 36		
		 c	HAPTER 2		
1.2	METHODS OF KNOWING AND ACQUIRING KNOWLEDGE 6	33	ESEARCH IDEAS 37		
	The Method of Tenacity 6 The Method of Intuition 7	CHAPTER OVERVIEW 37			
	The Method of Authority 8	2.1	GETTING STARTED 38		
	The Rational Method 11 The Empirical Method 14 Summary 16		Pick a Topic in Which You Are Interested 38 Do Your Homework 38 Keep an Open Mind 39		
1.3	THE SCIENTIFIC METHOD 16		Focus, Focus 39 Take One Step at a Time 40		
	The Steps of the Scientific Method 16 Other Elements of the Scientific Method 23	2.2	FINDING A GENERAL TOPIC AREA 40		
1.4	THE RESEARCH PROCESS 25		Common Sources of Research Topics 40 Common Mistakes in Choosing a Research		
	Step 1: Find a Research Idea: Select a Topic and Find a Hypothesis 25		Topic 43		
	Step 2: Determine How You Will Define and Measure Your Variables 30	2.3	FINDING AND USING BACKGROUND LITERATURE 45		

Primary and Secondary Sources 46

The Purpose of a Literature Search 48

Step 3: Identify the Participants or Subjects for

the Study 30

2.4	CONDUCTING A LITERATURE SEARCH 50 Starting Points 50 Using Online Databases 51	3.3	VALIDITY AND RELIABILITY OF MEASUREMENT 75 Validity of Measurement 75 Reliability of Measurement 82	
	Using PsycInfo 52 Beginning a Literature Search 55 The Process of Conducting a Literature Search 58		The Relationship Between Reliability and Validity 85	
	Searching Forward 60	3.4	SCALES OF MEASUREMENT 86	
2.5	FINDING AN IDEA FOR A NEW RESEARCH STUDY 62		The Nominal Scale 86 The Ordinal Scale 87 The Interval Scale 87	
	Find Suggestions for Future Research 62 Modify or Extend an Existing Study—Critical Reading 62		The Ratio Scale 88 Selecting a Scale of Measurement 88	
	Combine or Contrast Existing Results 63 Converting a Hypothesis Into a Specific Research Prediction 63	3.5	MODALITIES OF MEASUREMENT 89 Sclf-Report Measures 89 Physiological Measures 90 Behavioral Measures 90	
2.6	READING AND UNDERSTANDING A RESEARCH ARTICLE 64	3.6	OTHER ASPECTS OF	
СНА	PTER SUMMARY 66		MEASUREMENT 91 Multiple Measures 92	
KEY	WORDS 67		Sensitivity and Range Effects 92 Selecting a Measurement Procedure 93	
EXERCISES 67		СНА	APTER SUMMARY 94	
OTHER ACTIVITIES 67		KEY WORDS 94		
WEB RESOURCES 68		EXERCISES 95		
CHAPILR 3		OTH	HER ACTIVITIES 95	
DEFINING AND MEASURING VARIABLES 69		WEE	RESOURCES 96	
		 	HAPTER 4	
CHAPTER OVERVIEW 69		.XC	THICS IN RESEARCH 97	
3.1	AN OVERVIEW OF MEASUREMENT 70 CONSTRUCTS AND OPERATIONAL	CHA	NPTER OVERVIEW 97	
3.2	DEFINITIONS 72	4.1	INTRODUCTION 98	
	Theories and Constructs 72 Operational Definitions 73 Limitations of Operational Definitions 74		Ethical Concerns Throughout the Research Process 98 The Basic Categories of Ethical	
	Using Operational Definitions 74		Responsibility 99	

4.2	ETHICAL ISSUES AND HUMAN PARTICIPANTS IN RESEARCH 99
	Historical Highlights of Treatment of Human Participants 99
	American Psychological Association (APA) Guidelines 102 The Institutional Review Board (IRB) 115

NONHUMAN SUBJECTS IN
RESEARCH 117
Historical Highlights of Treatment of Nonhuman
Subjects 118
American Psychological Association (APA)
Guidelines 118
The Institutional Animal Care and Use

ETHICAL ISSUES AND

4.4 ETHICAL ISSUES AND SCIENTIFIC INTEGRITY 120
Fraud in Science 120
Plagiarism 122

Committee (IACUC) 119

CHAPTER SUMMARY 123

KEY WORDS 124

43

EXERCISES 124

OTHER ACTIVITIES 125

WEB RESOURCES 126

CHAPTER 5

SELECTING RESEARCH PARTICIPANTS 127

CHAPTER OVERVIEW 127

5.1 INTRODUCTION 128

Populations and Samples 128
Representative Samples 130
Sample Size 131
Sampling Basics 133

