

BRIEF CONTENTS

PART ONE Introduction	Chapter 1	Introduction to Educational Research	2
	Chapter 2	Quantitative, Qualitative, and Mixed Research	28

PART TWO Planning the Research Study	Chapter 3	Developing Research Questions and Proposal Preparation	54
	Chapter 4	Research Ethics	92

PART THREE Foundations of Research	Chapter 5	Standardized Measurement and Assessment	122
	Chapter 6	Methods of Data Collection	160
	Chapter 7	Sampling	196
	Chapter 8	Validity of Research Results	226

PART FOUR Selecting a Research Method	Chapter 9	Experimental Research	262
	Chapter 10	Quasi-Experimental and Single-Case Designs	298
	Chapter 11	Nonexperimental Quantitative Research	326
	Chapter 12	Qualitative Research	358
	Chapter 13	Historical Research	390
	Chapter 14	Mixed Model and Mixed Method Research	408

PART FIVE Analyzing the Data	Chapter 15	Descriptive Statistics	432
	Chapter 16	Inferential Statistics	462
	Chapter 17	Data Analysis in Qualitative Research	498

PART SIX Writing the Research Report	Chapter 18	Preparation of the Research Report	524
	Appendix A	Quantitative Research Article Abstract and Link	542
	Appendix B	Qualitative Research Article Abstract and Link	543
	Appendix C	Mixed Research Article Abstract and Link	544

Preface xvii

Using Research Navigator™ xxiii

■ PART ONE Introduction 2

1 Introduction to Educational Research 2

Why Study Educational Research?	4
Areas of Educational Research	5
Examples of Educational Research	7
General Kinds of Research	8
<i>Basic and Applied Research</i>	8 ■ <i>Evaluation Research</i> 10 ■
<i>Action Research</i>	10 ■ <i>Oriental Research</i> 11
Sources of Knowledge	12
<i>Experience</i>	12 ■ <i>Expert Opinion</i> 13 ■ <i>Reasoning</i> 13
The Scientific Approach to Knowledge Generation	14
<i>Dynamics of Science</i>	15 ■ <i>Basic Assumptions of Science</i> 15 ■
<i>Scientific Method(s)</i>	17 ■ <i>Theory</i> 18 ■ <i>The Principle of Evidence</i> 21
Objectives of Educational Research	22
Overview of Book	25
Summary	26
Key Terms	26
Discussion Questions	27
Research Exercises	27
Relevant Internet Sites	27
Recommended Reading	27

2 Quantitative, Qualitative, and Mixed Research 28

Characteristics of the Three Research Paradigms	30
Quantitative Research Methods: Experimental and Nonexperimental Research	35
<i>Variables</i>	35 ■ <i>Experimental Research</i> 38 ■ <i>Nonexperimental Research</i> 40
Qualitative Research Methods	45
<i>Phenomenology</i>	46 ■ <i>Ethnography</i> 46 ■ <i>Case Study Research</i> 46 ■
<i>Grounded Theory</i>	47 ■ <i>Historical Research</i> 47

The Research Proposal	82
<i>Introduction</i>	83 ■ <i>Method</i> 83 ■ <i>Data Analysis</i> 85
Consumer Use of the Literature	85
Summary	88
Key Terms	90
Discussion Questions	90
Research Exercises	91

4 Research Ethics 92

What Are Research Ethics?	94
Ethical Concerns	96
<i>Relationship between Society and Science</i>	96 ■ <i>Professional Issues</i> 96 ■
<i>Treatment of Research Participants</i>	98
Ethical Guidelines for Research with Humans	101
<i>Informed Consent</i>	102 ■ <i>Informed Consent and Minors as Research</i>
<i>Participants</i>	105 ■ <i>Passive versus Active Consent</i> 107 ■ <i>Additional</i>
<i>Consent</i>	109 ■ <i>Deception</i> 109 ■ <i>Freedom to Withdraw</i> 110 ■
<i>Protection from Mental and Physical Harm</i>	111 ■ <i>Confidentiality and</i>
<i>Anonymity</i>	112
Institutional Review Board	112
Summary	118
Key Terms	119
Discussion Questions	120
Research Exercises	120
Relevant Internet Sites	121
Recommended Reading	121

PART THREE Foundations of Research 122

5 Standardized Measurement and Assessment 122

Defining Measurement	124
Scales of Measurement	125
<i>Nominal Scale</i>	126 ■ <i>Ordinal Scale</i> 127 ■ <i>Interval Scale</i> 127 ■
<i>Ratio Scale</i>	128

Assumptions Underlying Testing and Assessment	129
Identifying a Good Test or Assessment Procedure	132
<i>Overview of Reliability and Validity</i>	132 ■ <i>Reliability</i> 133 ■
<i>Validity</i>	140 ■ <i>Using Reliability and Validity Information</i> 146
Educational and Psychological Tests	147
<i>Intelligence Tests</i>	148 ■ <i>Personality Tests</i> 148 ■
<i>Educational Assessment Tests</i>	150
Sources of Information about Tests	152
Summary	155
Key Terms	156
Discussion Questions	157
Research Exercises	157
Relevant Internet Sites	158
Recommended Reading	158
Endnotes	158

6 Methods of Data Collection 160

Tests	163
Questionnaires	164
<i>How to Construct a Questionnaire</i>	165
Interviews	178
<i>Quantitative Interviews</i>	180 ■ <i>Qualitative Interviews</i> 183
Focus Groups	185
Observation	186
<i>Quantitative Observation</i>	187 ■ <i>Qualitative Observation</i> 188
Secondary Data (Existing Data)	192
Summary	193
Key Terms	193
Discussion Questions	194
Research Exercises	194
Relevant Internet Sites	194
Recommended Reading	195

7 Sampling 196

Terminology Used in Sampling	199
Random Sampling Techniques	200

<i>Simple Random Sampling</i>	200	■	<i>Systematic Sampling</i>	204	■	<i>Stratified Random Sampling</i>	207	■	<i>Cluster Random Sampling</i>	211
Nonrandom Sampling Techniques	214									
<i>Convenience Sampling</i>	214	■	<i>Quota Sampling</i>	215	■	<i>Purposive Sampling</i>	215	■	<i>Snowball Sampling</i>	216
Random Selection and Random Assignment	216									
Determining the Sample Size When Random Sampling Is Used	217									
Sampling in Qualitative Research	220									
Summary	223									
Key Terms	223									
Discussion Questions	224									
Research Exercises	224									
Relevant Internet Sites	225									
Recommended Reading	225									
Endnotes	225									

8 Validity of Research Results 226

Validity Issues in the Design of Quantitative Research	228												
Statistical Conclusion Validity	229												
Internal Validity	230												
<i>Types of Causal Relationships</i>	230	■	<i>Criteria for Inferring Causation</i>	231	■								
<i>Threats to Internal Validity</i>	233												
External Validity	242												
<i>Population Validity</i>	242	■	<i>Ecological Validity</i>	245	■	<i>Temporal Validity</i>	245	■					
<i>Treatment Variation Validity</i>	245	■	<i>Outcome Validity</i>	246									
Construct Representation	246												
Research Validity in Qualitative Research	249												
<i>Descriptive Validity</i>	251	■	<i>Interpretive Validity</i>	251	■	<i>Theoretical Validity</i>	252	■	<i>Internal Validity</i>	253	■	<i>External Validity</i>	255
Summary	257												
Key Terms	259												
Discussion Questions	259												
Research Exercises	260												
Relevant Internet Sites	260												
Recommended Reading	260												
Endnotes	261												

■ PART FOUR Selecting a Research Method 262

9 Experimental Research 262

- The Experiment 264
- Independent Variable Manipulation 265
 - Ways to Manipulate an Independent Variable* 265
- Control of Confounding Variables 266
 - Random Assignment* 268 ■ *Matching* 270 ■ *Holding the Extraneous Variable Constant* 270 ■ *Building the Extraneous Variable into the Research Design* 271 ■ *Counterbalancing* 272 ■ *Analysis of Covariance* 274
- Experimental Research Designs 275
 - Weak Experimental Research Designs* 276 ■ *Strong Experimental Research Designs* 280 ■ *Factorial Designs* 286 ■ *Repeated-Measures Designs* 291 ■ *Factorial Designs Based on a Mixed Model* 293
- Summary 294
- Key Terms 295
- Discussion Questions 296
- Research Exercises 296
- Relevant Internet Sites 296
- Recommended Reading 297
- Endnote 297

10 Quasi-Experimental and Single-Case Designs 298

- Quasi-Experimental Research Designs 300
 - Nonequivalent Comparison-Group Design* 301 ■ *Interrupted Time-Series Design* 305 ■ *Regression Discontinuity Design* 309
- Single-Case Experimental Designs 312
 - A-B-A and A-B-A-B Designs* 313 ■ *Multiple-Baseline Design* 317 ■ *Changing-Criterion Design* 319
- Methodological Considerations in Using Single-Case Designs 321
- Summary 321
- Key Terms 323
- Discussion Questions 323
- Research Exercises 324
- Relevant Internet Sites 324
- Recommended Reading 325

