Author Index

A

Adams, R. J., 239, 251, 259, 300
Adams, N. A., 254
Adey, P., 76
Alder, K., 6, 13
Ali, M., 275
Anastasi, A., 269
Andersen, E. B., 49, 106, 123, 277
Andrich, D., 49, 106, 123, 222, 263, 272, 297
Armon, C., 179, 180

B

Baiardi, D., 83
Bassett, G. W. Jr., 199
Battaglia, M. A., 92
Bejar, I. I., 140
Beltyukova, S. A., 79, 193
Bendig, A. W., 220
Bergstrom, B. A., 198, 199
Beswick, D. G., 88, 90
Bezruczko, N., 299
Boardley, D., 183
Bond, T. G., xii, xiv, 19, 42, 51, 59, 66, 72, 73, 75, 78, 79, 83, 90, 94, 95, 110, 112, 120, 128, 139, 164, 170, 176, 184, 186, 193, 194, 195, 240, 250, 259, 263, 268, 269, 270, 291
Boone, W., 299
Bowe, B., 164
Brandenburg, D. C., 221
Bring, J., 199, 200
Brouwer, J., 207
Brown, G., 220,
Brunel, M-L., 166
Bunting, E. M., 94, 95, 128, 133, 139
Bush, M. J., 286

C

Campbell, N. R., 7, 8, 299
Campbell, R., 199
Campbell, S. K., 204, 206
Carling, K., 199, 200
Chagnon, Y., 166
Chan, M., 207
Chang, L., 221
Choppin, B. H. L., 12
Cicchetti, D. V., 220,
Clark, H. H., 219, 254
Cliff, N., 251, 263, 274
Colby, A., 180
Coudé, G., 170
Coulter, R. L., 220,
Cronbach, L. J., 269
Cronin, J., 164
Curtis, D. D., 193, 196, 197

D

Daltroy, L., 203
Davison, M. L., 221
Dawson, T., 164, 179, 180, 182
Derogatis, L. R., 254
Dinero, T., 221
Dinning, W.D., 254
Dorsey, J. K., 203
Douglas, G., 277
Draney, K. L., 171, 172, 173, 298
Ducret, 3
Dunham, T. C., 221

E

Einstein, A., 3, 275
Elliot, R., 254
Endler, L. C., 66, 75, 76, 78, 176, 179, 259,

268
Engelhard, G., 154, 155, 156, 157, 159, 298
Eubanks, R. L., 202
Evans, R. G., 254
Ewart, E., 220,

F

Fan, X., 91, 267, 268
Ferguson, G. A., 7
Finn, R. H., 220
First, M. B., 254
Fischer, G. H., 49, 251, 297
Fischer, K., 164
Fisher, W. P., Jr., 37, 79, 202, 203, 263, 269, 272, 274, 275
Fox, C. M., xiv, 41, 42, 59, 72, 79, 90, 94, 95, 183, 193, 207, 221, 226, 291
Franchignoni, F. P., 92
Friedman, M. J., 254
Frisbie, D. A., 221
Funk, J. B., 207

G

Galbraith, J., 199
Garner, M., 298
Gaulin, C., 166
Gedeon, J., 221
Gershon, R. C., 65, 198
Gibbon, M., 254
Girolami, G. L., 204
Glass, W., 199
Goldman, R. N., 254
Goldstein, H., 265, 266
Gori, E., 164
Goyer, L., 166
Granger, C. V., 92, 299
Green, S. B., 220
Greenberg, L. S., 254
Griffin, P., 164
Guilford, J, P., 149, 150, 151, 153
Gustafosson, J.-E., 241
Guttery, R. S., 199
Guttman, L., 20, 169, 239, 240, 241, 272,

H

Hales, S., 101
Haley, S. M., 203
Hambleton, R. K., 267, 273
Hamilton, B. B., 299
Hays, W. L., 264
Heinemann, A. W., 299
Holcomb, W. R., 254

I, J

Ingebo, G. S., 78, 91, 92, 298
Inhelder, B., 3, 18, 51, 76, 83, 90, 128, 133, 139, 268, 269
Iventosch, L., 172
Jenkins, G. D., 220
Johannesson, M., 203
Jones, J. A., 41, 59

