REFERENCES

Ahn, W-K, Medin, D L (1992) A two-stage model of category construction, Cognitive Science, 16,81-121

Aldenderfer M S & Blashfield R K (1984) Cluster Analysis, Newbury Park, Ca: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-044

Anglin, J M (1970) The Growth of Word Meaning. Cambridge, Ma: MIT Press

Arabie, P (1977) Clustering representations of group overlap, J Mathematical Sociology, 5, 113-128

Arabie, P & Boorman, S A (1973), Multidimensional scaling of measures of distance between partitions J Math Psychol. 10, 148 - 203

Arabie, P & Carroll, J D (1980a) MAPCLUS: a mathematical programming approach to fitting the ADCLUS model, Psychometrika, 45. 211 - 235

Arabie, P & Carroll, J D (1980b) How to use MAPCLUS: a computer program for fitting the ADCLUS model, Murray Hill, NJ: Bell Laboratories

Arabie, P & Carroll, J D (1998) Multidimensional scaling, in Birnbaum MH, ed Measurement, Judgment and Decision Making, London: Academic, pp 179-249

Arabie, P, Carroll, J D & DeSarbo, W S (1987) Three-way Scaling and Clustering, Newbury Park, Ca.: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-065

Arabie, P & Hubert, L J (1992) Combinatorial data analysis, Annual Review of Psychology, 43, 169-203

Arabie, P & Hubert, L J (1994) Cluster analysis in marketing research, in Bagozzi RP, ed Advanced Methods in Marketing Research, Oxford: Blackwell pp 160 -189

Arabie P, Hubert, L J , De Soete, G, eds (1996) Clustering and Classification, New Jersey: World Scientific Publishing

Ashby FG, Maddox WT (1998) Stimulus categorization, in Birnbaum 1998, 252-301

Ashmore, R D, Solomon, M R, & Longo ,L C (1997) Thinking about fashion models' looks: a multidimensional approach to the structure of perceived physical attractiveness, PSPB, 22, 1084-1104

Bailey K D (1994) Typologies and Taxonomies: An introduction to Classification Techniques, Newbury Park, Ca.: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07- 102

Ball, G H (1965) Data analysis in the social sciences: what about the details? Proc. Fall Joint Computer Conferences, Stanford, New York: Macmillan, 533-539

Ball, G H & Hall, D J (1967) A clustering technique for summarizing multivariate data, Behavioral science, 12, 153-155

Barthélemy, J P , Leclerc, B & Monjardet, B (1984), Quelques aspects du consensus en classification, in E Diday, ed Data Analysis and Informatics III, Amsterdam: North-Holland

Barthélemy, J P & Monjardet, B (1988) The median procedure in data analysis: new results and open problems, in Bock 1988, pp 309 - 316

Belbin, L (1987) The use of non-hierarchical allocation methods for clustering large sets of data, Australian Computer Journal, 19,32-41

Ben-Michael J, Vossen JMH, Felling AJA & Peters VAM (1997) Perception of Problematic Behavior in Dogs: Application of multidimensional scaling and hierarchical clustering analysis,Anthrozoös, 10(4), 199-213

Benzécri, J P (1967) Description mathématique des classifications, in L'Analyse des Données. Ia Taxonomie, Paris: Dunod

Benzécri, J P (1973) L'Analyse des Données, Vol 1: La Taxinomie, Vol. 2: L'analyse des correspondances, Paris: Dunod

Berlin, B, Breedlove, D E & Raven, P H (1968) Covert categories and folk taxonomies, American Anthropologist. 70, 290 - 299

Bernard, H R (1988) Research Methods in Cultural Anthropology, Newbury Park, Ca.:Sage

Bersted, C T, Brown, B R & Evans, S H (1970) Evaluation of unconstrained sorting data, Behavioral Research Methodology and Instrumentation, 2, 108-110

Best, D L, Ornstein, P A (1986)Children's generation and communication of mnemonic organizational strategies, Developmental Psychology, 22, 845-853

Bimler D, Kirkland J (1997) Multidimensional scaling of hierarchical sorting data applied to facial expressions, Scandinavian J Psychology, 38, 349-357

Bimler D, Kirkland J (1998a) Perceptual modelling of product similarities using sorting data, Marketing Bulletin, 9, 16-27

Birnbaum MH, ed (1998) Measurement, judgment and Decision Making, San Diego: Academic Press

Black, M B (1963) On formal ethnographic procedures, American Anthropologist, 65,

1347-1351

Block, J (1956) A comparison of the forced and unforced Q-sorting procedure, J Educational and Psychological Measurement, 16, 481-93

Block J (1961, 1978) The Q-sort Method in Personality Assessment and Psychological research, Palo Alto: Consulting Psychologists Press.

Bock, R D (1960) Methods and applications of optimal scaling, Chapel Hill: Thurstone Laboratory, Research Report 25

Bock, H H, ed (1988) Classification and Related Methods of Data Analysis, Proceedings, 1st Conference International Federation of Classification Societies. Amsterdam: North-Holland

Bonebright, T L (1996) An investigation of data collection methods for auditory stimuli: Paired comparisons versus a computer sorting task, Behavior Research Methods, Instrumentation and Computers, 28 (2), 275-278

Boorman, S A & Arabie, P (1972), Structural measures and the method of sorting, in Shepard 1972a, pp 226-248

Boorman, S A & Olivier, D C (1973) Metrics on spaces of finite trees, J Mathematical Psychology,10. 26 - 59

Borg I & Groenen P (1997) Modern Multidimensional Scaling: Theory and Applications, New York: Springer

Borg I, Shye S (1995) Facet Theory: Form and Content, London: Sage

Borgatti SP (1992) ANTHROPAC 4.0 Methods Guide, Columbia: Analytic Technologies

Borgatti SP (1998) Elicitation techniques for cultural domain analysis, in J Schensul and M Weeks, eds, The Ethnographic Toolkit, Walnut Creek, Ca: Almira Books

Boster, J S (1986) Can individuals recapitulate the evolutionary development of color lexicons? Ethnology, 25, 61-74

Boster, J S (1994) The successive pile sort. Cultural Anthropology Methods Journal 6(2):11-12.