11 Nonexperimental Quantitative Research 326

- Steps in Nonexperimental Research 329
- Independent Variables in Nonexperimental Research 329
- Simple Cases of Causal-Comparative and Correlational Research 330
- Three Necessary Conditions for Cause-and-Effect Relationships 333
- Applying the Three Necessary Conditions for Causation in Nonexperimental Research 335
- Techniques of Control in Nonexperimental Research 339
 - Matching* 339 ■ *Holding the Extraneous Variable Constant* 340 ■ *Statistical Control* 341
- Time Dimension in Research 342
 - Cross-Sectional Research* 343 ■ *Longitudinal Research* 344 ■ *Retrospective Research* 346
- Classifying Nonexperimental Research Methods by Research Objective 347
 - Descriptive Research* 347 ■ *Predictive Research* 348 ■ *Explanatory Research* 349
- Classifying Nonexperimental Research by Time and Research Objective 353
- Summary 354
- Key Terms 355
- Discussion Questions 355
- Research Exercises 355
- Relevant Internet Sites 356
- Recommended Reading 356
- Endnotes 356

12 Qualitative Research 358

- Phenomenology 363
 - Examples of Phenomenology* 364 ■ *Types of Phenomenology* 365 ■ *Data Collection, Analysis, and Report Writing* 367
- Ethnography 369
 - The Idea of Culture* 369 ■ *Examples of Ethnographic Research* 371 ■ *Types of Ethnographic Research* 372 ■ *Data Collection, Analysis, and Report Writing* 373
- Case Study Research 376
 - What Is a Case?* 376 ■ *Types of Case Study Research Designs* 377 ■ *Data Collection, Analysis, and Report Writing* 379
- Grounded Theory 380
 - Characteristics of a Grounded Theory* 381 ■ *Example of a Grounded Theory* 382 ■ *Data Collection, Analysis, and Report Writing* 383

Summary	387
Key Terms	387
Discussion Questions	387
Research Exercises	388
Relevant Internet Sites	389
Recommended Reading	389
Endnotes	389

13 Historical Research 390

What Is Historical Research?	392
Significance of Historical Research	393
Historical Research Methodology	394
Identification of the Research Topic and Formulation of the Research Problem or Question	395
Data Collection or Literature Review	397
How to Locate Historical Information	397
<i>Primary versus Secondary Sources</i>	399
Evaluation of Historical Sources	399
<i>External Criticism</i>	400
<i>Internal Criticism</i>	400
Data Synthesis and Report Preparation	403
Summary	404
Key Terms	406
Discussion Questions	406
Research Exercises	406
Relevant Internet Sites	407
Recommended Reading	407

14 Mixed Method and Mixed Model Research 408

The Research Continuum	413
Types of Mixed Research Methods	415
<i>Mixed Model Research</i>	415
<i>Mixed Method Research</i>	417
Stages of the Mixed Research Process	421
<i>Step 1: Determine Whether a Mixed Design Is Appropriate</i>	421
<i>Step 2: Determine the Rationale for Using a Mixed Design</i>	423
<i>Step 3: Select the Mixed Method or Mixed Model Research Design</i>	424
<i>Step 4: Collect the Data</i>	425
<i>Step 5: Analyze the Data</i>	425
<i>Step 6: Validate the Data</i>	425
<i>Step 7: Interpret the Data</i>	425
<i>Step 8: Write the Research Report</i>	427

Limitations of Mixed Research	428
Summary	429
Key Terms	430
Discussion Questions	430
Research Exercises	430
Relevant Internet Sites	431
Recommended Reading	431

■ PART FIVE Analyzing the Data 432

15 Descriptive Statistics 432

Descriptive Statistics	434
Frequency Distributions	436
Graphic Representations of Data	437
<i>Bar Graphs</i>	437
■ <i>Histograms</i>	438
■ <i>Line Graphs</i>	439
■ <i>Scatterplots</i>	439
Measures of Central Tendency	441
<i>Mode</i>	441
■ <i>Median</i>	442
■ <i>Mean</i>	442
■ <i>A Comparison of the Mean, Median, and Mode</i>	443
Measures of Variability	446
<i>Range</i>	446
■ <i>Variance and Standard Deviation</i>	447
■ <i>Standard Deviation and the Normal Distribution</i>	448
Measures of Relative Standing	449
<i>Percentile Ranks</i>	450
■ <i>z-Scores</i>	452
Examining Relationships among Variables	453
<i>Contingency Tables</i>	453
■ <i>Regression Analysis</i>	455
Summary	459
Key Terms	460
Discussion Questions	460
Research Exercises	460
Relevant Internet Sites	461
Recommended Reading	461
Endnotes	461

16 Inferential Statistics 462

Sampling Distributions	465
<i>Sampling Distribution of the Mean</i>	467

Estimation	468
<i>Point Estimation</i>	468 ■ <i>Interval Estimation</i> 469
Hypothesis Testing	472
<i>Null and Alternative Hypotheses</i>	473 ■ <i>Directional Alternative Hypotheses</i> 475 ■
<i>Explaining the Probability Value and Making a Decision</i>	476 ■ <i>The Hypothesis-Testing Decision Matrix</i> 479 ■ <i>Controlling the Risk of Errors</i> 483
Hypothesis Testing in Practice	485
<i>The t-Test for Independent Samples</i>	486 ■ <i>One-Way Analysis of Variance</i> 487 ■
<i>Post Hoc Tests in Analysis of Variance</i>	488 ■ <i>The t-Test for Correlation Coefficients</i> 489 ■
<i>The t-Test for Regression Coefficients</i>	490 ■
<i>The Chi-Square Test for Contingency Tables</i>	491 ■ <i>Other Significance Tests</i> 493
Summary	493
Key Terms	494
Discussion Questions	495
Research Exercises	495
Relevant Internet Sites	496
Recommended Reading	496
Endnotes	497

17

Data Analysis in Qualitative Research 498

Interim Analysis	500
Memoing	501
Data Entry and Storage	502
Segmenting, Coding, and Developing Category Systems	502
<i>Inductive and a Priori Codes</i>	508 ■ <i>Co-Occurring and Facesheet Codes</i> 508
Enumeration	510
Creating Hierarchical Category Systems	511
Identifying Relationships among Categories	513
<i>Drawing Diagrams</i>	516
Corroborating and Validating Results	518
Computer Programs for Qualitative Data Analysis	519
Summary	521
Key Terms	521
Discussion Questions	522
Research Exercises	522
Relevant Internet Sites	523
Recommended Reading	523
Endnote	523

PART SIX Writing the Research Report 524**18 Preparation of the Research Report 524**

General Principles Related to Writing the Research Report	525
<i>Language</i>	526 ■ <i>Editorial Style</i> 528 ■ <i>Reference List</i> 530 ■ <i>Typing</i> 531
Writing Quantitative Research Reports Using the APA Style	531
<i>Title Page</i>	532 ■ <i>Abstract</i> 532 ■ <i>Introduction</i> 532 ■ <i>Method</i> 533 ■
<i>Results</i>	533 ■ <i>Discussion</i> 534 ■ <i>References</i> 535 ■ <i>Author Notes</i> 535 ■
<i>Footnotes</i>	535 ■ <i>Tables</i> 536 ■ <i>Figure Captions</i> 536 ■ <i>Figures</i> 536
Writing Qualitative Research Reports	537
Writing Mixed Research Reports	540
Discussion Questions	541
Research Exercises	541
Relevant Internet Sites	541
Recommended Reading	541