K

Kaplan, D., 70
Karabatsos, G., 9, 251, 272, 273
Karmiloff-Smith, A., 18, 269
Katz, J. N., 203
Keay, J., 6, 13
Keeves, J. P., 140, 193, 196, 197
Khoo, S. T., 239, 300
Kieffer, K. M., 264
King, J., 110, 112, 120, 184, 186, 193
Kingsbury, G., 91, 164
Klockars, A. J., 221
Kofsky, E., 169, 272
Kohlberg, L., 180
Kolobe, T. H., 204
Komorita, S. S., 220
Krantz, D. H., 11, 251, 262
Küchemann, D. E., 83, 127, 128

L

Lam, T. C., 221
Lauden, L., 276
Lenke, M., 204
Liang, M. H., 203
Linacre, J. M., x, xv, 17, 49, 95, 99, 144, 147, 148, 149, 150, 153, 154, 179, 184, 201, 202, 207, 219, 221, 222, 223, 224, 225, 226, 227, 228, 241, 251, 252, 253, 256, 258, 275, 276, 289, 297, 299, 300, 302
Lissitz, R. W., 220
Liu, X., 299
Looney, M. A., 199, 200, 201
Lopez, W. A., 221, 223, 230
Lord, F. M., 266
Luce, R. D., 8, 10, 11, 13, 14, 251, 262, 263, 272, 274

Lunz, M. E., 148, 149, 198, 199
Lyons, S., 199

M

Maraun, M. D., 271
Marier, R. L., 202
Martin-Loff, P., 241
Masters, G. N., 35, 40, 49, 59, 88, 90, 105, 120, 123, 164, 193, 223, 230, 231, 238, 275, 284, 285, 297, 306
Maurer, M., 110
McCall, M. S., 164
McHorney, C. A., 203
McNamara, T. F., 298
Meehl, P. E., 269
Messick, S., 51, 70, 82, 269, 270
Miao, C. Y., 35,
Michell, J., 2, 11, 13, 133, 251, 262, 263, 264, 270, 271, 272, 274, 298
Miller, G. A., 220
Mislevy, R. J., 169
Mok, M., 298
Molenar, I. W., 37, 49, 251, 297
Montag-Torardi, M., 110
Moos, R. H., 186

N

Narens, L., 11, 274
Newson-Smith, J., 220
Newton, I., xiv
Noelting, G., 164, 166, 169, 170, 172, 173
Nunnally, J. C., 220

O

Ory, J. C., 221
Osten, E. T., 204
Overton, W. F., 269, 270

P

Parkinson, K., 19
Pedhazur, E. J., 264
Peirce, C. S., xiv, xv
Perkins, K., 203, 204
Perline, R., 263, 272
Persky, J., 199
Perucca, L., 92
Piaget, J., 3, 51, 52, 66, 76, 83, 90, 124, 125, 128, 133, 139, 240, 241, 263, 268
Plake, B. S., 147
Ponder, H. M., 254
Puchalska, E., 166

R

Ramsay, J. O., 220
Rasch, G., xiii, 10, 13, 26, 47, 49, 266, 277, 296
Reese, T., 299
Remington, M., 220
Remmers, H. H., 220
Rice, L. N., 254
Rigano, D., 186
Robinson, K. L., 183
Rogosa, D. R., 180
Rossi Ferrario, S., 83
Rost, J., 49
Rousseau, J.-P., 164, 169, 170
Russell, C. F., 92

S

Savitz, K. L., 254
Scheuneman, J. D., 92
Schmelkin, L. P., 264
Schober, M. F., 219
Schumacker, R. E., 252, 286
Seltzer, R., 199
Sfridis, J., 199
Shayer, M., 76, 83, 92, 127, 128
Simard, A., 166
Simonson, M. R., 110
Smith, E., 206, 207, 209, 299,
Smith, R. M., xi, 35, 57, 65, 71, 90, 243, 251, 269, 286, 299
Smullyan, R., 166
Sobel, D., 13
Spector, P. E., 221
Spitzer, R. L., 254
Stahl, J., 198
Stafford, E., 95, 128
Stanbridge, B., 75
Stevens, J. J., 221
Stevens, S. S., xv, 2, 4, 5, 7, 8, 262, 263
Stone, G. E., 147
Stone, M. H., 2, 6, 35, 37, 49, 73, 79, 90, 206, 207, 209, 253, 254, 255, 256, 297
Strauss, S., 95
Stucki, G., 203
Subhiyah, R. G., 92
Suppes, P., 11, 251, 262

