Index

A

Ability, 279
Acquiescence bias, 44
Additive systematic error, 39
Affective (attitudes or emotions) domain, 78
AIDS item questions, 71
Ajzen, I., 106, 109, 110, 117
Algina, J., 93, 98, 175, 210
Alpha. See Coefficient alpha method
American Educational Research Association, 17, 212, 213, 214
American Psychological Association, 17, 212
ANOVA (analysis of variance): described, 15, 157–158; on difference between mean scale scores of two groups, 231–232; interpreting a one-way, 158–161; SPSS commands for one-way, 158, 159. See also Variance
Aristotle, 3
Army Alpha (psychological test), 4–5
Assessment (verbal-probe method), 221, 222, 223–224
Avant, K. C., 120
B
Bandura, A., 106, 109, 110, 116, 118, 123, 127, 133, 216, 230, 238, 240
Bartlett’s test of sphericity, 251–252
Bassey, E. J., 34
Bernstein, I. H., 7, 10, 16, 53, 109, 121, 175, 181, 192, 198, 199, 211, 244, 247, 261, 275
Bias. See Response sets
Binet, A., 4, 39–40
Biobehavioral measures, 33–34
Bloom, B. S., 78, 79
Blueprint. See Concept-dimension matrix
Bollen, K., 31, 32, 274
Booth, A. L., 47
Bradburn, N. M., 60, 74, 220
Brennan, R. L., 36, 206, 207, 208, 210
Brett, J. M., 5, 152, 275
BRF (boundary response function), 286
British Association for the Advancement of Science, 6
Brown, W., 182
Buchanan, P., 48, 49
“Butterfly ballot” (2000 presidential election): as instrument-related errors example, 48–49; scoring of responses (votes) influencing errors of, 51–52
C
CAI (computer-assisted interviewing), 50
Camilli, G., 39, 40
Campbell, D. T., 233, 235
Carlson, L., 93, 98
Cattell, R. B., 261
Causality, 152–153
CCC (category characteristic curves), 281f, 285–286
CDC (Centers for Disease Control and Prevention), 79
Index