5.2 PROBABILITY SAMPLING METHODS 134
Simple Random Sampling 134
Systematic Sampling 136
Stratified Random Sampling 137
Proportionate Stratified Random Sampling 138
Cluster Sampling 139
Combined-Strategy Sampling 140
A Summary of Probability Sampling Methods 140

5.3 NONPROBABILITY SAMPLING METHODS 141 Convenience Sampling 141

CHAPTER SUMMARY 144

KEY WORDS 144

EXERCISES 144

OTHER ACTIVITIES 145

WEB RESOURCES 145

CHAPTER 6

RESEARCH STRATEGES
AND VALIDITY 146

CHAPTER OVERVIEW 146

Summary 156

- 6.1 QUANTITATIVE AND QUALITATIVE RESEARCH 147
- 6.2 STRATEGIES FOR QUANTITATIVE RESEARCH 148

The Descriptive Research Strategy 149

Relationships Between Variables 149
The Correlational Research Strategy: Measuring
Two Variables for Each Individual 150
Comparing Two or More Sets of Scores: The
Experimental, Quasi-Experimental, and
Nonexperimental Research Strategies 151
The Experimental Research Strategy 152
The Quasi-Experimental Research Strategy 153
The Nonexperimental Research Strategy 153
Data Structures and Statistical Analysis 154

6.3	INTERNAL AND EXTERNAL VALIDITY 156 Internal Validity 157 External Validity 158 Validity and the Quality of a Research Study 160	СНА	PTER SUMMARY 186
		KEY '	WORDS 187
		EXER	RCISES 187
6.4	THREATS TO INTERNAL VALIDITY 161 Extraneous Variables 161 Confounding Variables 162 Extraneous Variables, Confounding Variables, and Internal Validity 163 Category 1: General Threats to Internal Validity for All Studies: Environmental Variables 165 Category 2: Threats to Internal Validity for Studies Comparing Different Groups 165 Category 3: Threats to Internal Validity for Studies Comparing One Group Over Time 166	ОТН	ER ACTIVITIES 188
		WEB	RESOURCES 188
		CI	HAPTER 7
			HE EXPERIMENTAL RESEARCH FRATEGY 189
		CHAI	PTER OVERVIEW 189
6.5	THREATS TO EXTERNAL VALIDITY 170		
	Category 1: Generalizing Across Participants or Subjects 171	7.1	CAUSE-AND-EFFECT RELATIONSHIPS 190
	Category 2: Generalizing Across Features of a Study 174		Terminology for the Experimental Research Strategy 191
	Category 3: Generalizing Across Features of the Measures 174		Causation and the Third-Variable Problem 193
6.6	MORE ABOUT INTERNAL AND EXTERNAL VALIDITY 176		Causation and the Directionality Problem 194 Controlling Nature 195
	Balancing Internal and External Validity 177 Artifacts: Threats to Both Internal and External		DISTINGUISHING ELEMENTS OF AN EXPERIMENT 196
	Validity 177 Exaggerated Variables 182		Manipulation 196 Control 199
6.7	VALIDITY AND INDIVIDUAL RESEARCH STRATEGIES 182		DEALING WITH EXTRANEOUS VARIABLES 202
	Validity and the Experimental Strategy 183		Control by Holding Constant or
	Validity and the Quasi-Experimental Strategy 183 Validity and the Nonexperimental Strategy 183		Matching 203 Control by Randomization 205
	Validity and the Correlational Strategy 183 Validity and the Descriptive Strategy 184		Comparing Methods of Control 207 Advantages and Disadvantages of Control Methods 207
6.8	RESEARCH STRATEGIES, RESEARCH DESIGNS, AND RESEARCH PROCEDURES 184	7 1	
			CONTROL GROUPS 208 No-Treatment Control Groups 209
	Research Strategies 184 Research Designs 184		Placebo Control Groups 209
	Research Procedures 185	75	MANUPULATION CHECKS 210

7.5 MANIPULATION CHECKS 210

Research Procedures 185

7.6 INCREASING EXTERNAL VALIDITY:
 SIMULATION AND FIELD STUDIES 212
 Simulation 213
 Field Studies 215
 Advantages and Disadvantages of Simulation
 and Field Studies 216