Appendix A Quantitative Research Article Abstract and Link 542

Appendix B Qualitative Research Article Abstract and Link 543

Appendix C Mixed Research Article Abstract and Link 544

References 545

Index 555

- A-B-A design, 313–316
 A-B-A-B design, 315–316
 Abbreviations, in research reports, 528
 Abscissa, 437
 Absence technique. *See* Presence or absence technique
 Abstracts
 defined, 7
 examples of, 7–8, 542–544
 in literature searches, 64, 66
 in research reports, 532, 538
 Accessible populations, 243–244
 Achievement, class size and, 542
 Achievement batteries, 151
 Achievement tests, 150–152
 Acquiescence response sets, 175–176
 Across-stage mixed model research, 417
 Action research, 9, 10–11
 Active consent, 107, 108
 Activity theory of causation, 39
 Additive and interactive effects, 239–241, 277, 281. *See also* Interaction effects
 Administrators in conducting research, 11
 AERA. *See* American Educational Research Association (AERA)
 Age, reporting, 527
 Alger, Horatio, 401
 Already available data. *See* Secondary data
 Alta Vista search engine, 70, 71
 Alternative explanations, 39, 334
 Alternative hypotheses, 474–475
 Ambiguous temporal precedence, 234–235, 277, 281
 American Association for the Advancement of Science, 21
 American Counseling Association, 101
 American Educational Research Association (AERA)
 on confidentiality and anonymity, 112
 on deception, 109, 110
 discussion list of, 68–69
 divisions and special interest groups in, 6
 on duplicate publication, 98
 ethics guidelines, 101–102
 on freedom to withdraw, 110
 overview, 5, 7
American Educational Research Journal, 525
American Journal of Education, 525
 American Psychological Association (APA)
 on ethics, 98, 101
 style guidelines, 525–526, 531–537, 538
 Amount technique, 265–266
 Analysis of covariance (ANCOVA), 274–275, 341–342
 Analysis of variance (ANOVA), 331, 487–489, 536
 Anchors in rating scales, 171
 ANCOVA (analysis of covariance), 274–275, 341–342
 Anonymity, 112
 ANOVA (analysis of variance), 331, 487–489, 536
Anthropology of Education Quarterly, 525
 APA. *See* American Psychological Association (APA)
 Apparatus, 84, 533
Applied Measurement in Education, 155, 525
Applied Psychological Measurement, 155
 Applied research, 8–9, 9
 a priori codes, 508
 Aptitude tests, 151–152
 Archived research data, 192
 Argus Clearinghouse, 70
Art Education, 525
 Ask Jeeves search engine, 70
 Assent, minors giving, 105, 107, 111. *See also* Informed consent
 Assessments, 129–132. *See also* Measurement; Testing
 Associated Press, 99
 Assumptions
 in inferential statistics, 486
 of objectivity, 33
 qualitative versus quantitative, 33
 in science, 15–17
 in testing and assessment, 129–132
 At risk, 150
 Attitude, 20, 186–187
 Attrition, 241
 Author notes, 535
 Axial coding, 384
 Ayala, J., 543
 Backstage behavior, 190–191
 Bar graphs, 437–438
 Basic research, 8–9, 9
 Becker, H. S., 526
 Beeman, Richard R., 263
 Behavior, attitude incongruent with, 186–187
 Bellack, A. S., 153
 Bethune Elementary School, 55
 Biased samples, 198, 200. *See also* Researcher bias
Biographical Dictionary of American Educators (Ohles), 398
 Bloomberg, Michael, 3
 Bonferroni Test, 488, 489
 Books in literature searches, 63–64, 65
 Boolean operators, 520
 Bottom-up approach, 18
 Bounded systems, 376
 Bracketing, 364
 Breuning, Steven E., 97
 Britannica Internet Guide, 70
 The Buckley Amendment, 102
 Buros Institute of Mental Measurements, 154, 155
 Bush, George W., 56, 161
 California, University of (Berkeley), 433
Cambridge Journal of Education, 525
 Cancer, smoking link to, 327, 346, 347
 Captions, in research reports, 536
 Carryover effect, 274
 Cases, 376–377
 Case study research
 characteristics of, 363
 data collection, analysis, and reporting in, 379–380
 defined, 376–377
 introduction to, 46–47, 51
 types of, 377–379
 Categorical variables, 35–36, 37. *See also* Nominal scale
 Categories. *See also* Coding; Data analysis
 developing, 504–505, 507
 diagramming, 516–518
 hierarchical, 511–513
 typologies of, 513–516, 517
 Causal-comparative research, 40–41, 45, 330–333
 Causal descriptions, 230–231
 Causal explanations, 230–231
 Causal modeling, 350–353
 Causal research questions, 78
 Cause-and-effect relationships
 conditions for, 333–338
 defined, 37–38
 experimental research determining, 38–40
 in historical research, 403
 in qualitative research, 253–254
 in quasi-experimental research, 300–301
 Cells in factorial designs, 286
 Celsius temperature scale, 127–128
 Census Bureau, 198
 Census versus survey research, 198
 Center for Equity and Excellence in Education Test Database, 154
 Chairpersons, departmental, 382–383, 385
 Changing-criterion design, 319–321
 Checklists, 174, 188
 Chicago Academy, 227

- Chicago Manual of Style*, 404
Child Development, 525
 Children. *See* Minors; Teenagers
 Chi-square test for contingency tables, 491–493
Christian Science Monitor, 227
Chronicle of Higher Education, 123
 Cigarettes, research on, 327, 346, 347
 CIJE (*Current Index to Journals in Education*), 64, 66
 Citations, in research reports, 529–530
City Journal, 3
 Classification, levels of, 125–129
 Class size, achievement and, 542
Cleveland Plain Dealer, 99
 Cleverly, J., 396
 Closed-ended questions, 168–169
 Closed quantitative interview, 180, 181
 Clusters, 211–213
 Cluster sampling, 211–213
 Coaches, conducting research, 11
 Code of Federal Regulations for the Protection of Human Subjects, 111
 Coding. *See also* Categories; Data analysis
 co-occurring and facesheet, 508–510
 defined, 502
 examples of, 503–504, 505, 506, 507
 inductive, 508
 master list of, 504
 a priori, 508
 Coefficient alpha, 137–138, 144
Cognition and Instruction, 525
 Cohorts, 344–345
 Collective case studies, 378–379
 College admissions, research on, 433
 Commercials, research on, 4
 Compatibility thesis, 410
 Complementarity, 423, 424
 Complete observers, 190
 Complete participants, 189–190
 Comprehensive sampling, 220
 Computers, in data analysis, 519–521. *See also* Internet, as research tool
 Concurrent evidence, 141, 145
 Conditions. *See* Three necessary conditions
 Confidence intervals, 469–472
 Confidence limits, 469
 Confidentiality, 112
 Confirmatory research. *See* Quantitative research
 Confounding variables, 39–40, 228, 266–267. *See also* Experimental research; Quasi-experimental research designs; Third-variable problem; Third variables
 Constant comparative method, 383
 Constants, 35
 Construct validity, 246–249
 Content-related evidence, 141, 142–143
 Context sensitivity strategy, 362
 Contextualization, 402–403
 Contingency questions, 176
 Contingency tables, 453–455, 491–493
 Control
 experimental, 267
 in nonexperimental research, 339–342
 over errors, 483–484
 statistical, 341–342
 Control groups, 280, 281, 282–285
 Convenience sampling, 214–215
 Convergent evidence, 141, 145–146
 Co-occurring codes, 508–510
 Cooperative learning, 544
 Correlation, in inferential statistics, 464
 Correlational research, 41–45, 330–333
 Correlation coefficients
 defined, 41–42
 for reliability measurement, 134 (*see also* Reliability)
t-test for, 489–490
 for validity measurement, 145 (*see also* Validity)
 Corroboration, 51, 402, 518–519. *See also* Validity
 Counselors in research process, 11, 511–513
 Counterbalancing, 272, 273, 274
 Coutts, B. E., 398
 Creative synthesis strategy, 362
Creativity Research Journal, 525
 Criminal justice system, 473
 Criterion, 144–145
 Criterion-based selection, 220
 Criterion of falsifiability, 19
 Criterion-related evidence, 144–145
 Critical-case sampling, 221–222
 Critical theory research. *See* Orientational research
 Critical thinking skills, 3
 Croder, Kristen C., 7
 Cross-case analyses, 379
Cross Cultural Psychology, 525
 Cross-sectional research, 343–344
 Cross-tabulations. *See* Contingency tables
 Culture, 46, 369–371. *See also* Ethnography
 Culture shock, 370
Current Index to Journals in Education (CIJE), 64, 66
 Curriculum reform, 263
Curriculum Studies, 525
Curriculum/Technology Quarterly, 525
 Daley, Richard, 57
 DaRos-Voseles, D. A., 544
 Data analysis
 in case study research, 379
 computer programs for, 519–521
 corroboration and validation in, 518–519
 enumeration in, 510
 in ethnographic research, 373–375
 in grounded theory research, 383–384
 hierarchical categories in, 511–513
 in historical research, 395, 403–404
 interim, 500–501
 memoing in, 501
 in mixed research, 425–426
 in phenomenological research, 367–368
 relationships among categories in, 513–518
 by research paradigm, 31
 research proposals describing, 85
 transcription in, 502
 using codes in (*see* Coding)
 Databases, 66–67, 68. *See also* Educational Resources Information Center (ERIC)
 Data collection
 in case study research, 379–380
 in ethnography, 373–375
 focus groups for, 162, 185–186
 in grounded theory, 383–385
 for historical research, 397
 interviews for (*see* Interviews)
 introduction to, 161–163
 in mixed research, 425
 in phenomenology, 367–369
 in qualitative research plan, 361, 362, 363
 by research paradigm, 31
 secondary, 192–193
 tests in, 163
 through observation (*see* Observation)
 using questionnaires (*see* Questionnaires)
 Data sets, 434–435
 Data triangulation, 250, 255
 Debriefing, 110
 Deception, 109–110
 Deductive method, 17–18
 Deductive reasoning, 13–14
 Dehoaxing, 110
 Deontological approach, 94–95
 Department chairpersons, 382–383, 385
 Dependent variables, 36, 37
 Depew, Matthew, 359
 Descartes, René, 13
 Description as research objective, 23
 Descriptive research, 347–348, 353–354
 questions in, 78
 Descriptive statistics
 central tendency measures in, 441–445
 contingency tables in, 453–455
 data sets in, 434–435
 defined, 434
 frequency distributions in, 436–437
 graphic data representation in, 437–441
 regression analysis in, 455–459
 relative standing measures in, 449–453
 variability measures in, 446–449
 Descriptive validity, 251
 Desensitizing, 110
 Designs. *See* Research designs
 Determinism, 32
 Development, in mixed research, 423, 424
 Diagnostic tests, 152
 Diagramming, 516–518
Dictionary of Behavioral Assessment Techniques (Hersen and Bellack), 153
 Differential attrition, 241, 277, 281
 Differential influence, 267
 Differential selection, 239, 277, 281
 Differential statistics, 463–464
 Direct effects, 351