Swaminathan, H., 273
Symonds, P. M., 220
Szeminska, A., 3

T

Taber, T. D., 220
Tesio, L., 92
Thurstone, L. L., 24, 69
Tukey, J. W., 8, 10, 14, 262, 263, 272
Tversky, A., 11, 251, 262
Tyrer, P. J., 220

U

Urbina, S., 269

V

van der Linden, W. J., 266, 273

W

Wainer, H., 263, 272
Wallace, J. G., 128
Waller, M. I., 65
Wang, W., 259
Ware, J. E. Jr., 203
Warm, T. A., 179
Watson, J., 254
Waugh, R. F., 196
Whissell, C., 199
Whissel, R., 199
Whitaker, M., 110
Widing, R. E., 220
Wilkinson, D., 199
Williams, J. B., 254
Willett, J. B., 180
Wilson, M., xi, xii, 58, 169, 170, 171, 172, 251, 259, 269, 298, 301
Wright, B. D., xiii, 5, 6, 11, 17, 35, 37, 40, 49, 59, 71, 73, 80, 90, 99, 120, 123, 143, 179, 184, 193, 203, 206, 207, 209, 219, 221, 223, 226, 227, 230, 231, 238, 241, 251, 252, 253, 254, 255, 256, 263, 268, 272, 277, 284, 285, 297, 298, 299, 300, 302
Wu, M. L., 241, 251, 259, 301
Wylam, H., 83, 127, 128

Y

Yamagishi, M., 221,

Z

Zotti, A. M., 83
Zwinderman, A. H., 303

Subject Index

A

Ability estimates, 29, 31
difficulty estimates vs., 29–30, 3740, 60–62, 112–117, 169–175, 277–280
error and, 37–40
raw scores vs., 39–40, 158
ACER, *see* Australian Council for Educational Research
Adjusted person variability (SAP), 284
Agreeability estimates, *see* Ability estimates
American Educational Research Association Rasch SIG, 139, 304
Anchoring, 75–78
Asymmetry index, 171, 173
Attitudes, *see also* Rating scale model measurement, 101–108, 219
Australian Council for Educational Research (ACER), 305, 306
Axiomatic conjoint measurement, 251, 262–265, 272, 274

B

Basketball, *see* Sports performances
Benchmarks, 186–190
weighted vs. unweighted, 190–191
Bias, *see also* Differential facets functioning; Differential item functioning judges', 144
Bond&FoxSteps, *see* Software
Bond's Logical Operations Test (BLOT), 50–67, 72–78, 80–82, 176–179, 243–245, 259, 288
compared with PRTIII-Pendulum, 96–99, 250

C

CADATS, 199, 295
Calibrations, 186
Caskets task, 164–168
Categories, rating scale, *see* Rating scale categories
Ceilling effect, *see* Targetting
CEM centre, 199
Checklists, 183–184
Children's Empathic Aittitude Question naire (CEAQ), 207–217
Chi-square fit statistics, *see* Fit statistics
Classical test theory, *see* True score theory
Client satisfaction, 78–79, 184–196
Clinical interviews, *see* Interviews, clinical
Co-calibration, 91, 203
Coded orthogonal views, 164–168
Common person linking, *see* Linking
Common test linking, *see* Linking
Computer Adaptive Testing, 197–199
Computer anxiety example, 102–108
Computer Anxiety Index (CAIN), 110–122
Computer Opinion Survey, 110-122
Computer programs, *see* Software
Computerized adaptive testing, 197–199
Concurrent validity, *see* Validity
Conjoint measurement, 8, 11, 14; *see also* Axiomatic conjoint measurement; Item response theory and, 272–274
ConQuest, *see* Software
description, 301–302
Conservation of matter task, 89–92
Construct validity, *see* Validity
Control files, *see* Software, Bond&FoxSteps, Facets, Quest, RUMM, WINSTEPS,
Control lines, *see* Linking
Counts, *see* Raw scores
Creativity, of junior scientists, *see* Many-