CDC Web sites, 79
Celsius-Fahrenheit conversion, 12–14, 13r
Central tendency (end aversion) bias: described, 44–45; measures of, 139; SPSS printout of, 143t
CFA (confirmatory factor analysis), 273–274
Chave, E. J., 26
Chesney , M. A., 48
Chi-square value, 262–263
Chesney, M. A., 48
Chave, E. J., 26
CFA (confirmatory factor analysis), 253, 255; initial extraction, 255–256
Coefficient alpha method: item analysis, 194e–197e, 197–199; reliability assessment using, 184–185, 186t, 188e; standards of reliability factor, 191t, 193; test adjustments to increase alpha, 191–193; test length and interitem correlation factors, 191t
Cognitive assessment: described, 220–221; evaluation made from, 222–223; evaluation using, 222–224e; procedures for, 221–222; think-aloud method of, 221–222; verbal-probe method of, 221, 222, 223e–224e
Cognitive (knowledge) domain, 78
Cohen, J., 201
Common factor analysis (common FA): described, 253, 255; initial extraction, 255–256
Communalities, 257–258, 260t
Computer-administered surveys, 74
Comrey, A. L., 244, 270
Concept analysis: described, 115; identify antecedents and consequences of concept, 118; identify critical attributes of concept, 117; identify definitions and uses of concept, 114–116; identify dimensions of concept, 117; identify similar and different concepts, 117–118; state the variables, 119; steps in conducting, 115g; write model case, 118–119
Concept-dimension matrix: creating content-domain by, 123–124t; deciding how many items to include in, 124–125t; writing content-domain items in, 126
Concepts: analysis of, 114–119; item development process role of, 122g; 125–126; relational statements between, 106–107g; selection of, 113–114; social cognitive theory, 104, 107g; stated in form of variables, 119; subjective norms, 118. See also OE (outcome expectations); Statistical concepts
Conceptual frameworks, 229
Critical attributes of concepts, 225
Critical attributes of concepts, 225
Concurrent validity, 213, 226
Conditions, 207
Construct: validity of, 225, 229g–233; validity of relationships to other variables, 224–236
Content validity, 213, 214. See also Test content (content validity)
Convergent validity, 213
Cooper, W. H., 46
Correlation coefficient: computing, 150; described, 146–147; graphic representation of, 146–147, 151t; ICC (intraclass correlation coefficient), 203–204t; interpretation of, 150; Pearson, 226; range and sign of, 151g; reporting results of analysis of, 156; scatterplot used for, 147–148g; 149g; variance and, 154–156g. See also Matrix; SPSS commands; Variables
Correlation issues: causality, 152–153; group differences, 154; restriction of range, 154; sample size, 153–154
Correlational systematic error, 39
Couch, A., 44
Coulsen, D. B., 93, 98
Cramer, J. A., 34
Crane, G. R., 3
Crick, J. E., 210
Criterion validity, 224–227, 228t, 229
Criterion-related validity, 213
Crocker, L., 175, 210
Cronbach, L. J., 5, 44, 187, 205, 225, 229, 230, 233
Cronbach’s alpha method, 186–189, 191t
Cronk, B. C., 141, 162
Crossed observations, 210
Crowne, D. P., 43
CTT (classical test theory): assumptions and characteristics of, 167–170; continued importance of, 276–277; definition of error score in context of, 166; definition of parallel tests in, 166; described, 6, 165–167; disadvantages of, 206, 210, 277–278, 288; reliability defined according to, 6, 165–170, 176–177; as test-based theory, 278. See also Theories
CVI (content validity index), 218–219
D
D (decision) study, 207, 210
Dallosso, H. M., 34
De Ayala, R. J., 289
Decker, M. D., 47
Delacretaz, E., 34
De-Vellis, R. F., 210
Di Iorio, C., 241
Diaries, 22–23
DiClemente, C. C., 106
Difficulty index, 98–100
Diffusion of innovation, 106
Dillman, D. A., 50, 60, 70, 72, 74
Discriminant validity, 213
Dispersion measures, 139–140, 141t, 143t. See also Variance
Domain-sampling model, 80, 83g–84
Drasgow, F., 289
DuBois, P. H., 3, 4
Dulock, H. L., 107, 108g
E
Edwards, A. L., 42, 43
EFA (exploratory factor analysis): conceptual basis of, 241–242t; definition of, 238; 240–241; epilepsy stigma scale, 241t; physical activities formed by conceptual similarities, 242t–243; process/procedures of, 244–246
Index

Eigenvalues, 255, 256–257
Electronic measures, 34
Elliott, M. N., 74
Embretson, S., 289
Emerson, R. M., 115
End aversion (central tendency) bias, 44–45
EO (expected outcomes), 79
Epilepsy Attitude Scale, 27
Epilepsy stigma scale, 241
Equivalence approach to reliability, 253, 255–263; tests of sampling adequacy, 252–253
Face validity, 213
Face-to-face interviews, 72–73
Facet (source of error variance), 137–138
Fan, X., 278, 289
Favre, O., 34
Fidell, L. S., 162, 244, 246, 247, 252, 266, 267
Fishbein, M., 117
Fisher, R., 47
Fiske, D. W., 233, 235
Fitts, W. H., 117
Five-point response scale (Freyd), 5
Fixed facet, 210
Flexibility, 8
Folkman, S., 106
Forced-choice responses, 20
Frequency distribution: central tendency of, 44–45; described, 137–138; graphic representation of, 138
Freyd, M., 5, 24
Fricker, R. D., 74
Fridh, G., 109

G

G (generalizability) study, 207]
Galton, Sir F., 4
Gannon, K. M., 132
Gaston-Johnson, F., 109
General nutrition knowledge items, 211
Generic random error, 38
GENOVA, 210
Gibbs, J. P., 106, 107
Gibb’s model of research: as modified by Dulock, 107–109, 108
Gold standard, 226
Gore, A., 48, 49
GR (graded response) model, 285–286
GREF (Graduate Record Examination), 54
Green, S. B., 188
Gronlund, N. E., 77, 78, 84
Group differences, 154
GT (generalizability theory): D (decision) study using, 206, 209; described, 206–207; G (generalizability) study using, 207, 210, 209
Guillemin, F., 26
Guttman, L., 5, 29, 261
Guttman scale, 29–30, 128