- Directional alternative hypotheses, 475–476
- Directories in literature searches, 69–70
- Directory of Archives and Manuscript Repositories in the United States*, 398
- Disabilities, 73–74, 527, 543
- Discriminant evidence, 141, 145, 146
- Discussion section in research reports, 534–535, 540
- Disney, 299
- Disordinal interaction effect, 289–290
- Disproportional stratified samples, 209–211
- Dissonance theory, 20
- Documents, as secondary data source, 192
- Dogpile meta-search engine, 70
- Dominant-status concurrent designs, 418, 419–420
- Dominant-status sequential designs, 418, 420–421
- Double-barreled questions, 168
- Double negatives, 168
- Duplicate publication, 98
- Dynamic systems, 362
- Early Childhood Education Journal*, 525
- Early Screening Profile, 150
- Ebonics, teaching of, 57
- Ecological validity, 245
- Editorial style, 528–530. *See also* Typing style
- Education, U.S. Department of, 96
- Education Action Research*, 525
- Educational and Psychological Measurement*, 155
- Educational Assessment*, 525
- Educational assessment tests, 150–152
- Educational Evaluation and Policy Analysis*, 428, 525
- The Educational Forum*, 525
- Educational Policy*, 525
- Educational Psychologist*, 525
- Educational Psychology Review*, 525
- Educational research
- areas of, 5–7
 - examples of, 7–8
 - objectives of, 22–25
 - reasons for studying, 4–5
 - and sources of knowledge, 12–14
 - types of, 8–11 (*see also specific*)
- Educational Research and Evaluation*, 525
- Educational Research Association, 98
- Educational Researcher*, 525
- Educational Research List (ERL-L), 68–69
- Educational Resources Information Center (ERIC), 64, 67, 68, 154
- Educational Testing Service, 154
- Education and Urban Society*, 525
- Education Internet Guide, 70
- Effect-size indicator, 484
- Efficiency assessments, 10
- Elementary School Journal*, 525
- Elements, in sampling, 199
- The Elements of Style* (Strunk and White), 525
- Elephant in the Dark* (Rumi), 29
- Emergent design flexibility strategy, 362
- Emergent research. *See* Qualitative research
- Emic perspective, 374–375
- Emic terms, 374
- Empathetic understanding, 33–34
- Empathic neutrality and mindfulness, 362
- Empirical statements, 12
- Empiricism, 12
- Encyclopedia of Educational Research*, 64, 65
- Encyclopedia of Higher Education*, 65
- Encyclopedia of Special Education*, 65
- Enumeration, 510
- Epistemology, 12
- Equal probability selection method (EPSEM), 200
- Equal-status concurrent designs, 418, 419
- Equal-status sequential designs, 418, 420
- Equivalent-forms reliability, 134, 136
- ERIC (Educational Resources Information Center), 64, 67, 68, 154
- ERL-L (Educational Research List), 68–69
- Errors
- controlling risk of, 483–484
 - defined, 131
 - sampling, 199, 203–204, 466
 - standard, 466
- Erwin, E. J., 543
- Essence, 365–366
- Estimation, 468–472
- Ethical skepticism, 95
- Ethical Standards for Research with Children*, 111
- Ethics, 94. *See also* Research ethics
- Ethnic identity, 527
- Ethnocentrism, 373–374
- Ethnography
- characteristics of, 363
 - culture in, 369–371
 - data collection, analysis, and reporting in, 373–375
 - defined, 369
 - examples of, 371–372
 - introduction to, 46, 51
 - types of, 372–373
- Ethnohistory, 372
- Ethnology, 372
- Etic perspective, 374–375
- Etic terms, 374
- ETS Test Collection, 153
- ETS Test File, 154
- Evaluands, 10
- Evaluation*, 428
- The Evaluation Center, 154
- Evaluation Practice*, 428
- Evaluation research, 9, 10
- Evaluations. *See also* Validity
- formative, 10
 - of hypotheses, 476–479, 481–482
 - of Internet information, 72
 - of qualitative research, 88
 - of quantitative research, 87
- of research sources, 395, 399–403
- summative, 10
- Evans, Rand, 397
- Event sampling, 188
- Evidence
- in historical research, 403–404
 - principle of, 21–22
 - versus proof, 3, 21
- Exclusions of students from schools, 58
- Exempt studies, 113, 116, 117
- Exhaustive categories, 170, 515
- Exhaustive intervals, 437
- Existing data. *See* Secondary data
- Expansion in mixed research, 423, 424
- Expectation theory, 20
- Expedited review, 116
- Experience as source of knowledge, 12–13, 362
- Experimental control, 267
- Experimental groups, 280, 281, 282–285
- Experimental research. *See also* Quasi-experimental research designs; Research designs; Single-case experimental designs
- analysis of covariance in, 274–275
 - confounding variables in, 266–267
 - constant extraneous variables in, 270–271
 - counterbalancing in, 272–274
 - independent variable manipulation in, 265–266
 - introduction to, 38–40, 51
 - matching technique in, 270
 - random assignment in, 268–269
 - role of, 263–264
 - test design in, 163
- Experiments, 264–265
- Expert opinions, 13
- Explanation as research objective, 23, 24, 349–354
- Explanatory research, 349–353
- Exploration as research objective, 22–23
- Extended fieldwork, 250, 253, 373, 383
- External audits, 250
- External criticism, 400
- External validity, 59, 242–246, 255–256. *See also* Validity
- Extraneous variables
- constant, 270–271, 340–341
 - defined, 228
 - in experimental research, 39–40
 - in nonexperimental research, 41, 340–341
 - in research design, 271–272
- Extreme case sampling, 221
- Facesheet codes, 510
- Factor analysis, 143–144
- Factorial designs, 281, 286–291
- Factorial designs based on a mixed model, 281, 293–294
- Fahrenheit temperature scale, 127–128
- Fair Labor Standards Act, 391
- Family Education Rights and Privacy Act (1974), 102

- Farrell, Edwin, 8
- Fast Search, 70
- F-distribution, 487–488
- Feasibility, 72–73
- Federal-State Inspection Service, 197
- Festinger, Leon, 20
- Field Methods*, 428
- Field notes, 188
- Fieldwork, extended, 250, 253, 373, 383
- Figures in research reports, 536–537
- Filter questions. *See* Contingency questions
- Fine, M., 543
- Fisher, Ronald, 474–475
- Flying, research on, 161
- Focus groups, 162, 185–186
- Food and Drug Administration, 99
- Footnotes in research reports, 535
- Forbes, Malcolm, 499
- Formative evaluations, 10
- FORUM: for promoting 3-19 comprehensive education*, 525
- Four-level classification scheme, 125–129
- Fraudulent activity, 96–97
- Frequency distributions, 436–437
- Frontstage behavior, 190
- Full board review, 116
- Fully anchored rating scales, 171
- Fultz, M., 396
- Fundamental principle of mixed research, 50, 411. *See also* Mixed research
- Galenson, D. W., 396
- Gallup Organization, 23, 24, 180, 182
- Galton, Francis, 171
- Garbage-in garbage-out (GIGO), 123–124, 167
- Gender in research reports, 527
- Generalizing, 197
- General laws, 255–256
- General linear model (GLM), 341
- General Social Survey (GSS), 344
- GIGO (garbage-in garbage-out), 123–124, 167
- Glaser, Barney, 380–381. *See also* Grounded theory
- GLM (general linear model), 341
- Goal function of theory, 58
- Going native, 374
- Google search engine, 70, 71
- Grade retention, 349–350
- Graphs, 437–440
- Grounded theory
 - characteristics of, 363, 381–382
 - data collection, analysis, and reporting in, 383–385
 - defined, 381
 - example of, 382–383
 - history behind, 380–381
 - literature review and, 62–63
 - research on, 47, 51
 - saturation in, 500
- Grouped frequency distributions, 437
- Group matching technique, 270
- Group moderator, 185
- GSS (General Social Survey), 344
- Guide to Historical Literature* (Norton), 398
- Guilt, essence of, 366
- Handbook of Individual Differences, Learning, and Instruction* (Jonassen and Grabowski), 153
- Handbook of Mixed Methods Research*, 222
- Handbook of Reading Research*, 65
- Handbook of Research Design and Social Measurement* (Miller), 153
- Handbook of Research on Curriculum*, 65
- Handbook of Research on Educational Administration*, 65
- Handbook of Research on Mathematics Teaching and Learning*, 65
- Handbook of Research on Multicultural Education*, 65
- Handbook of Research on Music Teaching and Learning*, 65
- Handbook of Research on School Supervision*, 65
- Handbook of Research on Social Studies Teaching and Learning*, 65
- Handbook of Research on Teaching*, 65
- Handbook of Research on the Education of Young Children*, 65
- Handbook of Research on the Teaching of English*, 65
- Harley-Davidson, 499
- Harris, Eric, 359
- Harter Self-Perception Profile for Children, 143
- Harvard Educational Review*, 525
- Hat model, 200–201
- Headings, in research reports, 528–529
- Health, Education, and Welfare, U.S. Department of, 113
- Hedges, L. V., 542
- Hersen, M., 153
- Heterogeneous numbers, 446
- Heterogeneous populations, 218
- Heterogeneous tests, 137. *See also* Multidimensional tests
- Histograms, 438
- Historical research. *See also* History
 - data collection and literature review in, 395, 397
 - data synthesis and reporting in, 395, 403–404
 - defined, 392
 - evaluating sources for, 395, 399–403
 - introduction to, 47–48, 51
 - locating information for, 397–399
 - reasons for, 391, 393–394
 - research topics and questions in, 395–396
- Historiography, 48
- History. *See also* Historical research
 - in experimental designs, 277, 281
 - impacting validity, 235–236, 239–240
- Hitler, Adolf, 400
- Holism, 375
- Holistic descriptions, 46
- Holistic perspective strategy, 362
- Homogeneity, 144, 218, 221
- Homogeneous numbers, 446
- Homogeneous sample selection, 221
- Homogeneous tests, 136–137. *See also* Unidimensional tests
- HotBot search engine, 70
- Huberman, Michael, 500, 502–503, 518
- Hult, C. A., 526
- Hypotheses
 - defined, 17, 80
 - directional alternative, 475–476
 - evaluating, 476–479, 481–482
 - formulating, 80–82
 - in idea development flowchart, 60
 - logic of significance testing of, 493
 - method of working multiple, 334
 - null and alternative, 473–475
 - in proposals, 82, 83
 - rival, 39, 334
- Hypothesis testing
 - chi-square test for contingency tables in, 491–493
 - controlling errors in, 483–484
 - correlation coefficients in, 489–490
 - decision matrix, 479, 482–483
 - defined, 472
 - independent samples in, 486–487
 - one-way ANOVA in, 487–488
 - post hoc tests in, 488–489
 - regression coefficients in, 490–491
 - rules of, 485–486
 - steps in, 480
- ICPSR Guide to Resources and Services*, 1
- ICPSR (Interuniversity Consortium for Political and Social Research), 192–193
- Ideas for research, 56–59, 60, 61
- Impact assessments, 10
- Implementation assessments, 10
- Incompatibility thesis, 30
- Independent variables
 - defined, 36–37
 - in factorial designs, 286–291
 - manipulating, 265–266
 - in nonexperimental research, 329–330
- Indexes in literature searches, 64, 66
- Indirect effects, 351
- Individual matching technique, 270
- Inductive analysis strategy, 362
- Inductive codes, 508
- Inductive method, 17–18, 23, 360
- Inductive reasoning, 14
- Inferential statistics
 - defined, 434, 463
 - versus differential statistics, 463–464
 - estimation in, 468–472
 - sampling distributions in, 465–468
 - symbols in, 464–465
 - testing hypotheses in (*see* Hypothesis testing)
- Influence as research objective, 25
- Informal conversational interviews, 181, 183