CHAPTER SUMMARY 216

KEY WORDS 217

EXERCISES 217

OTHER ACTIVITIES 219

WEB RESOURCES 219

CHAPTER 8

EXPERIMENTAL DESIGNS: BETWEEN-SUBJECTS DESIGN 220

CHAPTER OVERVIEW 220

8.1 INTRODUCTION TO BETWEENSUBJECTS EXPERIMENTS 221

Review of the Experimental Research
Strategy 221
Characteristics of Between-Subjects
Designs 221
Advantages and Disadvantages of Between-Subjects
Designs 223

- 8.2 INDIVIDUAL DIFFERENCES AS
 CONFOUNDING VARIABLES 225
 Equivalent Groups 227
- 8.3 LIMITING CONFOUNDING BY INDIVIDUAL DIFFERENCES 227
 Random Assignment (Randomization) 227
 Matching Groups (Matched Assignment) 228
 Holding Variables Constant or Restricting Range of Variability 230
 Summary and Recommendations 230

8.4 INDIVIDUAL DIFFERENCES AND VARIABILITY 231

Differences Between Treatments and Variance Within Treatments 234 Minimizing Variance Within Treatments 234 Summary and Recommendations 236

8.5 OTHER THREATS TO INTERNAL VALIDITY OF BETWEEN-SUBJECTS DESIGNS 236

Differential Attrition 236

Communication Between Groups 237

8.6 APPLICATIONS AND STATISTICAL
ANALYSES OF BETWEEN-SUBJECTS
DESIGNS 238

Two-Group Mean Difference 238
Comparing Means for More Than Two
Groups 240
Comparing Proportions for Two or More
Groups 242

CHAPTER SUMMARY 243

KEY WORDS 244

EXERCISES 244

OTHER ACTIVITIES 245

WEB RESOURCES 245

CHAPTER 9

EXPERIMENTAL DESIGNS: WITHIN-SUBJECTS DESIGN 246

CHAPTER OVERVIEW 246

9.1 INTRODUCTION TO WITHIN-SUBJECTS EXPERIMENTS 247

Characteristics of Within-Subjects
Designs 247

Advantages of Within-Subjects Designs 248
Disadvantages of Within-Subjects Designs 252

9.2	THREATS TO INTERNAL VALIDITY FOR			
	WITHIN-SUBJECTS DESIGNS 254			
	Separating Time-Related Factors and Order			
	Effects 255			
	Order Effects as a Confounding			
	Variable 256			

9.3 DEALING WITH TIME-RELATED THREATS
 AND ORDER EFFECTS 258
 Controlling Time 258
 Switch to a Between-Subjects Design 259
 Counterbalancing: Matching Treatments
 with Respect to Time 259
 Limitations of Counterbalancing 262

9.4 APPLICATIONS AND STATISTICAL ANALYSES OF WITHIN-SUBJECTS DESIGNS 265
 Two-Treatment Designs 265
 Multiple-Treatment Designs 266

9.5 COMPARING WITHIN-SUBJECTS AND BETWEEN-SUBJECTS DESIGNS 267 Matched-Subjects Designs 268

CHAPTER SUMMARY 269

KEY WORDS 270

EXERCISES 270

OTHER ACTIVITIES 271

WEB RESOURCES 271

CHAPTER 10

THE NONEXPERIMENTAL
AND QUASI-EXPERIMENTAL
STRATEGIES: NONEQUIVALENT
GROUP, PRE POST, AND
DEVELOPMENTAL DESIGNS 272

CHAPTER OVERVIEW 272

10.1 NONEXPERIMENTAL AND QUASI-EXPERIMENTAL RESEARCH STRATEGIES 273

> The Structure of Nonexperimental and Quasiexperimental Designs 274

10.2 BETWEEN-SUBJECTS NONEXPERI-MENTAL AND QUASI-EXPERIMENTAL DESIGNS: NONEQUIVALENT GROUP DESIGNS 275

Threats to Internal Validity for Nonequivalent
Group Designs 276
The Differential Research Design 278
The Posttest-Only Nonequivalent Control Group
Design 279

The Pretest-Posttest Nonequivalent Control Group Design 282

10.3 WITHIN-SUBJECTS NONEXPERIMENTAL AND QUASI-EXPERIMENTAL DESIGNS: PRE-POST DESIGNS 283

Threats to Internal Validity for Pre–Post
Designs 283
The One-Group Pretest–Posttest Design 284
The Time-Series Design 285
Single-Case Applications of Time-Series
Designs 286