Boster, J S, Johnson, J C (1989) Form or Function: A comparison of expert and novice judgments of similarity among fish, American Anthropologist, 91, 866-889

Bousfield, W A et al (1958) Associative clustering in recall of words of different taxonomic frequences of occurrence Psychological Reports, 4, 39-44

Bricker, P D, Johnson, S C, Mattke, C F (1969) Apparatus for auditory stimulus

sorting, Behavioral Research Methods and Instrumentation, 1, 148-9.

Brown , S R (1980) Political subjectivity: Applications of Q-Methodology in Political Science, New Haven: Yale University Press

Brown, S R (1986) Q technique and method, in Berry WD & Lewis-Beck MS, eds New Tools for Social Scientists London: Sage

Bruner, J S, Goodnow, J J & Austin, G A (1956) A study of thinking, New York: Wiley

Buneman, P (1972) the recovery of trees from measures of dissimilarity, in Hodson, Kendall, Tăutu, pp 387-395

Burton, M L (1972) Semantic dimensions of occupation names, in Romney et al, 1972b, 55-72

Burton, M L (1975) Dissimilarity measures for unconstrained sorting data, Multivariate Behavioral Research. 10, 409 - 424

Burton, M L & Romney, K (1975) A multidimensional representation of role terms, American Ethnologist, 2, 397-407

Cagle H, Fisher DG, Kastner AR et al (1998) Classification of drug users' skin lesions using photographs: a method for corroborating HIV risk, Geneva: 12th WorldAids Conference, Abstract 23238
Canter D (1983) The potential of Facet theory for applied social psychology, Quality and Quantity, 17, pp35-67

Canter D, ed (1985) Facet Theory: Approaches to Social Research, Berlin: Springer Verlag

Canter D, Brown J, Groat L (1985) A multiple sorting procedure for studying conceptual systems, in Canter, D, Brenner M, Brown J, eds Research Interview – uses and approaches, London: Wiley, pp 79-113

Canter D, King K (1996) Ward development project, in Canter D, ed (1996) Psychology in Action, Aldershot: Dartmouth, pp 239-255

Carroll, J D & Arabie, P (1980) Multidimensional scaling, Ann Rev Psychol. 31. 607 - 649

Carroll, J D & Arabie, P (1998) Multidimensional scaling, in Birnbaum 1998, pp179-250

Carroll, J D & Arabie, P (1983) INDCLUS: an individual differences generalization of the ADCLUS model and the MAPCLUS algorithm, Psychometrika, 48, 157-169, reprinted in Law, Snyder, Hattie & McDonald, eds (1984), pp 518 - 534

Carroll, J D & Chang, J-J (1968) How to use PRO-FIT,a computer program for property-fitting by optimizing non-linear or linear correlation . Murray Hill NJ, Bell Laboratories: unpublished paper.

Carroll, J D & Chang, J-J (1970) Analysis of individual differences in multidimensional scaling via an N-way generalization of "Eckart-Young" decomposition, Psychometrika,35. 283 - 319

Carroll, J D, Clark, L A, & DeSarbo, W S (1984) The representation of three-way proximities data by single and multiple tree structures, J Classification, 1, 25-74

Carroll, J D & Corter, J E (1992) CLUSTREES: a method for representing non-hierarchical cluster solutions as extended or multiple trees, Newark NJ: Rutgers University, unpublished manuscript

Carroll, J D & Pruzansky, S (1980) Discrete and hybrid scaling models, in Lantermann D, Feger H, eds Similarity and Choice, Berne: Huber, pp 108-139

Clark, HH (1968) On the use and meaning of prepositions, J Verbal Learning and Verbal Behavior, 7, 421-431

Comrey A L (1962) The minimum residual method of factor analysis, Psychological Reports, 11, 15-18

Coombs, C H (1964) A Theory of Data , Chichester: Wiley

Cormack,R M (1971) A review of classification (and discussion) Journal of the Royal Statistical Society, Series A, 134(3), 311-367

Corte, J E (1982) ADDTREE/P: A PASCAL program for fitting additive tress based on Sattath and Tversky'e ADDTREE algorithim, Behavior Research Methods and Instrumentation, 14,353-354

Corter, J E (1996) Tree Models of Similarity and Association, Newbury Park, Ca.: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-112

Corte, J E & Tversky, A (1986) Extended similarity trees, Psychometrika, 51, 429-451

Cox, T F & Cox, M A A (1994) Multidimensional Scaling, London: Chapman and Hall

Cox ,F, Cox, M A A, Branco, J A (1991) Multidimensional scaling for n-tuples, British J of Mathematical and Statistical Psychology, 44, 195-206

Coxon, A P M (1982) The User's Guide to Multidimensional Scaling, London: Heinemann

Coxon, A P M (1996) Between the Sheets: Sexual Diaries and Gay Men's Sex in the Era of Aids London: Cassell

Coxon, A P M, Davies, P M & Jones, C L (1986), Images of Social Stratification. London: Sage

Coxon, A P M , Jones, C L (1974) Problems in the selection of occupational titles, Sociological Review, 22, 369-384

Coxon, A P M, Jones, C L (1978) The Images of Occupational Prestige: A Study in Occupational Cognition, London: Macmillan

Coxon, A P M , Jones, C L (1979a), Class and Hierarchy. London: Macmillan

Coxon, A P M , Jones, C L (1979b), Measurement and Meanings. London: Macmillan

Coxon, A P M, Jones, C L (1979c) Images and predication: the use of subjective occupational hierarchies, Quality and Quantity, (13), 121-140

D'Andrade, R G (1976) A propositional analysis of US beliefs about illness, in Basso K H, Selby H A, eds Meaning in Anthropology, Albuquerque: University of New Mexico Press

