Contents

	List of Figures List of Tables	xii xiii
ar	t I A New Language	1
	How We Know What We Know 2 What is Science? 2 The Evolution of Modern Science 4 Science: Argument and Evidence 5 Summary 6 Bibliography 6	
1	Reality, What a Concept: Definition Is Everything	9
	Definitions 10 Conceptualization 12 Operationalization 13 The Process of Scientific Inquiry or Science! 13 Summary 18	
2	Six of One, Half a Dozen of the Other: Explication, Validity, Reliability, and Measurement	20
	Validity of Definition (Conceptual and Operational) 24 Validity of Measurement 24 Meaning Analysis 24 Empirical Analysis (Construct Validity) 26 Hypothesis Testing 27 Discriminant Validity 27 Convergent Validity 28 Multitrait/Multimethod Validity 29 Validity of a Test 29 Pragmatic (Criterion) Validity 29 Concurrent Validity and Predictive Validity 30	

	Validity Summary 31 Reliability 31	
	Stability Reliability 32 Equivalence Reliability 33 Internal Consistency 33 Reliability Summary 33	
	Measurement 34 Nominal Measurement 34 Ordinal Measurement 35 Interval Measurement 35	
	Ratio Measurement 36	
	Summary 37 References 37	
3	Ladies and Gentlemen, Place Your Bets: Probability, Sampling Theory, and Hypothesis Testing	39
	Probability 40 Simple Probability (Odds) 41 Combinations 42 A Coincidence Game 44 Translating It to Science 49 Hypothesis Testing 50 Significance and Statements of Error 50 Significance and Type I Error 51 Type II Error 51 Summary 52 Reference 53	
4	Ask It in the Form of a Question, Please: Developing Questions and Creating Groups	54
	(The Research) Question, Hypotheses, and Research Questions 56 Sampling 58 Defining Samples 59 Probability Samples 59 Systematic Sampling 60 Stratified Sample 60 Non-probability Samples 63 Summary 64	
5	Are They Apples and Oranges, or Fruit?: Describing Groups	66
	Descriptive Statistics 67 Measures of Central Tendency 68 Measures of Dispersion 68 Parametric and Inferential Statistics 75 The Sampling Distribution 76 Curves 76 Summary 78	

t II Methodologies/Making Observations	81
Getting to Know You: Empirical Qualitative Approaches	83
Qualitative Approaches 83 The Approach 84 The Data 84 The Design 84 Data Evaluation 85 Conclusions 85 Qualitative Observational Techniques 86 Natural Observations 86 Participant Observation 87 In Person Interviews (In Depth and Focused) 89 The Group Interview 90 Summary 92	
Intelligent Design: Basic Approaches to Design	94
Experiments/Group Differences 96 Internal and External Validity 98 Attention, Advertisements, and Alpha 98 Congress, Kids, and Chocolate Sugar Bombs 99 Surveys/Continuous Relationships 101 Summary 102	
Kids, Don't Try This at Home: Experimental Design	104
The Nature of an Experimental Design 105 Pre-experimental Models 107 True Experimental Models 109 Common Threats to Validity 110 Quasi Experiments 114 Summary 114 References 115	
Survey Says: Survey Methodology	116
Basic Survey Language 117 Types of Survey 119 Mail/Internet Surveys 119 The Survey Schedule (Questionnaire) 120 The Interview/Survey Script 120 Length 121 Writing the Schedule 121 Survey Designs 122	
Sampling Error, Confidence Level, and Sample Size 123 Sampling Error 124 Confidence Level 124 Sample Size (N) 125	
	Getting to Know You: Empirical Qualitative Approaches Qualitative Approaches 83 The Approach 84 The Data 84 The Design 84 Data Evaluation 85 Conclusions 85 Qualitative Observational Techniques 86 Natural Observational Techniques 86 Natural Observation 87 In Person Interviews (In Depth and Focused) 89 The Group Interview 90 Summary 92 Intelligent Design: Basic Approaches to Design Experiments/Group Differences 96 Internal and External Validity 98 Attention, Advertisements, and Alpha 98 Congress, Kids, and Chocolate Sugar Bombs 99 Surveys/Continuous Relationships 101 Summary 102 Kids, Don't Try This at Home: Experimental Design The Nature of an Experimental Design 105 Pre-experimental Models 107 True Experimental Models 109 Common Threats to Validity 110 Quasi Experiments 114 Summary 114 References 115 Survey Says: Survey Methodology Basic Survey Language 117 Types of Survey 119 Mail/Internet Surveys 119 The Survey Schedule (Questionnaire) 120 The Interview/Survey Script 120 Length 121 Writing the Schedule 121 Survey Designs 122 Sampling Error, Confidence Level, and Sample Size 123 Sampling Error 124 Confidence Level 124

10	Is It a Boy or a Girl? Are Those the Only Choices?: Content Analysis	127
	An Overview 128 Conceptualization 129 Sampling 131	
	Coding Scheme and Coding (Operationalization) 132 Intercoder Reliability 134 Summary 134 References 135	
Pai	rt III Data Analysis	137
11	And What Does It All Mean?: Analytic Principles	139
	Hovland: Persuasion, Indoctrination, and Propaganda 140 Assessing Independent Variables (IVs) and Dependent Variables (DV) 141 Testing the Data for Statistical Significance 144 Hypotheses 144	177
	A Statistical Test: The Differences of Proportions Test 144 Summary 147	
12	The Count Says: Quantitative Approaches	148
	Group Differences Tests 151 t-Test (t to Test Explained Variance) 151 One-way ANOVA (F to Test Explained Variance) 152	-10
	ANOVA (F to Test Explained Variance) 152 ANOVA (F to Test Explained Variance) 152 MANOVA 152	
	Variable Relationship Tests 152	
	Correlation (r, r^2 ; t-Test for Explained Variance) 152 Simple Correlation/Regression (b, β , α , α ; t-Test for Explained Variance) 152	
	Multiple Correlation/Regression (R, R ² ; F to Test Over Explained Variance; t-Tests for Coefficients) 152	
	Canonical Correlation 153	
	Calculating Descriptive Statistics and a t-Test 153 Summary 157	
13	Who Are You Calling a Deviate?: Group Differences, ANOVA, and the F	159
	Impact of Voices 160	
	The F Table 161	
	Source of Variation 161	
	Degrees of Freedom 162 Sums of Squares 162	
	Between Groups Terms 163	
	Within Groups Terms 164	
	Total Variance 165	
	Mean Squares 165	

Back to Our Experiment 166 Beyond One-Way ANOVAs 169 Summary 170 14 We Need to Have a Talk About Relationships: Correlation, Simple Regression, Multiple Regression 171 Correlation 172 Simple Regression 175 Control and Multiple Regression 179 Multiple Regression and Beyond 182 Summary 182 Bibliography 183 15 Nobody Got Hurt: Human Subjects, Institutional Review Boards, and Ethics 184 History of Human Subjects Review Boards 184 Nuremberg Declaration 185 Other International Declarations 186 Basic Ethical Principles 187 Individual Protection for Human Subjects 187 Voluntary Participation 187 Privacy 188 Anonymity and Confidentiality 188 Coercion 188 Examples of Ethical Guidelines from Scholarly and Professional Communication Organizations 189 Scholarly Communication Organizations 189 Professional Communication Associations 190 Summary 190 Bibliography 191

Index