- Informed consent
 deception and, 109–110
 information included in, 102–105
 IRB waiving need for, 116
 for minors, 105, 107, 111
 passive versus active, 107–108
 within school systems, 109
- Initiation in mixed research, 423, 424
- In-person interviews, 178
- Institutional Review Board (IRB), 112–113, 116–117
- Instrumental case studies, 377–378
- Instrumentation
 in experimental designs, 277, 281
 impacting validity, 237–238
 in proposals, 84
 in research reports, 533
- Intelligence, measuring, 148, 311
- Interaction effects, 287–291
- Interactive effects. *See* Additive and interactive effects
- Intercoder reliability, 504
- Interim analysis, 500–501
- Internal consistency reliability, 134, 136–139
- Internal criticism, 400–403
- Internal structure, 141, 143–144
- Internal validity. *See also* Validity
 additive and interactive effects and, 239–241
 ambiguous temporal precedence impacting, 234–235
 attrition as threat to, 241
 causation and, 230–233
 defined, 230
 differential selection affecting, 239
 history impacting, 235–236
 improving, 59
 instrumentation and, 237–238
 maturation as threat to, 236
 in one-group and multigroup designs, 233–234
 in qualitative research, 253–255
 regression artifacts affecting, 238–239
 threat of testing to, 236–237
- The International Encyclopedia of Education: Research and Studies*, 65
- The International Encyclopedia of Educational Evaluation*, 65
- International Encyclopedia of Higher Education*, 65
- International Studies in Sociology of Education*, 525
- Internet, as research tool, 67, 69–71, 72. *See also* Computers, in data analysis
- Interpretive validity, 251–252
- Interrupted time-series design, 305–309
- Interscorer reliability, 134, 139
- Interuniversity Consortium for Political and Social Research (ICPSR), 192–193
- Interval estimations, 469–472
- Interval scale, 125, 127–128
- Intervening variables, 36, 38, 351
- Interviewees, 178. *See also* Participants
- Interviewers, 178
- Interview guide approach, 181, 183–184
- Interview protocols, 180, 182–183, 186
- Interviews
 classification chart, 181
 defined, 162, 178
 in historical research, 397, 398–399
 in phenomenological research, 367
 qualitative, 181, 183–184
 quantitative, 180, 181, 182–183
 tips for effective, 178, 179
- Intracoder reliability, 504
- Intrinsic case studies, 377
- Introduction in research reports, 532–533, 538
- Investigator triangulation, 250, 251
- IRB (Institutional Review Board), 112–113, 116–117
- Italics in research reports, 528
- Item stems, 169
- Jacob, Brian A., 7
- Jacob, Zipora, 299
- Jacobson, Lenore, 20
- Jenkins, Joseph, 8
- Jonassen, D. H., 153
- Journal for Research in Mathematics Education*, 525
- Journal of Classroom Interaction*, 525
- Journal of Curriculum and Supervision*, 525
- Journal of Curriculum Studies*, 525
- Journal of Education*, 525
- Journal of Educational and Behavioral Statistics*, 525
- Journal of Educational Measurement*, 155
- Journal of Educational Psychology*, 351
- Journal of Educational Research*, 525
- Journal of Education for Students Placed at Risk*, 525
- The Journal of Experimental Education*, 542
- Journal of Information Technology for Teacher Education*, 525
- Journal of In-service Education*, 525
- Journal of Literacy Research*, 525
- Journal of Negro Education*, 525
- The Journal of Research in Science Teaching*, 525
- Journal of Visual Impairment & Blindness*, 543
- Journal of Vocational Education and Training*, 525
- Journals, 64, 66, 525
- Joyce Foundation, 463
- Judgmental sampling, 215
- Kappa Delta Pi Record*, 525
- Kelvin temperature scale, 128
- Kerlinger, Fred, 21
- KeyMath Revised Test, 152
- Keyser, D. J., 153
- k* in sampling, 204–206
- Klebold, Dylan, 359
- Known groups evidence, 146
- Konstantopoulos, S., 542
- Labels in research reports, 526–527
- Laboratory observation, 186
- Language
 in categorizing data, 504–506
 in historical research, 403
 of questionnaires, 167
 in writing research reports, 526–527
- LaPiere, Richard, 186
- Leading questions, 167
- Learning disabilities, 73–74
- LeCompte, Margaret, 220, 507
- Level of confidence, 470
- Librarian's Index, 70
- Libraries, 397–398
- Lietz, John, 359
- Life-world, 364
- Liggett Group, 327
- Likert, Rensis, 171, 175
- Likert scale, 175
- Lindsey, Rashed, 8
- Line graphs, 439
- Literacy, research on, 123
- Literature reviews
 historical research, 397
 meta-analysis in, 86
 qualitative research, 62–63, 88
 quantitative research, 61–62, 87
 resources for, 63–67
 steps in, 85–86, 89–90
- Literature searches
 databases in, 66–67, 68
 Internet in, 67, 69–71, 72
 personal communication in, 67, 69
 research literature and, 5
- Loaded questions, 167
- Locke, John, 12
- Logic of significance testing, 493
- Longitudinal research, 343, 344–346
- Lower limits in interval estimation, 469
- Low-inference descriptors, 250, 252
- Lycos search engine, 70
- Maddox, T., 153
- Main effects, 286–287
- Manipulation in research, 39, 265–266. *See also* Experimental research
- Marginal means, 287–289
- Margins of error, 470, 472
- Master lists, 504
- Matching technique, 270
- Matching variables, 339–340
- Material culture, 369–370
- Maturation, 236, 240–241, 277, 281
- Max, Josh, 499
- Maximum variation sampling, 220–221
- Maxwell, Joseph, 252
- Mayes, Herbert, 401
- McAlexander, James, 499
- Mean
 defined, 442–443
 versus mode and median, 443–445
 sampling distribution of, 467–468, 471
 symbol for, 464