10.4 DEVELOPMENTAL RESEARCH
 DESIGNS 288
 The Cross-Sectional Developmental Research
 Dosign 288
 The Longitudinal Developmental Research
 Design 291

10.5 TERMINOLOGY IN NONEXPERIMENTAL, QUASI-EXPERIMENTAL, AND DEVELOPMENTAL DESIGNS 294

CHAPTER SUMMARY 295

KEY WORDS 296

EXERCISES 297

OTHER ACTIVITIES 297

WEB RESOURCES 298

CHAPTER 11

FACTORIAL DESIGNS 200

CHAPTER OVERVIEW 299

11.1 INTRODUCTION TO FACTORIAL DESIGNS 300Experimental Factorial Designs 300

11.2 MAIN EFFECTS AND INTERACTIONS 303
Identifying Interactions 305

11.3 MORE ABOUT INTERACTIONS 307

Alternative Definitions of an Interaction 308
Interpreting Main Effects and Interactions 310
Independence of Main Effects and
Interactions 311

11.4 TYPES OF FACTORIAL DESIGNS 312

Between-Subjects and Within-Subjects
Designs 314

Experimental and Nonexperimental
or Quasi-Experimental Research
Strategies 316

Pretest-Posttest Control Group Designs 318

Higher-Order Factorial Designs 319

11.5 APPLICATIONS OF FACTORIAL DESIGNS 320

Expanding and Replicating a Previous Study 320
Reducing Variance in Between-Subjects
Designs 322
Evaluating Order Effects in Within-Subjects
Designs 323

CHAPTER SUMMARY 330

KEY WORDS 330

EXERCISES 331

OTHER ACTIVITIES 332

WEB RESOURCES 332

CHAPTER 12

TENE CORRELATIONAL RESEARCH

CHAPTER OVERVIEW 333

12.1 AN INTRODUCTION TO CORRELATIONAL RESEARCH 334

12.2 THE DATA FOR A CORRELATIONAL STUDY 335

Measuring Relationships 336
Evaluating Relationships for Non-Numerical Scores 339
Comparing Correlational, Experimental, and Differential Research 339

12.3 APPLICATIONS OF THE CORRELATIONAL STRATEGY 340

Prediction 341 Reliability and Validity 342 Evaluating Theories 343 Interpreting a Correlation 343

12.4 STRENGTHS AND WEAKNESSES
OF THE CORRELATIONAL RESEARCH
STRATEGY 345

12.5 RELATIONSHIPS WITH MORE THAN TWO VARIABLES 348

CHAPTER SUMMARY 349

KEY WORDS 349

EXERCISES 349

OTHER ACTIVITIES 350

WEB RESOURCES 350

CHAPTER 13

THE DESCRIPTIVE RESEARCH STRATEGY 351

CHAPTER OVERVIEW 351

13.1 AN INTRODUCTION TO DESCRIPTIVE RESEARCH 352

13.2 THE OBSERVATIONAL RESEARCH DESIGN 353
 Behavioral Observation 353
 Content Analysis and Archival Research 355
 Types of Observation and Examples 356
 Strengths and Weaknesses of Observational Research Designs 359

13.3 THE SURVEY RESEARCH DESIGN 360

Types of Questions 361
Constructing a Survey 366
Selecting Relevant and Representative
Individuals 367
Administering a Survey 368
Strengths and Weaknesses of Survey Research 372

13.4 THE CASE STUDY DESIGN 373

Applications of the Case Study Design 373 Strengths and Weaknesses of the Case Study Design 375

CHAPTER SUMMARY 377

KEY WORDS 378

EXERCISES 378

OTHER ACTIVITIES 379

WEB RESOURCES 379

CHAPTER 14

SINGLE-SUBJECT RESEARCH DESIGNS 380

CHAPTER OVERVIEW 380

14.1 INTRODUCTION 381

Evaluating the Results From a Single-Subject Study 382

14.2 PHASES AND PHASE CHANGES 383

Level, Trend, and Stability 384 Changing Phases 388 Visual Inspection Techniques 389

14.3 THE ABAB REVERSAL DESIGN 392

Limitations of the ABAB Design 395
Variations on the ABAB Design: Creating More
Complex Phase Change Designs 397