facets
Customer satisfaction, *see* Client satisfaction

D
Data input, 288–289, 295
Data matrix, 8, 9, 18, 19, 20, 21, 22, 38, 48, 52, 80
  empty cells in, 109–110, 123
  ordered, 20, 22, 48, 125, 126, 236
  unordered, 19
Derived measures, *see* Measurement
Deterministic models, 272
Developmental pathways
  dichotomous model, 52
  general Rasch model, 29–40, 43
  many-facets, 151, 152
  partial credit model, 135
  principles, 41–44
  rating scale model, 101–122
Developmental stages, *see also* Saltus model
  cross-sectional analysis, 76, 164, 166, 176, 180
  discovery, 124–139
  discontinuity, 164, 166–168
  longitudinal analysis, 163–182, 176–178, 179–182
  stage boundaries, 182
Diagnosis (medical), 203–204, 204–206
Dichotomous data analysis, 50–67, 289–295
  checklists, 183–185
  coding, 49–50
  interpretation of analysis, 57–63
  superitems, 172–173
Dichotomous model description, 49
  technical aspects, 277–279
Differential facet functioning, 95, 159
Differential Item Functioning (DIF), 92–95, 159, 231–232, 296
Differential person functioning, 94–95
Difficulty estimates, 24, 31, 43, 56
  ability estimates vs., 43
  error and, 43, 56, 73
  rating scale models, 105–108, 112-118
Discontinuity, *see* Developmental stages

E
Eighth Grade Writing Test, 154–159
Endorsability estimates, *see* Difficulty estimates
Equating, *see* Linking
Error, 38, 41, 73, 258
  dichotomous model, 56
  linking, 86–88
  partial credit model, 136–137
  rating scale model, 109
Estimation, *see* Ability estimates; Difficulty estimates; Fit
Excel used for equating, *see* Software

F
Facets, *see* Software
  description, 302–302
Facets model, *see* Many-facets model
Family Strain Questionnaire (FSQ), 83
Ferguson committee, 7
Fit, 34–37, 43, 48, 65, 274
  conjoint measurement and, 272–273
  graphical representation, 30–32
  item, 34–37, 54–57
  item response theory and, 265, 268, 273–274
  raters and, 159
  rating scale categories, 117
Fit statistics
  chi-square, 238–239
  diagnostic use, 249
  infit, 57, 238–239, 246, 285
  interpretation, 157–159, 239–249
  misfit, 180, 182, 267
  misfit and ICC, 243–246
  outfit, 57, 238–239, 285
  standardized (*t* statistic), 57, 60, 112–114, 117–118, 239–240, 286,
  technical aspects, 250–251, 285–286
  unidimensionality and, 34–35
  unstandardized (mean square), 57, 60, 112–114, 117–118
Fundamental measurement, *see* Measurement

G
Guilford, 149–154
Global stage scores, 180
Glossary of terms, 309–314
Good Life Interview, 180–182
Graphical representations, *see* Developmental pathways; Maps; Probability curves
Guessing, 63–65, 245–246
Guttman scaling, 20, 169, 239, 241, 272

I
Identity lines, *see* Linking
Inference
observation vs., 143
Infit, *see* Fit statistics
Institute for Objective Measurement (IOM), 303–304
International Objective Measurement Workshops (IOMW), 298, 304
International Outcomes Measurement Conference, 305
Interrater reliability, *see* Reliability
Interval-level data, 2, 4, 8
transformed from ordinal-level data, 11, 17, 37, 109
Interviews
clinical analysis, 132–134
interpretation of analysis, 138–140
ordered performance criteria, 127–130
scoring of transcripts, 133–134
Invariance, x, 7, 69–99, 188, 231–232, 235
see linking,
many-facets model, 153
rating scale model, 231–232
Item characteristic curves (ICC), 29, 46–47, 62–63, 92–94, 126, 131, 243–246, 251, 273, 294
Item difficulty, *see* Difficulty estimates
Item fit, *see* Fit
Item-free ability estimates, *see* Parameter separation
Item reliability index, 41
Item response theory, xi, 251, 265–268, 272–274
conjoint measurement and, 272–274
Item separation index, 59