- Measurement
 defined, 124–125
 importance of, 123–124
 of relative standing, 449–453
 in research reports, 529
 scales of, 125–129
 testing and assessment in, 129–132 (*see also* Reliability; Testing; Tests; Validity)
 of variability, 446–449
- Measurement Excellence Initiative, 154
- Measurement models, 175
- Measures of central tendency, 441–445
- Measures of Personality and Social Psychological Attitudes* (Robinson, Shaver, and Wrightsman), 153
- Median, 442, 443–445
- Mediating variables. *See* Intervening variables
- MEDLINE database, 66
- Member checking. *See* Participant feedback
- Memoing, 501
- Mental Measurements Yearbook (MMY), 155
- Merriam, Sharon, 537
- Merton, Robert K., 185
- Meta-analysis, 86
- Metacrawler meta-search engine, 70
- Methods. *See also* Research methods
 of data collection, 162 (*See also* Data collection)
 of working multiple hypotheses, 334
- Methods triangulation, 250, 254–255
- Miles, Matthew, 500, 502–503, 518
- Military-style schools, 57
- Miller, D. C., 153
- Miller Assessment for Preschoolers, 150
- Minors as research participants, 105–107, 111, 116. *See also* Teenagers
- Misconduct. *See* Fraudulent activity
- Mitch, D. F., 396
- Mixed method research. *See also* Mixed research
 design of, 417–421
 introduction to, 48, 51
 versus mixed model research, 424–425
 in research continuum, 413, 415
- Mixed model research, 415. *See also* Mixed research
 factorial designs based on, 281, 293–294
 introduction to, 49, 51
 versus mixed method research, 424–425
 within- and across-stage, 415–417
- Mixed purposeful sampling, 222
- Mixed research
 advantages of, 49–50
 choosing, 421–423
 collecting and analyzing data in, 425–426
 defined, 8, 30, 48, 410
 fundamental principle of, 162–163
 history of, 30
 interpreting data in, 426–427
 limitations of, 428–429
 versus qualitative and quantitative research, 30–35
 rationale for, 409–411, 413, 423–424
- reporting results of, 427–428, 540–541
 sample abstract, 544
 strengths and weaknesses of, 414
 types of, 48–49, 51 (*see also* Mixed method research; Mixed model research)
 validating data in, 426
- MMY (Mental Measurements Yearbook), 155
- Mode, 441, 443–445
- Moderator variables, 36, 38
- Monomethod research, 413, 415
- Multidimensional tests, 137, 144
- Multigroup research design, 234
- Multimethod research. *See* Mixed method research
- Multiple-baseline design, 317–319
- Multiple operationalism, 248–249
- Multiple regression, 455, 458–459
- Multipism. *See* Mixed method research
- Mutually exclusive categories, 169–170, 515
- Mutually exclusive intervals, 437
- Myers-Briggs personality test, 348
- National Archives, 398
- National Center for Education Statistics, 123
- National Historical Publications and Records Commission, 398
- National Inventory of Documentary Sources in the United States*, 398
- National Opinion Research Center, 344
- National Safety Council, 161
- Naturalistic generalization, 256
- Naturalistic inquiry strategy, 362
- Naturalistic observation, 187, 188. *See also* Qualitative observation
- Needs assessments, 10
- Negative-case sampling, 222, 250, 251
- Negative correlation, 42–45
- Negative criticism, 401
- Negatively skewed distributions, 444
- Network diagrams, 517–518
- Newman-Keuls Test, 488
- New Teacher Advocate*, 525
- Newton, Isaac, 15
- N* in sampling, 204–206
- n* in sampling, 204–206
- Nominal scale, 125, 126
- Nondirectional alternative hypotheses, 475–476
- Nonequivalent comparison-group design, 301–305
- Nonexperimental research
 applying causation conditions in, 335–338
 causal-comparative, 40–41, 330–333
 cause-and-effect relationships in, 333–335
 control techniques in, 339–342
 correlational, 41–45, 330–333
 defined, 40, 328
 descriptive, 347–348, 353–354
 explanatory, 349–354
 independent variables in, 329–330
 introduction to, 327–329
 predictive, 348–349, 353–354
 in research typology, 51
- steps in, 329
 time in (*see* Time dimension)
- Nonmaterial culture, 369–370
- Nonprobability sampling technique, 198
- Nonrandom sampling technique, 198
- Normal distributions, 443
- Norming groups, 147
- Norms, 369
- Northern Light search engine, 70
- Norton, M. B., *Guide to Historical Literature*, 398
- Null hypotheses, 473–475. *See also* Hypotheses; Hypothesis testing
- Numbers in research reports, 529
- Numerical rating scales, 171
- Nurses, research on, 368
- Nye, B., 542
- Objectives. *See* Research objectives
- Observation
 in data collection, 162
 defined, 186
 environments for, 187
 qualitative, 188–191
 quantitative, 187–188
 validity in, 237–238
- Observer-as-participant style, 190
- O'Connor, Rollanda, 8
- Official documents, as secondary data source, 192
- Ohles, J. F., 398
- One-group posttest-only designs, 276, 277
- One-group pretest-posttest designs, 233–234, 276, 277, 278–279
- One-stage cluster sampling, 212
- One-way analysis of variance, 487–488
- Online Evaluation Resource Library, 154
- Onwuegbuzie, A. J., 544
- Open coding, 384
- Open Directory, 70
- Open-ended questions, 168–169, 504, 505–506
- Operationalism, 247–249
- Opinions, expert, 13
- Opportunistic sampling, 222
- Oral histories, 397, 398
- Order effect, 272, 274
- Ordinal interaction effect, 290
- Ordinal scale, 125, 127
- Ordinate, 437
- Oriental research, 9, 11
- Osgood, R. L., 396
- Outcome validity, 246
- Outcome variables. *See* Dependent variables
- Outliers, 445
- Oxford Studies in Comparative Education*, 525
- Panel studies, 344–346
- Paradigms. *See* Research paradigms
- Parameters in sampling, 199, 464
- Partial correlation, 341
- Partially spurious relationships, 336
- Partial publication, 98
- Partial regression coefficients, 458

- Participant-as-observer style, 190
 Participant feedback, 250, 252, 375
 Participants
 building trust and rapport with, 178, 179
 confidentiality and anonymity for, 112
 ethics in treatment of, 98–102
 mental and physical harm to, 100, 111–112
 minors as, 105–107, 111, 116 (*see also*
 Teenagers)
 permission from (*see* Informed consent)
 in qualitative observation, 189–190
 questionnaire construction and, 166, 176
 in research proposals, 83–84
 in research reports, 527, 533
 and right to withdraw, 110–111
 similarity of, 146–147
 Passive consent, 107–108
 Pataki, George, 3
 Path coefficients, 351
 Path model. *See* Causal modeling
 Pattern matching, 250, 253
 Patton, Michael, 220, 222
 Peanut farming, 197
 Pearson, Karl, 171
 Pearson Product Moment, 331–332
 Peer reviews, 250, 253
 Peguero, George, 8
 Pennsylvania, University of, 263
 Percentile ranks, 449–452
 Perfect correlations, 43
 Performance measures, 149
 Periodicity, 207
 Perkins, T. S., 543
 Personal documents, 192
 Personal experiences, 362
 Personality, 148
 Personality tests, 148–150
 Perspective, 362, 374–375
 Phenomena, 264
 Phenomenology
 characteristics of, 363
 data collection, analysis, and reporting in,
 367–369
 examples of, 364–365
 introduction to, 46, 51
 types of, 365–366
 Phi Delta Kappa, 23, 24
 Phi Delta Kappa/Gallup Education Poll, 180,
 182
Phi Delta Kappan, 23, 525
 Philip Morris, 327
 Physical data, 192
 Piercy, Thomasina, 409
 Piercy Drug Program, 409
 Pilot tests, 177
 Planning
 assessing feasibility in, 72–73
 formulating hypotheses in, 80–82
 proposals, 82–85
 research problems, 73–75
 research questions, 56–61, 77–80
 reviewing existing studies in (*see*
 Literature reviews; Literature searches)
 study purpose, 75–77
 Point estimates, 469–472
 Popper, Karl, 19
 Populations, 199, 242–245, 463
 Population validity, 242–245
 Positive correlation, 42–45
 Positive criticism, 401
 Positively skewed distributions, 444
 Post hoc fallacy, 329
 Post hoc tests, 488–489
 Posttest-only control-group designs, 281,
 284–285
 Posttest-only designs with nonequivalent
 groups, 277, 279–280
 Power, in inferential statistics, 483
 PPS (probability proportional to size)
 technique, 213
 Practically significant findings, 484
 Pragmatism, 30, 410
 Prayer in schools, 61
 Prediction as research objective, 24–25
 Predictive evidence, 141, 145
 Predictive research, 348–349, 353–354
 questions in, 78
 Preissle, Judith, 220
 Preschool assessment tests, 150
 Presence or absence technique, 265, 266
 Presentism, 401
 Pretest-posttest control-group designs, 281,
 282–284
 Primary sources, 399
 Principals in research process, 11, 109, 110,
 386
 Principle of evidence, 21–22
 Probabilistic causes, 32, 333
 Probabilistic reasoning, 14
 Probability proportional to size (PPS)
 technique, 213
 Probability sampling technique, 198
 Probability values, 477, 479, 481–482
 Probes, 178, 179
 Problem of induction, 14
 Problems. *See* Research problems
 Procedures, describing, 84–85, 533
 ProFusion meta-search engine, 70
 Projective measures, 149–150
 Proof versus evidence, 3, 21
 Proportion, 464
 Proportional stratified sampling, 207–209
 Proposals, 82–85, 96. *See also* Research
 problems
 Prospective studies, 344. *See also* Panel
 studies
PROSPERO, 525
 Protocols
 interview, 180, 182–183, 186
 research, 113–116
 Psychological factors, 15
 PsycINFO database, 66, 69
*Publication Manual of the American
 Psychological Association*, 404
 Public Health Service (PHS), 99, 113
 Purposeful sampling, 220, 222, 362
 Purpose of a research study, 60, 75–77,
 82, 83
 Purposive sampling, 15, 220
 Pygmalion effect, 20
 Qualitative interviews, 181, 183–184
 Qualitative observation, 188–191
 Qualitative research
 analyzing data from (*see* Data analysis)
 approaches to (*see* Case study research;
 Ethnography; Grounded theory;
 Phenomenology)
 characteristics of, 361, 362, 363
 construct validity in, 246–249
 defined, 30, 359
 descriptive validity in, 251
 ethical oversight in, 111–112
 evaluating, 88
 external validity in, 255–256
 history of, 29–30
 hypotheses in, 81–82
 interpretive validity in, 251–252
 literature reviews for, 62–63, 88
 problem statement in, 74–75
 purpose statement of, 76–77
 versus quantitative and mixed research,
 30–35
 questions in, 60, 79–80
 question statement in, 60, 79–80
 reporting results of, 537–540
 researcher bias in, 249, 251
 sample abstract, 543
 sampling in, 220–222
 stages of, 415–416
 steps in, 360–361
 strategies promoting validity of, 250
 strengths and weaknesses of, 410, 412
 theoretical validity in, 252–253
 types of, 45–48, 51 (*see also specific*)
 validating results of, 518–519
 Qualitative researchers, 18
 Quality, 425–426
Quality and Quantity, 428
 Quantitative interviews, 180, 181, 182–183
 Quantitative observation, 187–188
 Quantitative research
 defined, 30
 evaluating, 87
 history of, 29–30
 hypotheses in, 81
 literature reviews for, 61–62, 87
 nonexperimental (*see* Nonexperimental
 research)
 problem statement in, 73–74
 purpose statement in, 75–76
 versus qualitative and mixed research,
 30–35
 questions in, 60, 77–79
 question statement in, 60, 77–79
 reporting results of, 531–537
 sample abstract, 542
 stages of, 415–416
 strengths and weaknesses of, 410, 411
 types of, 51 (*see also* Experimental
 research; Nonexperimental research)
 variables in, 35–38