H

Halo effect, 46
Hambleton, R. K., 93, 98, 278, 289
Hand-hygiene practices survey, 56–57, 58
Harris, D., 289
Health behavior research: concept analysis, 115–120; Gibb’s model of, 106–109, 108; measurement process in, 1–3, 106; scale development in, 105; 111–115; theoretical and operational definitions used in, 109–111. See also Theories; Variables
Health belief model, 106, 118
Healthy eating scale: concept analysis of, 115–120; content validity assessment of, 121; CVI (content validity index) for, 218–219; factor analysis diagram for, 238–239, 240; items on the, 134; model case, 119; self-efficacy for behavior associated with, 230. See also OE (outcome expectations)
Herman, J., 25
Hipparchus, 23
Histograms: on scores on health behavior theory test, 165; on scores on research methods test attempts, 164
HIV knowledge test: domain-sampling model for, 80, 83–84; instrument-related errors in, 49; item analysis of, 92–101; multiple choice, 85–90; objectives of, 78–79, 82; specifications for, 79–80, 82, 83
HIV knowledge test (continued)  
80, 81t; SPSS printout of KR20 results for, 190;e; table of test specifications for, 80, 83e; true/false, 90–92, 95, 99t. See also Test/testing  
HIV knowledge test item analysis; average congruency percentage, 98; for college students, 95; difficulty index, 98–100; item discrimination index, 101; item-objective congruency, 92–93, 96e–97f, 98; materials for review by content experts, 94e–95f; for true/false test, 99t  
Hockenbury-Eaton, M., 24  
Holzemer, W. L., 107  
Homogeneity of scale, 188–189  
How to Use SPSS (Cronk), 141  
Hulin, C. L., 289  
Hypotheses: assessing instruments in case of unsupported, 232–233; generating and testing, 229–230; hypothesized relationships among variables, 230/–231  
Hypothetical test items, 281t  
I  
ICC (intraclass correlation coefficient), 203–204e  
ICC (item characteristic curve), 280, 281t  
ICRF (item category response function), 286–288, 287fg  
ID (identification number), 168  
Idiosyncratic random error, 38  
Inaoka, T., 34  
Indexes: calculation of reliability, 174; CVI (content validity index), 218–219; described, 31–32; difficulty, 98–100; item discrimination, 101  
Instrument factors: butterfly ballot example of, 48–49, 51–52; HIV knowledge test example of, 49t; measurement rules to avoid errors due to, 53; overview of, 48–51; situational, 52–53; strategies to reduce errors during interviews, 51–52; strategies to reduce errors on self-report questionnaires, 50–51; types listed, 48  
Instruments: assessed in case of unsupported hypotheses, 232–233; defining, 278–279; errors related to, 48–53; evaluating responses to items on, 220–224e; FA (factor analysis) to assess validity of, 213, 237–275  
Internal consistency, 188–189  
Internal consistency reliability approach: coefficient alpha method, 184–185, 186e, 188e, 190–193; Cronbach's alpha method, 186–188, 191t; described, 181; Kuder-Richardson Formula 20, 181, 189–190e; split-half method, 181–184, 183e  
Internal consistency of scale, 187–188  
Interpersonal Relationship Inventory (IPR Inventory), 115  
Interrater reliability: described, 200; equation for, 200–201  
Interval scale, 12–14, 13fg, 15fg  
Interviewer-administered survey, 72–73  
Interviews: CAI (computer-assisted interviewing), 50; face-to-face, 72–73; measurements gathered from, 19–20; minimizing negative attitude toward, 41–42; qualitative, 126–127; strategies to reduce errors during, 51–52. See also Self-reporting measurements  
Intrarater reliability: assessing, 200–202; described, 198–199  
IRT (item response theory): described, 5, 276; item parameters of, 282–283e, 284fg; items for two hypothetical tests using, 280, 281t; polychotomous models of, 285–288; technical aspects of, 280, 288–289; terminology of, 278–279; as test development framework, 279–280  
Item analysis: coefficient alpha, 194e–197e, 197–199; knowledge test, 92–101  
Item characteristic curve, 281fg  
Item development process: create content-domain by concept-dimension matrix, 123–124t; decide how many items included in matrix cell, 124–125t; identify dimensions of concept, 123; literature review, 126; other instruments used in, 127–128; qualitative interviews, 126–127; state theoretical definition, 123; steps in, 122fg; write items for content-domain by concept-dimension cell, 126; write rules for scale scoring/administration, 128  
Item discrimination index, 101  
Item parameters, 282–283e, 284fg  
Item writing: development process for, 122fg–123; example of item characteristic curve, 281fg; knowledge test, 84–92; recoding negatively worded items, 144–145; survey, 59–70; test item analysis, 92–101; test item-objective congruency, 92–93, 94e–98; for two hypothetical tests, 281  
Item-based theory, 278  
J  
James, L. R., 5, 152, 275  
Jones, R. W., 74, 278, 289  
Joreskog, K. G., 5  
Journals, 22–23  
K  
Kaiser, H. F., 261  
Kaiser-Guttman rule, 261, 262  
Kappa formula, 201–203e  
Kashiwazaki, H., 34  
Keniston, K., 44  
Kerlinger, F. N., 110  
Kleinbaum, D. G., 162  
Kline, P., 244  
KMO (Kaiser-Meyer-Olkin) test, 248, 252–253  
Knäuper, B., 132  
Knowledge test. See Test/testing  
Known group validity, 213  
Known-groups approach, 231  
Koch, G. G., 203  
Kramer, M. K., 120  
Krosnick, J. A., 41  
Kuder-Richardson Formula 20, 181, 189–190e  
Kupper, L. L., 162, 188
Index