J
Journal of Applied Measurement, 4, 299

K
Kidmaps, *see* Maps

L
Latent traits, 36, 82, 94, 108, 120, 140,143–144, 250, 261–265
Length, 5, 11, 12, 16
Lexile Reading Framework, 307
Levels of data, 8
Likert scales, 49, 101–122, 184, 196
Limen, *see* Threshold estimates
Linking
common item linking, 71–78
pseudo common items, 78–78, 202–203
common person linking, 80–82, 84–90
common test linking, 76
control lines, 72–75, 84–90, 231–232
error estimates, 58–59
Microsoft Excel, 97–100
physical functioning scales, 202–203
relative test difficulties, 86–87
unidimensionality and, 80–82
Local independence, 172
Log odds, 24–26, 278
Logarithmic transformation, 24, 26, 37, 38, 278
Logit (log odds unit), 38, 47, 278
scale, 35, 41, 43, 54, 58, 159, 168, 173, 182, 224
Longitudinal data, *see* Developmental stages
Louisiana State University Health Status Instruments–Physical Functioning Scale, 203

M
Many-facets data
analysis, 149–154, 154–159
eighth-grade writing, 154–159
interpretation of analysis, 151–154, 155–159
judging plans, 148–149
junior scientists example, 149–154
missing data, 148
specifications, 149–151, 154–155
Many-facets model description, 139, 143–161
interrater reliability vs., 157
technical aspects, 283
Maps
developmental pathway, 30–32, 44, 53, 85, 104, 111, 135, 152, 291–292
item–person, 41, 55, 58, 59, 61, 115, 116, 166, 180, 181, 185
kidmap, 198, 246–249
longitudinal studies, 177–178, 181
residual principal components analysis, 205, 255
Saltus model, 171, 174
Wright, 58, 62, 106, 153, 156, 292
Matching subjects and tests, *see* Targetting

Measurement
analogy for human sciences, 11–13
assumptions, 17, 26, 274
derived, 6, 7, 11, 14
fundamental, 5, 7, 8, 11, 13, 73, 163, 235, 251, 263, 271
ignored by researchers, 2–4, 264–265
physical, 6, 8, 13, 263
principles, 15–18, 262–265
scientific, 69–100
statistics and, 1–5, 35, 85–89, 148, 157
Medical applications, *see* Diagnosis; Physical therapy; Rehabilitation Medical Outcomes Study Short Form, 203
MESA, 202
Research Memoranda, 300
Misfit, *see* Fit Statistics
Missing data, 288
many-facets model, 148
rating scale model, 109
Mixing juices task, 164–168
Model assessment, 284–286
notation and definition, 286
Model fit, *see* Fit
Moral Judgment Interview, 179–182
Multidimensional Rasch model, 258–260

N

Natural logarithms, *see* Logarithmic transformation
Northwest Evaluation Association (NWEA), 91, 306

O

Observation, xiv, 16–28, *see also* Raw scores inference vs., 143
Olympic Games, *see* Sports performances
Opinion surveys, *see* School Opinion Survey
Ordinal-level data
transformation to interval-level, 11, 17, 37, 109
Outfit, *see* Fit statistics

P

Pacific Rim Objective Measurement Symposia (PROMS), 305
Paired-comparisons method, 201
Parallel forms, 83, 147
Parameter separation, 71, 188–190, 279–280
Partial credit data, *see also* Interviews
clinical analysis, 132–140
coding, 124, 133
interpretation of analysis, 138–140
Partial credit model, 123–141, 193
description, 49, 123–126
technical aspects, 282–283
Pendulum task, 127–139
Percentages, *see* Raw scores
Perfect scores, 66, 179
Performance criteria, *see* Interviews, clinical
Person ability, *see* Ability estimate
Person estimate, *see* Ability estimate
Person-free difficulty estimates, *see* Parameter separation
Person reliability index, 40
Person separation, 40–41, 62, 184, 204, 284–285, 286
Person separation index (GP), 284–285 286
Person separation reliability (RP), 284 286
Physical functioning scales linking, 202–203
Physical measurement, *see* Measurement
Physical therapy, 202, 203
Piaget, 3, 5, 124–125, 132, 164, 176, 240, 272
Piagetian Reasoning Task, *see* PRTIII–Pendulum
PISA, *see* Program for International Student Assessment
Polytomous data, *see* Rating scale model; Partial credit model
Practice dialogue with theory, 36, 37, 51, 65, 66, 84, 90, 139, 217, 230, 261, 269–270, 276
Probabilistic model, 10, 15, 37, 45, 48, 239–241, 245, 263–265, 272, 277–278
Probabilities expected, 10, 37
Probability curves, 224, 225, 282
Probability estimates, 15
Program for International Student Assessment (PISA), 259–260, 275, 306
PRTIII–Pendulum, 131
compared with BLOT, 83–90, 96–99
description of, 83–84
Psychological measurement, *see* Measurement
Public policy involvement, 183–184