- Quantitative researchers, 18
- Quantitative variables, 35–36, 37
- Quantitizing, 425
- Quasi-experimental research designs. *See also* Experimental research
- defined, 300
 - interrupted time-series, 305–309
 - nonequivalent comparison-group, 301–305
 - regression-discontinuity, 309–312
- Questionnaires
- abstract constructs on, 175
 - analyzing data from, 504, 505–506
 - defined, 162, 164
 - double-barreled questions on, 168
 - double negatives on, 168
 - ease of, 176–177
 - information resource for, 178
 - introduction to, 164–165
 - language of, 167
 - leading and loaded questions on, 167–168
 - matching questions to objectives in, 165–166
 - open- and closed-ended questions on, 168–169
 - in operationalism, 247, 248
 - pilot testing of, 177
 - response categories on, 169–174
 - response sets from, 175–176
 - understanding participants and, 166
- Questions. *See* Research questions
- Quota sampling, 215
- Quotations, in research reports, 529
- Racial identity, 527
- Random assignment
- in controlling extraneous variables, 39–40, 268–269
 - defined, 216
 - quasi-experimental research and, 300
- Random sampling technique, 198, 268
- Random selection, 216–217, 268
- Ranges, 446–447
- Rankings, 173
- Rates in descriptive statistics, 455
- Rating scales, 170–173
- Rationalism, 13
- Ratio scale, 125, 128–129
- Ratio statements, 128
- Reactivity, 190, 245
- Reading Research Quarterly*, 525
- Reasoning as knowledge source, 13–14
- Referees, 15
- Reference groups, 450
- References in research reports, 529–531, 535, 540
- Reference Sources in History: An Introductory Guide* (Fritze, Couetts, and Vyhnanek), 398
- Reflexivity, 249, 250, 251, 362
- Regression analysis, 455–459
- Regression artifacts, 238–239, 277, 281
- Regression coefficients, 457, 464, 490–491
- Regression-discontinuity design, 309–312
- Regression equations, 456
- Regression lines, 456
- Reliability. *See also* Measurement; Validity
- in coding data, 504
 - defined, 133
 - equivalent forms, 136
 - internal consistency, 136–139
 - interscorer, 139
 - introduction to, 132–134
 - and participant similarity, 146–147
 - test-retest, 135–136
- Reliability coefficient, 134
- Repeated-measures designs, 281, 291–293
- Repeated sampling, 465
- Replication, 21, 59
- Replication logic, 217, 256
- Reporting
- case study research, 379–380
 - and choosing to publish, 524
 - clear communication in, 525–526
 - editorial style of, 528–530
 - ethnographic research, 375
 - grounded theory research, 384–385, 386
 - historical research, 404
 - language in, 526–527
 - mixed research, 31, 427–428, 540–541
 - phenomenological research, 368–369
 - qualitative research, 31, 537–540
 - quantitative research, 31, 531–537
 - reference lists in, 530–531
 - typing style in, 531
- Representative samples, 198
- Research designs
- building extraneous variables into, 271–272, 273
 - defined, 275
 - factorial, 281, 286–291, 293–294
 - one-group posttest-only, 276, 277
 - one-group pretest-posttest, 276, 277, 278–279
 - posttest-only, 277, 279–280
 - posttest-only control-group, 281, 284–285
 - pretest-posttest control-group, 281, 282–284
 - repeated-measures, 281, 291–293
 - strong versus weak, 276, 280, 282
- Researcher-as-detective strategy, 250, 254
- Researcher bias, 249, 251. *See also* Biased samples
- Research ethics
- approaches to, 94–96
 - defined, 96
 - and human participants (*see* Informed consent; Participants)
 - leading to nonexperimental research, 327–328
 - leading to quasi-experimental designs, 299
 - professional issues in, 96–98
 - in qualitative observation, 189–190
 - research review and, 112–117
 - in society-science relationship, 96
- Research ideas, 56–59, 60, 61
- Researching and Writing in the Social Sciences* (Hult), 526
- Research in Nursing & Health*, 428
- Research in Post-Compulsory Education*, 525
- Research in the Schools*, 544
- Research in the Teaching of English*, 525
- Research literature, 5
- Research methods
- constant comparative, 383
 - deductive versus inductive, 17–18
 - EPSEM, 200
 - exploratory, 23
 - inductive, 17–18, 23, 360
 - mixed (*see* Mixed method research; Mixed research)
 - in proposals, 83–85
 - in reporting, 533, 538–539
 - scientific (*see* Scientific methods)
 - selecting, 162
- Research objectives
- classifying research by, 31, 353–354
 - descriptive, 347–348, 353–354
 - explanatory, 349–354
 - matching questionnaires to, 165–166
 - in mixed research, 31, 421–423
 - overview of educational, 22–25
 - predictive, 348–349, 353–354
 - in qualitative research, 31, 360
- Research paradigms, 29–30. *See also* Mixed research; Qualitative research; Quantitative research
- Research problems
- in historical research, 395–396
 - in idea development flowchart, 60
 - in proposals, 82, 83
 - qualitative, 74–75
 - quantitative, 73–74
- Research proposals, 82–85, 96
- Research protocol, 113–116
- Research purpose, 60, 75–77, 82, 83
- Research questions
- in historical research, 395–396
 - in idea development flowchart, 60
 - in proposals, 82, 83
 - qualitative, 60, 79–80
 - quantitative, 60, 77–79
- Research topics, 60, 82, 83, 395–396
- Resources in Education* (RIE), 64, 66
- Response rates, 199–200
- Response sets, 175–176
- Response variables. *See* Dependent variables
- Results section in research reports, 31, 533–534, 539–540
- Retrospective questions, 347
- Retrospective research, 343, 346–347
- Reuben, J. A., 396
- Review of Educational Research*, 525
- Reynolds, R. J., 327
- RIE (*Resources in Education*), 64, 66
- Rival explanations, 334
- Rival hypotheses, 39, 334
- Robinson, J. P., 153
- Rodin, Judith, 263
- Roller coasters, 299
- Rosenberg Self-Esteem Scale, 143, 164, 165, 175, 176
- Rosenthal, Robert, 20