L

Lackey, N. R., 244, 247, 251, 252, 253, 261, 266, 267, 270, 272, 273
Landis, J. R., 203
Latent variable model for SEM analysis, 274ff
Lazarus, R. S., 106
Lee, H. B., 110, 244, 270
Lennox, R., 32
Lewy, T. R., 46
Lord, F. M., 10, 101
Lodge, M., 23
Linn, M. R., 217
Lissitz, R. W., 188
Littell, J. R., 203
Likert, R., 5, 28, 128–129, 130, 133
Lenz, E. R., 98, 215, 217, 218, 219
Likert scale, 28–29, 128–134
Lissitz, R. W., 188
Literature review, 126
Lodge, M., 23
Lord, F. M., 10, 101
Lowe, T. R., 46
Lynn, M. R., 217
Measurement: benefits of using, 123–126, 124f, 125f; description and functions of, 152; evaluation of the determinant of, 250–251; evaluation of, 248–250; for exercise hours, VO_{2}, and weight change, 151f; maternal involvement scale correlation, 184–186, 185f; multitrait-multimethod validity, 235f; reconfiguration of A factor matrix from correlation, 245ff; rotated pattern for SE scale using sort/suppression commands, 271f; scatterplot of factor loadings for SE scale unrotated factor, 264–265ff; SE scale correlation, 243–243f, 249–250f; SE scale scatterplot of rotated factor (pattern), 266ff; SE scale unrotated factor, 263–264f; test for identity, 251–252; variance-covariance, 186t–187. See also Correlation coefficient
Mattson, R. H., 34
May, B. A., 115
Measurement: benefits of using, 8–9; conceptualization of, 6–7ff; defining, 6; definition of test in context of, 37; flexibility created through, 8; health education study of, 1–3; history of psychosocial, 3–6; linked to theory-based health practice/research, 104–111; objects of, 206; quantification element of, 7; reliability concept of, 5, 17; validity concept of, 17. See also Scales
Measurement error classifications: random error, 38–39; systematic error, 39–40
Measurement error factors: instrument, 48–55; respondent, 40–48
Measurement errors: classifications of, 38–40; CTT (classical test theory) addressing issues of, 165–170; definition of, 37; factors of, 40–55; observed-, error-, and true-, 165–170; standard, 168, 205–206. See also Reliability; Variance
Measurement rules, 53
Measurement types: biobehavioral measures, 33–34; electronic measures, 34; observations, 33; self-reporting, 19–32
Medication adherence/self-efficacy, 227–228ff, 229ff–233
Meehl, P. A., 225, 229, 230, 233
MEMS (medication monitoring system), 233
Messick, S., 212, 213
Metzger, D., 74
Michell, J., 3, 6
Model case, 119
MSA (Measure of Sampling Adequacy) test, 252–253
MTMM (multitrait-multimethod), 225, 233–235f
N