Q
Qualitative data
quantitative data vs., 17, 18, 21, 34, 35
quantification, 4, 7, 70, 133, 263, 266, 268
Quantitative data
qualitative data vs., 17, 18, 21, 34, 35
Quest, *see* Software
description, 300–301

R
Rasch family of models notation and definition, 284, 286
relations among models, 147, 277–283
Rasch Measurement Transactions, 304
Rasch model, *see also* Rasch family of models
assessment, 284–286
description, 10–14, 43–48,
item response theory vs., 261–262, 265–268, 273
as a post hoc, 184, 268, 270–271
and progress of science, 270–271, 277–286
real data and, 274, 276
technical aspects, 277–286
Rasch SIG, *see* American Educational Research Association, Rasch SIG
Rater severity
as a facet, 144–160, 200
sports performances, 95
writing assessment, 154–159
Rating scale data analysis, 101–122
coding, 101–107
interpretation of analysis, 110–120
missing data, 109–110
Rating scale design, 219–233, *see also* Probability curves
average category measures, 222–223
category frequencies, 222–223, 228
category fit, 223–226, 230
category labels, 221
diagnostics, 222, 225, 229
guidelines for collapsing categories, 227–231
number of categories, 219–221
revision, 226
thresholds, 223–226
thresholds, disordered, 227–231
Rating scale model description, 101–108, 184–190, 281–282
technical aspects, 281, 282
Raw scores, 2, 19
ability estimates vs., 24, 73, 157, 183, 277
checklists, 183, 184
inspection, 21–22, 35
percentages, 21–24
Recommended readings, 296–299
Rehabilitation, 50–51, 202–203, *see also* Physical therapy
Reliability, 40–41, 59
indices, 40–41, 284–285
interrater, 146–147
Residuals fit and, 57, 236–238, 251, 285
principal components analysis, 204, 205, 251, 252–258, 296
RUMM, see Software
description, 303

S
Saltus model, 169–175
Saltus parameter, *see* Asymmetry index
Sampling, 36, 60–62, 76
invariance of estimates and, 188–190, 279–280
partial credit model, 139
rating scale model, 108–109
Scales
Conversion, 82, 206, 217
School Opinion Survey, 186–190
Scientific measurement, *see* Measurement
Segmentation, 170
Skating, ice, *see* Sports performances
Software, 289, *see also*
Bond&FoxSteps, 67, 122, 141, 289, 290, 302
ConQuest, 251, 259–260, 301–302
Excel, 96–99
Facets, Minifac, 150, 153, 160, 161, 302–303
OCR, 295
Quest, 66–67, 95, 114, 120, 134, 136, 140, 179, 239, 246, 250, 300–301
RUMM 303
Survey Pro, 295
WINSTEPS, 59, 95, 66–67, 114, 121–122, 136, 141, 179, 184, 204,

207, 209, 222, 232, 243, 245, 250, 251, 256, 275, 289, 290, 302
Virtual PC, 280
Specific objectivity, *see* Parameter separation
Sports performances
high jump analogy, 15–16, 23, 29, 45–47
judge severity and outcomes, 95, 144, 199–201
many-facets analysis, 95, 144
median rank analysis, 199
paired-comparisons analysis, 200
predicting success, 201–202
Statistics
measurement and, 1, 2, 3, 5, 176
Step structure, *see* Threshold structure
Stevens, S. S., 3, 7, 8, 262
Stochastic model, *see* Probabilistic model
Student Feedback about Teaching (SFT), 77–78, 193–195, 240
JCET and, 77–78, 193, 195
Subjectivity, 101–102
Superitems, 175
Symptom Checklist 90–Revised (SCL-90-R), 245–257