14:4 MULTIPLE-BASELINE DESIGNS 400

Rationale for the Multiple-Baseline
Design 402
Strengths and Weaknesses of the Multiple-Baseline Design 403

14.5 OTHER SINGLE-SUBJECT DESIGNS 404

Dismantling, or Component-Analysis,
Design 404
The Changing-Criterion Design 405
The Alternating-Treatments Design 408

14.6 GENERAL STRENGTHS AND
WEAKNESSES OF SINGLE-SUBJECT

DESIGNS 410

Advanages of Single-Subject Designs 410 Disadvantages of Single-Subject Designs 411

CHAPTER SUMMARY 413

KEY WORDS 413

EXERCISES 414

OTHER ACTIVITIES 414

WFB RESOURCES 415

CHAPTER 15

STATISTICAL EVALUATION OF DATA 416

CHAPTER OVERVIEW 416

15.1 THE ROLE OF STATISTICS IN THE RESEARCH PROCESS 417 Planning Ahead 417 Statistics Terminology 418

15.2 DESCRIPTIVE STATISTICS 419

Frequency Distributions 419
Measures of Central Tendency 422
Measures of Variability 424
Describing Interval and Ratio Data
(Numerical Scores) 427
Describing Nominal and Ordinal Data 428
Using Graphs to Summarize Data 429
Correlations 432
Regression 435
Multiple Regression 436

15.3 INFERENTIAL STATISTICS 437

Hypothesis Tests 439
Reporting Results From a Hypothesis Test 443
Errors in Hypothesis Testing 444
Factors That Influence the Outcome
of a Hypothesis Test 446

15.4 EXAMPLES OF HYPOTHESIS TESTS 448

Comparing Groups of Scores: Statistical Tests for the Experimental, Quasi-Experimental, and Nonexperimental Research Strategies 449 Tests for Mean Differences 449 Comparing Proportions 452
Evaluating Relationships: Statistical Tests for the
Correlational Research Strategy 453

15.5 CONCERNS ABOUT HYPOTHESIS TESTS: MEASURING EFFECT SIZE 455

Measuring Effect Size With Cohen's d=456Measuring Effect Size as a Percentage of Variance $(r^2 \text{ and } n^2) = 458$

15.6 SPECIAL STATISTICS FOR RESEARCH 459

The Spearman-Brown Formula 459
The Kuder-Richardson Formula 20 460
Cronbach's Alpha 461
Cohen's Kappa 461

CHAPTER SUMMARY 464

KEY WORDS 465

EXERCISES 465

OTHER ACTIVITES 467

WEB RESOURCES 467

CHAPTER 16

WRITING AN APA-STYLE RESEARCH REPORT 468

CHAPTER OVERVIEW 468

16.1 THE GOAL OF A RESEARCH REPORT 469

16.2 GENERAL APA GUIDELINES FOR WRITING STYLE AND FORMAT 470

Some Elements of Writing Style 470
Guidelines for Typing or Word
Processing 473
Manuscript Pages 474
Page Numbers and Page Headers 474

16.3 THE ELEMENTS OF AN APA-STYLE RESEARCH REPORT 475

Title Page 475 Abstract 477 Introduction 477 Method 479 Results 481 Discussion 483 References 485 Appendix 487

Author Note 489
Tables, Figure Captions, and Figures 490
Conference Presentations: Papers and Posters 490

16.4 SUBMITTING A MANUSCRIPT FOR PUBLICATION 493

16.5 WRITING A RESEARCH PROPOSAL 495Why Write a Research Proposal? 495How to Write a Research Proposal 496

CHAPTER SUMMARY 497

KEY WORDS 497

EXERCISES 497

OTHER ACTIVITIES 498

WEB RESOURCES 498

APPENDICES

- A MANDOW NEW YORK TARES AND INSTRUCTION (1996)
- SELVINES LECTVE LANGE VOI VOI DE S E ESTANCE ESTA LECTVE EL EL VIN VIN L'EL EL ENCENTE EN L'EL L'EL VIN VIN L'EL L'EL VIN L'EL L'EL VIN L'EL L'EL VIN VIN L'EL L'EL VIN VIN L'EL VIN VIN L'E
- CONTROL STREET SEED OF THE CONTROL SEED OF THE
- U. SAMPLEAPASTYUE RESEARCH REPORT MANUSCRUTTEO 3 PTORTAINEON STR

CALCUSSARY 581

REDERENCES 599

NAME INDEX 505

SUBJECT INDEX 607