D'Andrade R G, Quinn, N R, Nerlove, S B, & Romney, A K (1972) Categories of disease in American-English and Mexican Spanish, in Romney, Shepard & Nerlove (1972b)

Davies, PM, Coxon A P M, eds (1982) Key Texts in Multidimensional Scaling, London: Heinemann Educational Books

Daws, J T (1996) The analysis of free-sorting data: beyond pairwise co-occurrences, J Classification, 13(1), 57-80

Day, W H E, guest ed. (1986) Journal of Classification, 3(1) Special Issue: Consensus Classifications

Day, W H E (1988) Consensus methods as tools for data analysis, in Bock 1988, pp 317 - 324

Day, W H E (1981) The complexity of computing metric distances between partitions, Mathematical Social Sciences. 1. 269 -287

de Leeuw, J & Pruzansky, S (1978) A new computational method to fit the weighted euclidean distance model, Psychometrika, 43, 479 - 490

Dennis K,E (1986) Q-Methodology: Relevance and Application to Nursing Research, Advances in Nursing Science, 8(3), 6-17

DeSoete G & Carroll J,D (1996) Tree and other network models for representing proximity data, in Arabie P, Hubert L,J & DeSoete G, (1996) pp 157-197

DeSoete G (1983) A least squares algorithm forfitting additive trees to proximity data, Psychometrika, 48, 621-626

Donderi, DC (1988) Information measurement of distinctiveness and similarity, Perception and Psychophysics, 44(6), 576-584

Drasgow, F & Jones LE (1979) Multidimensional analysis of derived dissimilarities, Multivariate behavioral Research, 14, 227-244

Dunteman G H (1989) Principal Components Analysis, Newbury Park, Ca: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-069)

Fillenbaum, S & Rapoport, A (1972) An experimental study of semantic structures, in Romney, Shepard & Nerlove 1972a, pp 96-130

Fisher D H, Hoffman P (1988) The adjusted Rand statistic: a SAS macro, Psychometrika, 53,417-423

Flament, C (1962) La mesure en psychologie sociale, in Faverge, J M et al, eds, Les Problémes de la mesure en psychologie. Paris: Presses Universitaires de France

Frank, O (1975) Comparing partitions and dendograms, Lund: Dept of Statistics, Research Report 1975-6

Frank, O (1976) Comparing classifications by use of the symmetric class difference, Lund: Dept of Statistics, Research Report 1976-3

Freeman L C, Freeman S C and Michaelson A g (1988) On human social intelligence, J Social and Biological Structures, 11, 415-425

Gärling T (1976) The structural analysis of environmental perception and cognition, Environment and Behavior, 8(3), 385-415

Gifi , A (1981) Non-linear Multivariate Analysis, Leiden: Department of Data Theory

Gordon, A D (1981) Classification : methods for the Exploratory Analysis of Multivariate Data, London: Chapman and Hall

Gordon, A D (1996) Hierarchical classification, in Arabie, Hubert & DeSoete 1996, 65-122

Gower, J C (1975) Generalized procrustes analysis, Psychometrika, 40, 33-51

Gower, J C (1966) Some distance properties of latent root and vector methods in multivariate analysis, Biometrika, 53, 325-328

Green, P E, Carmone, F J & Smith, SM (1989) Multidimensional Scaling: Concepts and Applications, Boston: Allyn and Bacon

Green, P E & Carroll JD (1976) Mathematical Tools for Applied Multivariate Analysis, New York: Academic

Greenacre, M J (1993) Correspondence Analysis in Practice, London: Academic Press

Greenacre, M J (1984) Theory and Applications of Correspondence Analysis, London: Academic Press

Groat L (1982) Meaning in post-modern architecture: an examination of the multiple sorting task, J Environmental Psychology, 2(3), 3-22

Guttman L (1950) The basis for scalogram analysis, in Stouffer SA, Guttman L, Suchman EA, Lazarsfeld PF, Star SA, Clausen JA (1950) Measurement and Prediction, New York: Wiley, pp 60 - 212

Harman, H H (1976) Modern Factor Analysis, Chicago: University of Chicago Press

Harshman, R A, Lundy, M E (1984) The PARAFAC model for three-way factor analysis and multidimensional scaling , in Law, Snyder, Hattie et al, pp 122-215

Hayashi, C (1952) On the prediction of phenomena from qualitative data and the quantification of qualitative data from a mathematico-statistical viewpoint, Annals Institute Statistical Mathematics. 3. 68-98

Hodson, F R, Kendall, D G, Tăutu P,(1972) Mathematics in the Archaeological and Historical Sciences, Edinburgh: University Press

Hojo, H (1986) Response threshold models for binary ranking and sorting, Behaviormetrika, 20, 1-12

Hollins M, Faldowski R, Rao S, Young FW (1993) perceptual dimensions of tactile surface texture: a multidimensional scaling analysis, Perception and Psychophysics, 54(6), 697-705

Holman, E W (1972) The relation between hierarchical and Euclidean models for psychological distances, Psychometrika, 37, 417-423

Hubert, L J & Arabie P (1992) Correspondence analysis and optimal structural representations, Psychometrika, 56(1), 119-140

Hubert L J & Arabie P (1985) Comparing Partitions, J of Classification, 2, 193-218

Hubert, L J & Levin, J R (1975) Evaluating object set partitions: Free-sort analysis and some generalizations, J Verbal Learning and Verbal Behavior. 15. 459-470

Hulin WS & Katz D (1935) The Frois-Wittmann pictures of facial expression, J Experimental Psychology, 18, 482-498

Hunt , S (1962) Concept Learning, New York: Wiley

Imai, S (1966) Classification of sets of stimuli with different stimulus characteristics and numerical properties, Perception and Psychophysics, 1, 48-54

Imai, S & Garner, W R (1968) Structure in perceptual classification, Psychonomic Monograph Supplements, 2(9), 153-172

Jacoby, W G (1991) Data theory and Dimensional Analysis, Newbury Park, Ca: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-078)