National Council on Measurement in Education, 17, 212
National Research Council, 4
Nay saying, 44
Negatively worded items, 28, 144–145
Nelson, C. A., 115
Nested observations, 210
Nizam, A., 162
Nominal scale, 9–10, 15ff
Nomological networks, 229
Norman, G. R., 42, 130, 131, 133, 162, 244
Novick, M. R., 10, 101
Nunnally, J. C., 7, 10, 16, 53, 109, 121, 175, 181, 192, 198, 199, 211, 244, 247, 261, 275
Objectives: determining survey, 56–58; HIV knowledge test, 78–79, 82; stating the test, 78–79; three primary domains of, 78. See also Purpose

Objects of measurement, 207

Observations: cross-tabulations for agreement in, 202; crossed or nested, 210; as measurement, 33; universe of admissible, 206

Observed-scores: CTT (classical test theory) on, 165–170; relation-ship among true-, error-, and, 170fig; for ten attempts on research method quiz, 167–168

OE (outcome expectations): defining, 116; four primary sources of efficacy information in, 119; item development process on, 122fig–128; model case written for, 119; social cognitive theory concept of, 106, 107fig; three di-mensions of, 117–118. See also Concepts; Healthy eating OE scale

One-parameter logistic IRT model, 283fig–284fg

Open-ended questions, 20

Operational definitions, 109–111

Optimizing, 41

Ordinal scale, 11–12, 15fg

Osgood, C. E., 30

Ostrom, T. M., 132

Pain: operational definition of, 110; Wong-Baker faces pain rating scale for, 24fg

Parallel tests: correlations among true-, error-, and, 169; CTT (classical test theory) on, 166–170, 169; descriptive statistics for, 168fg; reliability estimated as correlation between, 177–178t

Parsons, C. K., 289

Participants. See Respondents

Paul-Dauphin, A., 26

PCA (principal components analysis): described, 253, 255; initial extraction, 255–256

Pearson correlation, 226

Pearson correlation coefficient, 150

Pearson, K., 4

Pedhazur, E. J., 16, 42, 51, 52, 175, 206, 225, 244, 249, 253, 256, 263, 274

Percentage of agreement, 200–201t

Personal Resource Questionnaire, 116

Pett, M. A., 244, 247, 251, 252, 253, 261, 266, 270, 272, 273

Polytomous item response models, 285–288

Population, 207

Positive skew bias, 45–46

Preacher, K. J., 255, 261, 270

Predicators, 225fig–226, 227

Price, D. D., 26

Priori content validity, 215

Prochaska, J. O., 106

Psychology Committee (National Research Council), 4

Psychomotor (skills) domain, 78

Psychosocial measurement history, 3–6, 267

Purpose: for students’ attitudes about exercise survey, 57; survey development and statement of, 55–56; test development and statement of, 76–78. See also Objectives

Q

QOL (quality of life), 234–235t

Qualitative interviews, 126–127

Questionnaires: measurements gathered from, 20–22; optimizing approach to, 41–42; Personal Resource Questionnaire, 116; strategies to reduce errors on self-report, 50–51. See also Surveys

Questions: open-ended and closed-ended, 20; for students’ attitudes about exercise survey, 57; survey research, 56–58t