T

Targetting, 58, 60–62, 66, 73, 114, 179, 210
Temperature, *see* Thermometry
Test equating, *see* Linking
Test of Infant Motor Performance, 204–205
Theory
dialogue with practice, 36, 37, 51, 65, 66, 84, 90, 139, 217, 230, 261, 269–270, 276
Thermometry, 12, 13, 14, 69, 70, 76, 82, 99, 202, 214-215
Threshold estimates
dichotomous model, 58
many-facets model, 145–146, 283–284
partial credit model, 123–136, 282–283
rating scale model, 103–107, 281–282
Threshold structure
partial credit model, 134–136
Rasch–Andrich, 105
Rasch–Thurstone, 105
rating scale model, 103–108
True score theory, 89–90, 90–91, 190, 252, 266, 267–268
Two-and three-parameter models, *see* Item response theory

U

Unidimensionality, 32–34, 35, 36, 37, 47, 66, 140, 143, 235–260, 275
linking and, 84
Unpredictability, 23

V

Validity
collapsing rating scale categories and, 230–231
concurrent, 82
construct, 34, 37, 51, 70, 204, 268–270
Variation with respect to fit, 239–241
Visual analog scales (VAS), 124

W

Warm estimator (WLE), 179
WINSTEPS, *see* Software
description, 302
Writing skill assessment, 154–159
rater severity and outcomes, 155–158

"A very clearly written book ... (that) does a great job of presenting the very general idea of Rasch measurement.... I would recommend Bond & Fox to students and colleagues who have absolutely no knowledge of Rasch measurement."

—Randall Penfield, University of Florida

"... it's the best book available for introducing IRT to novices.... My students have gained a good grasp of the what and why of Rasch from reading the book."

—Kathy E. Green, University of Denver

"The first edition is an excellent teaching tool, and I think the revised version will be even better."

—George Engelhard, Emory University

Written in an accessible style, this book facilitates a deep understanding of the Rasch model, a theoretically elegant, yet straightforward method for explaining interactions between observed and latent variables. Authors Bond and Fox review the crucial properties of the Rasch model and demonstrate its use with a wide range of examples including the measurement of educational achievement, human development, attitudes, and medical rehabilitation. A glossary and numerous illustrations further aid the reader's understanding of the important measurement issues. The authors' goals are to present an accessible overview of Rasch analysis that does not require a statistical background. They demonstrate how to apply Rasch analysis and prepare readers to perform their own analyses and interpret the results.

Updated throughout, highlights of the Second Edition include:

- A new CD that features an introductory version of the latest *Winsteps* program and the data files for the book's examples, preprogrammed to run using *Winsteps*.
- A new chapter on invariance that highlights the parallels between physical and human science measurement.
- A new appendix on analyzing data to help those new to Rasch analysis get started.
- More explanation of the key concepts and item characteristic curves make the text easier to follow.
- A new empirical example with data sets demonstrates the many-facets Rasch model.
- New examples using thermometry and the measurement of sport performances, and the growing use of student satisfaction data in university and college reviews.
- An increased focus on issues related to unidimensionality, multidimensionality, and the Rasch factor analysis of residuals.

Applying the Rasch Model (2nd ed.) is intended for researchers and practitioners in the human sciences: psychologists, especially developmental psychologists, education, health care, medical rehabilitation, business, government, and those interested in measuring attitude, ability, and/or performance. The book is an excellent text which focuses on the measurement properties of the Rasch model and is suitable for use in courses on advanced research methods, measurement, or quantitative analysis. Significant knowledge of statistics is not required.

Trevor G. Bond is the head of the Department of Educational Psychology, Counseling and Learning Needs at the Hong Kong Institute of Education. A prominent figure in the world of Rasch measurement, he is a regular keynote speaker on applying measurement in education and Rasch workshops around the world.

Christine M. Fox is an Associate Professor at the University of Toledo where she teaches a variety of educational research and statistics courses. She received her PhD in Evaluationand Measurement from Kent State University.

ISBN 0-8058-5462-2

90000

9 780805 854626

ISBN 0-8058-5462-2