Jardine, N & Sibson, R (1971) Mathematical Taxonomy. London: Wiley

Johnson, S C (1967) Hierarchical Clustering Schemes, Psychometrika. 32. 241 -254

Joly, S & Le Calvé, G (1995) Three-Way distances, J Classification 12, 191-205

Jones, R A & Ashmore, R D (1973) The structure of intergroup perception: categories and dimensions in views of ethnic groups and adjectives used in stereotype research, J Personality and Social Psychology,25. 428 - 438

Kemeny, J G & Snell, J L (1972) Mathematical Models in the Social Sciences. Cambridge, MA: MIT Press

Kendall, D G (1971) Seriation from abundance measures, in Hodson, Kendall, Tăutu (1971), pp 215-252

Kirkland J, , Bimler D, Drawneek A et al (1998) A quantum leap in the analysis and interpretation of attachment sort items. Palmerston North, NZ: MUCE, Massey University, Draft Paper

Kiss, G R (1966) Networks as models of word storage, in Collins, N L & Michie, D, eds Machine Intelligence I, Edinburgh: The University Press

Kruskal, J B (1964a) Multidimensional scaling by optimizing goodnes of fit to a nonmetric hypothesis, Psychometrika, 29, 1-27

Kruskal, J B (1964b) Nonmetric multidimensional scaling: a numerical method Psychometrika, 29, 115-129

Kruskal, J B & Landwehr, J (1983) Icicle plots: better displays for hierarchical clustering, American Statistician, 37, 162-168

Kruskal ,J B (1964a) Multidimensional scaling by optimizing goodness of fit to a nonmetric hypothesis, Psychometrika, 29, 1-27

Kruskal, J B (1964b) Nonmetric multidimensional scaling: a numerical method Psychometrika, 29, 115-129

Kruskal, J B & Wish M (1978) Multidimensional Scaling, Beverly Hills, Ca.: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-011

Larson, P J (1984) Important nursing care behaviors perceived by patients with cancer, Oncology Nursing Forum, 11(6), 46-50

Law, H G, Snyder, C W, Hattie, J A & McDonald, R P, eds (1984),Research Methods for Multimode Data Analysis: New York: Praeger Scientific

Lawless HT (1989) Exploration of fragrance categories and ambiguous odors using multidimensional scaling and cluster analysis, Chemical Senses, 1493) 349-360

Lewis-Beck, M S, ed (1994) Factor Analysis and related Techniques, London: Sage Publications and Toppan Publishing

Lingoes JC (1983) The multivariate analysis of qualitative data, Multivariate Behavioral Research, 3, 61-94

Lingoes JC, ed (1973) The Guttman-Lingoes Nonmetric program Series, Ann Arbor: Mathesis Press

Lingoes, J C & Borg I (1978) A direct approach to individual differences scaling using increasingly complex transformations, Psychometrika, 43, 491-519

Lockhart ,R & McPherson, M (1973) Methods of Data-collection used in the Project on Occupational Cognition: A Handbook for Interviewers. Edinburgh: Project on Occupational Cognition, University of Edinburgh, Research Memorandum no.2

MacQueen, J B (1967) Some methods for classification and analysis of multivariate observations, Proceedings 5th Berkeley Symposium, 1, 281-297

MacRae AW, Howgate P and Geelhoed E (1990) Assessing the similarity of odours by sorting and triadic comparison, Chemical senses, 15, 691-699

McKeown, B F, Thomas, D B (1988) Q Methodology, Newbury Park: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-066

Maiolo J R, Petterson J S, Glazier E W, Downs MA et al (1993) Coastal North Carolina Socioeconomic Study: Vol IV: Pile Sort and Data Analysis, Greenville, N Carolina: Institute for Coastal and Marine Resources and Dept of Sociology, East Carolina University.

Miles, M B, Huberman, A M (1994) Qualitative Data Analysis, 2nd Edition. London: Sage

Miller, D M, Wiley, D E & Wolfe, R G (1986) Categorization methodology: an approach to the collection and analyses of certain classes of qualitative information, Multivariate Behavioral Research, 21, 135-167

Miller, G A (1956) The magic number seven plus or minus two: some limits of our capacity for processing information, Psychol Review ,63, 81 - 97

Miller, G A (1969a) A psychological method to investigate verbal concepts, J Mathematical Psychology, 6, 169 - 191

Miller, G A (1969b) Psycholinguistic approaches to the study of communication, in Arm, D L, ed. Journeys into Science -- Small Steps, Great Strides, Albuquerque: University of New Mexico Press

Miller GA & Chomsky N (1963) Finitary models of language users, in Luce RD, Bush RR & Galanter E Handbook of Mathematical Psychology, vol 2, New York: John Wiley, 323-418

Milligan, G W & Cooper, M C (1986) A study of the comparability of external criteria for hierarchical cluster analysis, Multivariate Behavioral Research, 21, 441-458

Mirkin, B G & Chernyi, L B (1970), On measurement of distance between partitions of a finite set of units, Automation and Remote Control.31. 786 - 792

Moser L & Wyman, M (1955) An asymptotical formula for Bell Numbers, Transactions of the Royal Society of Canada, Series III, section 3, 49, 49-53
Murcott, A, ed. (1983) The Sociology of Food and Eating: the social significance of food, Aldershot, Gower

Nave A (1998) Marriage and maintenance of ethnic group boundaries: the case of Mauritius, Los Angeles: Department of Anthropology Working Paper

Nishisato, S (1980) Analysis of Categorical Data: Dual Scaling and its Applications. Toronto: University Press

Norušis, M J (1994) SPSS Professional Statistics 6.1, Chicago: SPSS Inc

Petrie, W M F (1899) Sequences in prehistoric remains, J Anthropological Institute, 295-301

Quine, W O (1969) Ontological relativity and other essays. New York: Columbia University Press

Ramsey J O (1988) Is multidimensional scaling magic or science? [Book review of FW Young and R M Hamer,eds (1987) Multidimensional scaling : History, theory and Applications, Hillsdale: Erlbaum], Contemporary Psychology, 33(10), 874-875

Rand, W M (1971) Objective criteria for the evaluation of clustering methods, J Am.