Quigley, K., 47

R

Random error, 38–39

Random facet, 210

Range restrictions, 154

Rasinski, L. J., 41, 74, 220

Ratio scale, 14, 15fg

Recall (participant), 46–48

Reliability: CTT (classical test theory) and, 6, 165–170, 176–177; described, 5, 37, 164, 174–175; estimate of, 172–173; estimated as correlation between parallel test, 177–178t; GT (generaliz-ability theory) and, 205–209; histograms to represent, 164fg–165fg; ICC (intraclass correlation coefficient), 202–203e; intrarater and inter-rater, 200–203; selection of procedures to assess, 17; standard error of measurement and, 204–205. See also Measurement errors; Variance


Reliability coefficient: calculation of reliability index, 174; calculation of variance due to true score, 173–174; described, 5, 170; estimating reliability, 172–173; theoretical equation for, 171–172

Reliability index, 174

Research. See Health behavior re-search

Respondent factors: instrument, 48–55; overview of, 40–42; recall, 46–48; response sets or bias patterns, 42–46

Respondents: recall of, 46–48; re-sponse set patterns of, 42–46; responses to items on instru-ment by, 220–224fg; self-reporting by, 19–31, 41–42; survey development considerations of, 58–60
Response processes: described, 220–221; evaluation using, 222–224; procedures for, 221–222

Response scales, 239–24, 25

Response sets: acquiescence and nay-saying, 44; described, 42; end aversion (central tendency), 44–45; halo effect, 46; options for, 45; positive skew, 45–46; social desirability, 42–44

Restriction of range, 154

Richardson, M. W., 188

Rips, L. J., 74

Rogers, E. M., 106

Rogers, H. J., 278, 289

Rosenberg, M., 109

Rosenberg Self-Esteem Scale, 29–30, 128

Russo, M. J., 235

S

Salant, P., 50, 74

Samejima’s graded response (GR) model, 285–286

Sample size, 153–154

SAT (Scholastic Aptitude Test) scores, 225–226

Scale development: conceptualization issues in, 111–115; item development process, 122–128; steps in, 105

Scale development issues: concept selection, 114–115; scoring/administration rules, 128; single-item versus multiple-item scales, 111, 113–114; survey versus scale, 111, 112–113

Scale measurements: development of, 105; historic development of, 5

Scales: defining, 278–279; differences between surveys and, 110–111, 112–113; history of development, 5; internal consistency versus homogeneity of, 188–189; interval, 12–14, 13; item analysis, 193–198; nominal, 9–10, 15; ordinal, 11–12, 15; ratio, 14, 15; schema for levels of, 15; scoring and administration rules, 128; single-item versus multiple-item, 111, 113; statistics and levels of, 15–16; summated rating, 128–134; types of, 9. See also Measurement

Scaling methods: described, 24

Guttman scale, 29–30, 128; Likert scale, 28–29, 128–134

Rosenberg Self-Esteem Scale, 28–29, 133; SD (semantic differential scale), 30–31, 128

Thurstone scale, 26–27

V AS (visual analog scale), 28–29, 128–134

Self-efficacy: ANOVA on difference between two groups, 231–232; medication adherence and, 227–228; operations; 229; operational definition of, 109–110; social cognitive theory concept of, 106, 107; 229

Self-efficacy theory, 229

Self-esteem: as latent variable, 239; operational definition of, 110

Self-reporting measurements: described, 19; indexes as, 31–32; journals and diaries as, 22–23; questionnaires as, 20–22, 41–42, 50–51; response scales as, 23–24; 25; scaling methods as, 24–31. See also Interviews; Surveys

SEM analysis latent variable model, 274

SEM (structural equation modeling), 5

Shavelson, R. J., 210

Shepard, L. A., 39, 40

Silverman, I., 41

Simon, T., 4, 39

Situational factors: described, 41–53; measurement rules to avoid errors due to, 53

Skip patterns, 72

Social cognitive theory. See SCT (social cognitive theory)