- Rosner, L., 396
 Rosnow, M., 526
 Rosnow, R. L., 526
 Rowe, Denny, 359
 Rubin, E., 543
 Rule of parsimony, 19
 Rumi, Jelaluddin, 29
 Russell, William, 98
- Samples, 199, 463
- Sampling
 versus census, 198
 cluster random, 211–213
 convenience, 214
 defined, 197
 purposive, 215
 in qualitative research, 220–222
 quota, 215
 random selection and assignment in, 216–217
 reaching target population from, 242–243
 simple random, 200–204
 size determination in, 217–219
 snowball, 216
 stratified random, 207–211
 systematic, 204–207
 terminology used in, 199–200
 Web resources, 213
- Sampling distribution of the mean, 467–468, 471
- Sampling distributions, 465–468
- Sampling errors, 199, 203–204, 466
- Sampling frames, 199
- Sampling intervals, 204–206
- SavvySearch meta-search engine, 70
- Scatterplots, 439–440
- Scheffe Test, 488
- School Leadership and Management*, 525
- Schouten, John, 499
- Schutz, Paul A., 7
- Science
 assumptions of, 15–17
 defined, 14
 dynamics of, 15
 research on achievement in, 126
 society directing course of, 96
- Scientific methods
 concept of theory in, 17, 18–20
 introduction to, 17–18
 principle of evidence and, 21–22
 in research paradigms, 31
- Screening tests, 150
- Search.com meta-search engine, 70
- Search Engine Showdown, 69
- Search Engine Watch, 69
- Secondary data, 162, 192–193
- Secondary sources, 399
- Segmenting, 502. *See also* Coding
- Selection-history effects, 239–240
- Selection-maturation effects, 240–241
- Selective coding, 384
- Self-reports, 149
- Semantic differential technique, 173–174
- Sequencing effects, 272, 273, 274
- Sexual orientation, reporting on, 527
- The Shape of Reason* (Gage), 526
- Shared beliefs, 369
- Shared values, 369
- Shaver, P. R., 153
- Significance levels, 478–479, 481–482
- Significance testing, 485, 493. *See also* Hypothesis testing
- Simple cases, 331
 of causal-comparative research, 331, 332–333
 of correlational research, 331–333
- Simple random samples
 versus cluster samples, 212
 method for drawing, 200–204
 versus proportional stratified samples, 207, 208
 versus systematic samples, 205–206
- Simple regression, 455–458
- Single-case experimental designs. *See also* Experimental research
 A-B-A, 313–316
 A-B-A-B, 315–316
 changing-criterion, 319–321
 considerations in using, 321, 322
 defined, 312
 multiple-baseline, 317–319
- Skewed distributions, 444
- Smoking, research on, 327, 346, 347
- Snowball sampling, 216
- Social desirability response set, 176
- Social psychological factors, 15–16
- Social Sciences Index, 66
- Society
 directing course of research, 96
 testing and assessment benefiting, 132
- Society for Research in Child Development, 101, 107, 111
- SocioFile database, 66
- Sociological factors, 16
- Software in data analysis, 519–521
- Sourcing, 402
- Spearman-Brown formula, 137, 138
- Special case of the general linear model, 341
- Specificity, 526
- Spinoza, Benedict de, 13
- Split-half reliability, 137–138
- Spradley, James, 513, 514
- Spurious relationships, 336–338
- Standard deviations, 447–449, 464
- Standard errors, 466
- Standardization, 180
- Standardized achievement tests, 151, 163
- Standardized open-ended interviews, 181, 184
- Standard scores, 449–450
- Standards for Educational and Psychological Testing*, 131, 141
- Starting point, 204–206
- States, versus traits, 130
- Statistical conclusion validity, 229–230
- Statistical control, 341–342
- Statistically significant findings, 331, 477–479
- Statistical results, reporting, 529
- Statistics, 199, 203, 464
- Stern*, 400
- Stratification variables, 207
- Stratified sampling, 207–211
- Strauss, Anselm, 380–381. *See also* Grounded theory
- Stress in Teaching Questionnaire, 247, 248
- Structural model. *See* Causal modeling
- Structured observation. *See* Quantitative observation
- Strunk, Jr., W., 525
- Subcultures, 371
- Summated rating scale, 175
- Summative evaluations, 10
- Superintendents, in research process, 109, 110
- Survey research, 197
- Sweetland, R. C., 153
- Syllogisms, 13–14
- Symbolic coding systems, 507
- Synthesis, 403. *See also* Data analysis
- Systematic error, 133
- Systematic samples, 204–207, 209
- Tables
 of random numbers, 200–204
 in research reports, 536
- Target populations, 199, 242–243
- Taxonomies, 514
- Teacher Development*, 525
- Teacher Education Quarterly*, 525
- Teachers
 conducting action research, 11
 dealing with dropouts, 515, 516
 and freedom to withdraw, 110
 giving consent, 109
 training of, 227
- Teachers and Teaching: Theory and Practice*, 525
- Teachers College Record*, 525
- Teaching and Teacher Education*, 525
- Teenagers. *See also* Minors
 ethics in studying, 99–101
 historical research on, 391
 in positive classroom environment, 306–309
 violence of, 93, 359
- Telephone interviews, 178
- Temporal validity, 245
- Terry, Luther, 327
- Test anxiety, 58–59
- Test Critiques* (Keyser and Sweetland), 153
- Testing. *See also* Hypothesis testing;
 Measurement; Tests
 assumptions in, 129–132
 educational assessment, 150–152
 in experimental designs, 281
 impacting validity, 236–237
 information sources, 152–155
 intelligence, 148
 personality, 148–150
 of questionnaires, 177
 for significance, 485

- Test-retest reliability, 134, 135–136
- Test Review Locator, 154
- Tests. *See also* Hypothesis testing; Testing anxiety about, 58–59
in data collection, 162, 163
educational and psychological, 147–152
homogeneous and heterogeneous, 136–137
information sources on, 153–154
measuring intelligence, 148
unidimensional and multidimensional, 143–144
- Tests: *A Comprehensive Reference for Assessment in Psychology, Education, and Business* (Maddox), 153
- Tests in Print (TIP), 155
- Theoretical modeling. *See* Causal modeling
- Theoretical saturation, 384, 500
- Theoretical sensitivity, 383
- Theoretical validity, 252–253
- Theories. *See also* Grounded theory
activity theory of causation, 39
defined, 17, 19, 58
examples of, 20
as idea source, 58–59
judging quality of, 19
- Theory assessments, 10
- Theory confirmation, 381
- Theory generation, 381
- Theory into Practice*, 525
- Theory triangulation, 250, 253
- Think-aloud technique, 177
- Third-variable problem. *See also* Confounding variables
defined, 333–334
examples of, 335–338
- Third variables, 232. *See also* Confounding variables
- Three necessary conditions
applying, 335–338
defined, 333–335
- Time, 401
- Time dimension
classifying research by, 353–354
in cross-sectional research, 343–344
in longitudinal research, 343, 344–346
in mixed method research, 418–421
reasons for, 342
in retrospective research, 343, 346–347
- Time-interval sampling, 187–188
- TIP (Tests in Print), 155
- Titchener, E. B., 397
- Title pages in research reports, 532, 538
- Tomiak, J., 396
- Tool function of theory, 58
- Top-down approach, 18
- Topics for research, 60, 82, 83, 395–396
- Traits, versus states, 130
- Transactional strategies, 301–303
- Transcription, 502
- Treatment variation validity, 245–246
- Trend studies, 344
- Triangulation strategy
in mixed research, 423, 424, 426
types of, 250, 251, 253, 254–255
- t*-test
for correlation coefficients, 489–490
for independent samples, 486–487
in nonexperimental research, 331
for regression coefficients, 490–491
- Tukey Test, 488
- Tuskegee syphilis experiment, 99, 114–115
- Twenty-twenty hindsight, 329
- Two-stage cluster sampling, 212
- Type I errors, 482–483
- Type II errors, 483
- Type technique, 266
- Typical-case sampling, 221
- Typing style, 531. *See also* Editorial style
- Typologies, 514–516
- UMI Dissertation Abstracts International database, 66
- Unidimensional tests, 143–144. *See also* Homogeneous tests
- Unique case orientation strategy, 362
- Universal laws, 255–256
- Upper limits in interval estimation, 469
- Urban Education*, 525
- The Urban Review*, 525
- Utilitarianism, 95–96
- Vagueness, 401
- Validation, 140
- Validity. *See also* Evaluations; Internal validity; Measurement; Reliability
based on internal structure, 143–144
based on relation to other variables, 144–146
construct, 246–249
content-related evidence in, 142–143
defined, 140
descriptive, 251
in ethnographic research, 375
external, 59, 242–246, 255–256
of historical sources, 399–403
interpretive, 251–252
introduction to, 132–133, 140–142
issues in quantitative research, 228–229
in mixed research, 426
participant similarity and, 146–147
in qualitative research (*see* Qualitative research)
researcher bias in, 249, 251
statistical conclusion, 229–230
testing and improving, 59
theoretical, 252–253
- Validity coefficients, 145
- Validity evidence, 140
- Variables. *See also* Extraneous variables; Independent variables
categories of, 35–38
confounding, 39–40, 228, 266–267
contingency tables in analyzing, 453–455
inferring causation, 231–232
intervening, 36, 38, 351
manipulating, 265–266 (*see also* Experimental research)
matching, 339–340
regression analysis of, 455–459
stratification, 207
third, 232, 333–338
- Variances
ANCOVA, 274–275, 341–342
ANOVA, 331, 487–489, 536
in descriptive statistics, 447–448
in inferential statistics, 464
- Verbal conditioning study, 103, 105
- Verbatims, 252
- Verstehen*. *See* Empathetic understanding
- Violence of teenagers, 93, 359
- Vivisimo meta-search engine, 70
- Voice in qualitative research, 362
- Voice recognition software, 502
- Vyhnanek, L. A., 398
- Weber, Max, 33
- Web surveys, 176
- White, E. B., 525
- White, Ronald, 8
- White, Victoria E., 7
- Within-stage mixed model research, 416–417
- Women, education of, 74
- Woodcock Reading Mastery Test, 152
- Wrightsmen, L. S., 153
- Writing for Social Scientists* (Becker), 526
- Writing Papers in Psychology* (Rosnow and Rosnow), 526
- WWW Virtual Library, 70
- X-axis, 437. *See also* Graphs; Regression analysis
- Yahoo!, 69, 70
- Y-axis, 437. *See also* Graphs; Regression analysis
- Y-intercepts, 457
- z-scores, 450, 452–453