Stat. Association. 66. 846 - 850

Rao V R & Katz D (1971) Alternative multidimensional scaling methods for large stimulus sets, J Marketing Research, 8, 488-494

Rapoport, A & Fillenbaum, S(1971) Structures in the Subjective Lexicon; New York: Academic Press

Reading, A E & Newton, J R (1978) A card-sort method of pain assessment, J Psychosomatic Research, 22, 503-512

Régnier, S (1965) Sur quelques aspects mathématiques de la classification automatique, ICC Bulletin 4, 175-191

Reiss, A J, Duncan, O D, Hatt, P K & North, CC (1961) Occupations and social status, New York: Free Press of Glencoe

Restle, F (1959) A metric and an ordering on sets, Psychometrika l24. 207-220

Rhodes, A K & Stern, S E (1994) Ranking Harassment: A Multidimensional scaling of sexual harassment scenarios, The Journal of Psychology, 129 (1), 29-39

Rohlf, F J (1974) Graphs implied by the Jardine-Sibson overlapping clustering methods, B_k , J American Statistical Association, 69(347): Theory and Methods section, 705-710

Romney, A K, D'Andrade, R G, eds (1964) Transcultural Studies in Cognition; American Anthropologist Special Issue, 66 (3, pt2)

Romney, A K, Moore, C C & Brazill , T J (1998) Correspondence Analysis as a multidimensional scaling technique for nonfrequency similarity matrices, in Blasius, J, Greenacre, M, eds (1998) Visualization of Categorical Data, San Diego: Academic press, pp 329-345

Romney, A K, Shepard, R N & Nerlove, S B (1972b) Multidimensional scaling: theory and applications in the behavioral sciences, vol. 2 (Applications) London: Seminar Press

Romney, A K, Weller, S C & Batchelder, W H (1986) Culture as consensus: a theory of culture and informant accuracy, American Anthropologist, 88, 313-338

Rosch, E E (1977) Human categorization, in Warren, N, ed. Advances in Cross-Cultural Psychology, vol 1, London: Academic Press

Rosch, E E (1978) Principles of categorization, in Rosch E, Lloyd, B B, eds Cognition and Categorization, Hillsdale N J: Lawrence Erlbaum Associates

Rosch ,E E, Mervis, C B (1975) Family resemblances: studies in the internal structure of categories, Cognitive Psychology, 7, 573 - 605

Rosch E E, Mervis CB, Gray WD, Johnson DM & Boyes-Braem P (1976) Basic objects in natural categories, Cognitive Psychology, 8, 382-439

Rosenberg, S (1982) The method of sorting in multivariate research with applications selected from cognitive psychology and person perception, in Hirschberg, N, & Humphreys, L G, eds (1982) Multivariate Applications in the Social Sciences, Hillsdale, NJ: Erlbaum

Rosenberg, S (1988) Self and Others: Studies in social personality and autobiography, in Advances in Experimental Social Psychology, 21, 57-95

Rosenberg,S & Cohen, BD (1977) A method for the study of lay conceptions of psychopathology: a free-response approach, Am J Community Psychology, 5, 177-193

Rosenberg, S & Jones RA (1972) A method for investigating and representing a person's implicit theory of personality: Thomas Dreiser's view of people, J Personality and Social Psychology, 22,372-386

Rosenberg, S & Kim, M J (1975) The method of sorting as a data-gathering procedure in multivariate research, Multivariate Behavioral Research, 10, 489-502)

Rosenberg, S, Nelson C & Vivekananthan, P S (1968) A multidimensional approach to the structure of personality impressions, J Personality and Social Psychology, 9, 283-294

Rosenberg, S & Sedlak, A (1972a) Structural representations of perceived personaility trait relationships, in Romney, Shepard, Nerlove (1972a), pp 133-162

Rosenberg, S & Sedlack, A (1972b) Structural representations in implicit personality theory, in L Berkowitz, ed Advances in Experimental Social Psychology , vol 6. New York: Academic Press

Rubin, J (1967) Optimal classification into groups: an approach for solving the taxonomy problem, J Theoretical Biology, 15, 103-144

Rummel, R J (1970) Applied Factor Analysis, Evanston: Northwestern University Press

Saltstone, R & Strange K (1996) A computer program to calculate Hubert and Arabie's adjusted Rand Index. J Classification, 13, 169-172

Sattath, S & Tversky, A (1977) Additive similarity trees, Psychometrika.42. 319 -346

Schiffman, S S, Reynolds, M L & Young F W (1981) Introduction to Multidimensional Scaling: Theory Methods and Applications, New York: Academic Press

Schmidt, C F (1972) Multidimensional scaling analysis of the printed media's explanations of the riots of the summer of 1967, J Personality and Social Psychology, 24, 59-67

Scott MJ and Canter DV (1997) Picture or Place? A Multiple sorting study of landscape, J Environmental Psychology, 17, 263-281

Shepard, R N (1980) Multidimensional scaling, tree-fitting and clustering Science.210. 390 - 398

Shepard, R N & Arabie P(1979) Additive clustering: representation of similarities as combinations of discrete overlapping properties Psychol. Review, 86, 87-123

Shepard, R N, Romney, A K & Nerlove, S 8 (1972a) Multidimensional scaling: theory and applications in the behavioral sciences. vol. 1 (Theory) London: Seminar Press

Sherif, M & Hovland, C I (1953) Judgmental phenomena and scales of attitude measurements: placement of items with individual choice of number categories, J Abnormal and Social Psychology, 48, 135-141

Sherif, M & Sherif, CW, eds (1967) The own categories procedure in attitude research, in Fishbein M (1967) Readings in Attitude Theory and Measurement, New York, Wiley, 190-198

Sherman, R (1972) Individual differences in perceived trait relationships as a function of dimensional salience, Multivariate Behavioral Research, 7, 109-129