Social desirability bias, 42–44

Social support scale variance, 209

Spearman, C., 5, 182

Spearman-Brown formula, 182

Spector, P. E., 23, 111, 129, 131

Split-half method, 181–184, 183
SPSS commands: for computing ICC (intraclass correlation coefficient), 203; for computing kappa, 202; computing total scale scores, 145–146; for extraction, 255–256; introduction to, 140–146; for item analysis, 193–198; for one-way ANOVA (analysis of variance), 158, 159; options, 270; recoding negatively worded items, 144–145; rotation, 267. See also Correlation coefficient

SPSS printouts: of alpha coefficient for maternal involvement scale, 188; of ANOVA summary table, 160; of anti-image correlation matrix for SE scale, 254; of central tendency and dispersion, 143; of communalities table for SE scale, 260; comparing self-efficacy scale differences of two groups, 232; of correlation coefficient between two forms of scale, 177–178; of goodness of fit test for SE scale, 262; of ICC (intraclass correlation coefficient), 204; of initial solution for SE scale, 257–258; of item analysis for maternal involvement scale, 194–197; of KR20 results for HIV knowledge test, 190; of results of kappa, 202–203; of results of split-half reliability assessment, 183; of rotated factor (pattern) matrix on SE scale, 266; of rotated factor/correlation matrix for SE scale, 268–269; of rotated pattern matrix for SE scale using sort/suppression commands, 271; of scree plot for SE scale, 261–262; showing comparison among groups, 160–161; of Test of Homogeneity of Variances, 159; of twelve-item SE scale, 247–248; of unrotated factor matrix for SE scale, 258–259; of SE scale, 261, 263–264.

Survey item writing: the don’ts of, 68–70; the do’s of, 60–68; overview of, 60

Survey item writing don’ts: 1: avoid word “not,” 68–69; 2: avoid jargon or regional expressions, 69; 3: avoid ambiguous items, 69; 4: avoid value-laden or biased words, 69–70

Survey item writing do’s: 1: write item related to purpose, 60–61; 2: write items as complete sentences, 61; 3: write items that are short and concise, 61–62; 4: write open-ended items when requesting sensitive information, 62–63; 5: write mutually exclusive/exhaustive response choices, 63–64; 6: spell out acronyms, 64; 7: define unusual terms, 64–65; 8: write items that contain one idea, 65; 9: write items that are specific, 65; 10: use simple words, 66; 11: highlight terms that could be missed or important, 66; 12: allow specific time period for recall items, 66–67; 13: use ranges rather than precise values for sensitive items, 67; 14: use don’t know and not applicable response options sparingly, 67–68; 15: make careful decision about including response options, 68

Surveys: administration of, 72–74; basic principles of constructing, 55–60; definition of, 55; described, 20–22; differences between scales and, 110–111, 112–113; format of, 70–72; hand-hygiene practices, 56–57; handwashing practices, 56–57; students’ attitudes about exercise, 57. See also Questionnaires; Self-reporting measures

Swaminathan, H., 93, 98, 278, 289

Systematic error, 39–40

Tabachnick, B. G., 162, 244, 246, 247, 252, 266, 267

Table of test specifications, 79–80, 81t, 83t
Variance-covariance matrix, 186–187

VAS (visual analog scale), 24–26fig, 128

Venn diagrams: for P x O x I design, 209fig; showing shared variance of variables, 157fig; showing variance for two variables, 156fig

Verbal-probe method, 221, 222, 223–224

Viswanathan, M., 38, 39

VO₂-exercise relationship: calculating correlation coefficient for, 149; correlation matrix showing, 151; scatterplot showing, 147–148fig

W

Walker, L. O., 120
Waltz, C. F., 98, 109, 215, 217, 218, 219
Webb, N. M., 210

Weight change-exercise hours relationship: correlation matrix showing, 151; for fewer than five hours per week, 155fig; for 100 participants, 149fig; verbal probes used in assessment of, 223–224

Weinert, C., 115
Weiss, R., 115, 117

Wilson, D., 24
Wilson, J., 114, 120
Winkelstein, M. L., 24
Wong, D. L., 24
Wong-Baker faces pain rating scale, 24fig

Y

Yea-saying, 44
Yerkes, R., 4