Silverman, S F (1966) An ethnographic approach to social stratification: prestige in a central Italian community, American Anthropologist, 68, 899-921

Sokal, R R & Sneath, P H A (1963) Principles of Numerical Taxonomy, San Francisco: Freeman

Sorenson R L (1997) Doctoral students' integration of Psychology and Christianity: perspectives via Attachment Theory and multidimensional scaling, J Scientific Study of Religion, 36(4), 530-548

Spence, I & Graef J (1974) The determination of the underlying dimensionality of an empirically obtained matrix of proximities, Multivariate Behavioral Research, 9, 331-341

Spradley, J P (1979) The Ethnographic Interview, New York: Holt Rinehart

Steinberg, D D (1967) The word-sort: an instrument for semantic analysis, Psychonomic Science, 12, 541-542

Stephenson, W (1953) The Study of Behavior, Chicago: University Press

Stevens, S S (1959) Measurement, psychophysics and utility, in Churchman CW, Ratoosh P, eds Measurement: Definitions and Theories, New York: Wiley

Stringer P (1967) Cluster analysis of non-verbal judgements of facial expressions, 20(1), 71-79

Struhsaker, T T (1967) Social structure among vervet monkeys (Cercopithecus athiops.), Behavior. 29, 83 - 121

Sturtevant, WC (1964) Studies in ethnoscience, in Romney & D'Andrade 1964, 99-131

Takane, Y (1980) Analysis of categorizing behavior by a quantification method, Behaviormetrika. 8, 75 - 86

Takane, Y (1981a) Multidimensional scaling of sorting data, in Chaubey YP & Dwivedi TD, eds Topics in Applied Statistics, Montreal: Concordia University Press, 659-666

Takane, Y (1981b) MDSORT: A special-purpse multidimensional scaling program for sorting data, Behavior Research Methods and Instrumentation. 13, 698

Takane, Y (1981c) How to Use MDSORT: a special-purpose multidimensional scaling program for sorting data, Montréal: Department of Psychology, McGill University.

Takane, Y (1982a) IDSORT: An individual differences multidimensional scaling program for sorting data, Behavior Research Methods and Instrumentation. 14. 546

Takane, Y (1982b) How to Use IDSORT: an individual-differences multidimensional scaling program for sorting data, Montréal: Department of Psychology, McGill University.

Torgerson W S (1958) Theory and Methods of Scaling, London: Wiley

Trochim W M K (1989) An introduction to concept mapping for planning and evaluation, Evaluation and Program Planning, 12(1), 1-16

Trochim W M K, Cook J and Setze RJ (1994) Using concept mapping to develop a conceptual framework of staff's views of a supported employment program for persons with severe mental illness, J Consulting and Clinical Psychology, 62 (4), 766-775

Trotter RT (1991) Ethnographic Research Methods for Applied Medical Anthropology,

in C E Hill, ed Training Manual in Applied Medical Anthropology, Washington DC: American Anthropological Association, Special Publication 27.

Trotter RT & Potter J M (1993) Pile Sorts:a cognitive anthropological model of drug and AIDS risks for Navajo teenagers: assessment of a new evaluation tool. Drugs and Society 7 (3/4), 23-39.

Trotter R T, Üstün B, Chatterji S, et al (1997) Cross-Cultural Applicability Research On Disablement: Models, Methods and Contributions to Revision of the International Classification, Geneva: World Health Organization

Tucker, L R (1964) The extension of factor analysis to three-dimensional matrices, in Frederiksen N & Gulliksen, H, eds Contributions to Mathematical Psychology, New York: Holt, Rinehart

Tversky, A (1977) Features of similarity, Psychological Review, 84, 327-356

Tversky, A, Hemenway, K (1984) Objects, parts and categories, J Experimental Psychology (General),113(2), 169-193

Van der Kloot, W A & van Herk, H (1991) Multidimensional scaling of sorting data: a comparison of three procedures, Multivariate behavioral Research, 26(4) 563-581

Van der Kloot, W A & Slooff, N (1989) Die Bedeutungsstruktur von 281 Persönlichkeitsadjectiven, Zeitschrift für Sozialpsychologie, 86-91

Van Der Kloot, W A (1996) Multidimensional scaling of free-sorting data by means of generalized canonical correlation analysis, Leiden: Department of Psychology, Leiden University

Verkes, R-J, Van der Kloot, W A, Van der Meij, J (1989) The perceived structure of 176 pain descriptive words, Pain, 38, 219-229

Weller S C and Romney A K (1988) Systematic Data Collection, Newbury Park, Ca: Sage: Qualitative Research Methods Series, #10

Weller, S C & Romney, A K (1990) Metric Scaling: Correspondence Analysis, Newbury Park, Ca: Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-075

Wiley, D E (1967) Latent partition analysis, Psychometrika, 32, 183-193

Wilson M, Canter D (1993) Shared concepts in group decision-making: a model for decision based on qualitative data, British J Social Psychology, 32, 159-172

Wing, H & Nelson, C (1972) The perception of personality through trait-sorting: a comparison of trait sampling techniques, Multivariate Behavioral Research, 7, 269-

Wish M, Carroll JD (1974) Applications of Individual Differences Scaling to studies of human perception and judgment, in E C Carterette and M P Friedman, eds Handbook of Perception, Vol !!, New York: Academic Press, pp449-491

Zvulun E (1978) Multidimensional Scalogram Analysis: the method and its application, in Shye S, ed. Theory Construction and Data Analysis in the Behavioral Sciences, San Francisco: Jossey-Bass, pp237-264

APPENDIX 1: SORTING DATA: MEASURES AND NOTATION

(Based on Arabie and Boorman 1973, Table IV)

I: Partition Definitions and Notation

Definitions:

S = $\{s_1, s_2,...,s_n\}$ is a set S of n elements or objects

P = $\{c_1,c_2, ..,c_m\}$, where the c_i are the cells/categories of P

Q = $\{d_1,d_2, ..,d_p\}$, where the d_j are the cells of Q

Size of sets:

The cardinality (i.e. the number of elements) in a set A is denoted: $|A|$

n = $|S|$ (size of a set S of n objects)

m = $|P|$ (number of categories in P)

p = $|Q|$ (number of categories in Q)

$|P\&Q|$ = size of P&Q (number of non-empty cells in the intersection matrix z_{ij})

Partition: Given m subsets/categories/cells[1] of a set P of objects: $c_1,c_2, ..,c_m$ this constitutes a partition of set P if and only if:

- The union of the subsets is the set P ($\cup_i c_i = P$)
- For every i and j , their intersection[2] is the empty set ($c_i \cap c_j = \varnothing$).

That is, the subsets c_1 are a partition of P only if each element of P is in one and only one subset.

Intersection of two partitions P and Q: (P&Q = $\{z_{ij}\}$)

Two elements a, b are in the same cell of Z (P&Q) if and only if they are in the same cell of P and also in the same cell of Q.

e.g. if P = {(ab) (cd)}, and Q = {(abc) d}, then P&Q is {(ab) (c) (d)}

---

[1] The terminology is varied. Normally "cell" is reserved for use when referring to the divisions (exclusive subsets or "parts") constituting the formal structure of the partition, and "subgroup" or "category" for the corresponding empirical sorting structure .

[2] In this text, the symbol **&** ("and") is normally used in preference to the symbol $\cap$ to denote intersection

Fine-ness A partition P is finer than a partition Q

if and only if each cell $c \in P$ is contained in some cell $d \in Q$

(equivalently, the fineness of a partition is the least upper bound of distances between c and d)

II: Supervaluations on the Partition Lattice (Arabie)

$D(P) = \Sigma_i \binom{n}{2}$ where $n = |c_i|$ (the number of elements in category i)

$M(P) = \Sigma_i \log_2 (|c_i|!)$

$E(P) = - \Sigma_i [|c_i|/n] \log_2 [|c_i|/n]$

$V(P) = \log_2 n - E(P)$

Corresponding Arabie Measures

1.	PAIRBONDS	$D(P) + D(Q) - 2D(P\&Q)$
2.	INFOTWO	$V(P) + V(Q) - 2V(P\&Q)$
3.	MULTINOM	$M(P) + M(Q) - 2M(P\&Q)$
4.	INFOTHRY	INFOTWO / E(P&Q)
5.	1 - NT/SQP	$1 - [D(P\&Q)] / [D(P)D(Q)]^{1/2}$
6.	1-NT1+2	PAIRBONDS / [D(P) + D(Q)]
7.	APPROX	$\|P\&Q\| - \min(\|P\|, \|Q\|)$
8.	1-LAMBDA	$[(2n - \Sigma_i \| z_{i\cdot} \| - \Sigma_j \| z_{\cdot j} \|)/2n - \| c \|_{max} - \| d \|_{max}$
9.	T12MINUS	$2 \|P\&Q\| - \|P\| - \|Q\|$
10.	CHISQUAR	$1 - [\chi^2 (P,Q) / (n \min(\| P \| - 1, \| Q \| - 1))]$
11.	INVRHEIT	$[\text{PAIRBONDS} / (\binom{n}{2} - D(P\&Q))]$
12.	NVRNTROP	$[\text{INFOTWO} / (2 \log_2 n - E(P) - E(Q))]$

III: Number of partitions of a set:

The total number of partitions of a set of p objects can be calculated using the recursive relation:

$J_{p,r} = rJ_{p-1,r} + J_{n-1,r-1}$,
where $J_{p,r}$ = the number of ways of
partitioning a set of p objects into exactly r non-empty sets. Then,
$J_p = \sum_{r=1}^{n} J_{n,r}$.
Note:
$J_{1,r} = 0$ if $r \neq 1$, 1 if $r = 1$

(See Rubin 1967, p133)

APPENDIX 2: REQUIREMENTS OF A MEASURE

(a) Requirements of a metric measure:

The axioms of a measure are:

_____(i) Non-negativity and Equivalence

$d(A,B) \geq 0$, and $d(A,B)=0$ if and only if $A=B$

(ii) Symmetry

$d(A,B) = d(B,A)$

And for a metric measure: For all triples of distinct points (A,B,C):

(iii) Triangle Inequality

$d(A,C) \leq d(A,B) + d(B,C)$.

n.b. If $d(A,C) = d(A,B) + d(B,C)$, then B lies along a line between A and C

If $d(A,C) < d(A,B) + d(B,C)$ then (ABC) form a triangle, with B off the line.

These axioms specifically exclude the possibility that:

$d(A,C) > d(A,B) + d(B,C)$

(b) Requirements of an ultrametric measure:

The first two axioms of an ultrametric measure are identical to a metric measure:

_____(i) Non-negativity and Equivalence

$d(A,B) \geq 0$, and $d(A,B)=0$ if and only if $A=B$

(ii) Symmetry

$$d(A,B) = d(B,A).$$

The crucial difference lies in its requirement for all triples of distinct points (A,B,C) :

(iii) Ultrametric Inequality

$$d(A,C) \leq \max \{d(A,B), d(B,C)\}.$$

c) Requirements for an additive tree (Buneman's 4-point condition)

An additive tree satisfies the axioms of a metric and an ultrametric. In addition is satisfies the four-point condition (Buneman 1972)

Given a set of four distinct points A,B,C,D and their six interpoint distances, the necessary and sufficient condition that d is an additive tree metric is that for all A,B,C,D in the set of points

(iv) Four-point condition

$$D(A,B) + D(C,D) \leq MAX \{ D(A,C) + D(B,D) , D(B,C) + D(A,D)\}$$

(Buneman also proves (p392) that if C=D, the four-point condition reduces to the triangle inequality, and that an ultrametric satisfies the four-point condition).

APPENDIX 3: FOUR TYPES OF AGREEMENT AND DISAGREEMENT AMONG OBJECT PAIRS BETWEEN PARTITIONS[3]

The Intersection matrix between two partitions can be augmented to produce a bivariate contingency table, N, whose entries n(i,j) are the number of objects in category i of partition S and category j of partition T , but which also appends the row and column sums[4] from which the height of each partition can be calculated:

Category	t_1	t_2	...	t_C	Sums
s_1	n_{11}	n_{12}	...	n_{1C}	$n_{1.}$
s_2	n_{21}	n_{22}	...	n_{21}	$n_{2.}$
.	.	.		.	.
.	.	.		.	.
.	.	.		.	.
s_R	n_{R1}	n_{R2}	...	n_{RC}	$n_{R.}$
Sums	$n_{.1}$	$n_{.2}$	...	$n_{.C}$	$n_{..} = n$

[3]This appendix and notation is based on Hubert and Arabie 1985, Tables 1 and 2. The dot-notation signifies summation over the relevant subscript.

Type	Formula	Description
I	$\frac{1}{2}\sum_{i=1}^{R}\sum_{j=1}^{C} n_{ij}(n_{ij}-1)$	(Pairs in same class)
II	$\frac{1}{2}(n^2+\sum_{i=1}^{R}\sum_{j=1}^{C} n_{ij}^2-(\sum_{i=1}^{R} n_{i.}^2+\sum_{j=1}^{C} n_{.j}^2))$	(Pairs in different classes)
III	$\frac{1}{2}(\sum_{j=1}^{C} n_{.j}^2-\sum_{i=1}^{R}\sum_{j=1}^{C} n_{ij}^2)$	(Pairs in different classes in S and in same class in T)
IV	$\frac{1}{2}(\sum_{i=1}^{R} n_{i.}^2-\sum_{i=1}^{R}\sum_{j=1}^{C} n_{ij}^2)$	(Pairs in same class in S and in different classes in T)

(I) + (II) = A (Agreement)

(III) + (IV) = D (Disagreement)

n.b. Rand Index: $Rand = A / \binom{n}{2}$

(see Hubert and Arabie 1985 for discussion of correction for chance and methods of normalising the Rand Index).

APPENDIX 4

Software for Sortings Data Collection and Analysis[5]

There are four characteristics which differentiate software relating to sorting data:

1. Data Collection and Input;
2. Calculation of measure/s of dis/similarity between objects and/or individual sortings;
3. Analysis of sorting data / measures, and
4. Cost and Availability factors.

1. Data Collection:

    1. Data Generation: whether the program has the facility for the user to produce sortings (usually in a graphical manner, using "click and move" or "drag and drop" object icons to produce piles/categories)
    2. Whether the program accepts as input (already produced) sortings, in either rectangular (N x p) "preferred data format" (p18) or textual Anthropac format[6].

2. Calculation of Measures

    3. Measure/s of similarity between objects, especially the Burton measures (section

---

[5]Web URLs operative on 17 October 2006. Page/section references are to Coxon, A.P.M. (1999) Sorting Data: Collection and Analysis, Sage QASS 07-127) unless otherwise specified. See also Harloff and Coxon (2005) How To Sort in References below.

[6]PDF: each row consists of a subject's sorting. Her groups are assumed to be numbered sequentially (but arbitrarily) and the number in the jth column is the group number in which object j is located.
ANTHROPAC: the objects are numbered sequentially, and each group of a subject's data is entered as a set of space-separated object numbers terminated by a semi-colon.

3.3.1) based upon the frequency with which pairs of objects co-occur in the same group in subjects' sortings. (Section 3.3, pp 41-51). R-analysis of a p x p matrix).

4. Measure/s of similarity between sortings or subjects. These include the Arabie-Boorman Partition measures (section 3.3.2) and the Rand Index.

Analysis of Sorting Data

5. Clustering procedures (section 4.1.2.3), usually include Hierarchical Clustering, but less often include Partition Clustering, and Additive Clustering.
6. Scaling Procedures (section 4.1.2.1), include metric and non-metric MDS, but more direct relevant are Takane's specifically-designed MDSORT and IDSORT (section 4.2.3.1) and also Homogeneity Analysis.
7. Consensus analysis using quadratic assignment methods.

Cost and Availability Factors

8. Cost: Programs differ from fully commercial through educational low-cost to freeware.
9. Platform: MS-DOS and Windows are the main platforms for programs, and increasingly on-line Web (interactive) programs are being produced

---

A. GENERAL SORTING PACKAGES:

There is no single package for all aspects of the collection and analysis of sorting data. The nearest approximations to a general package for free-sorting data are provided by two programs: SORTPAC and ANTHROPAC.

- SORTPAC 3 (1999) (C++ in MS-DOS) (and MAC using GUI[7])
  - Author: A.P.M. Coxon (Edinburgh University; apm.coxon ATed.ac.uk)
    - http://www.methodofsorting.com
  - provides for input of either row-sorting preferred data format ("PDF") or "Anthropac" format sortings
  - For each sorting, generates (1,0) co-occurrence matrix and aggregates into frequency matrix.
  - Generates any of the four Burton weighted inter-object similarity matrices
  - produces Syntax/Runscript files for direct analysis of inter-object similarity measures by non-metric MDS and HCS for SPSS and for NewMDSX (www.newmdsx.com). NewMDSX uniquely implements Takane's MDSORT.
  - Sub-program DISSIM implements several Arabie-Boorman inter-sorting/subject dissimilarity measures, including Intersection matrices between pairs of sortings.
  - Educational low-cost ($75; student $30)
- ANTHROPAC 4.98 (1996) (MS-DOS)
  - Author: S.P. Borgatti (Boston College; borgattsATbc.edu)
    http://www.analytictech.com/anthropac/apacdesc.htm
  - consists of programs for the collection and analysis of several types of systematic data.
  - Includes a number of programs for analysis of free-sorting data, and it (uniquely) contains Consensus Analysis using quadratic assignment.

A.1 Windows-based Programs:

[7]Available from Wolfgang Otto, Zurich:(u_wottoATmac.com)

- CONCEPT SYSTEM (2006)[8] Windows
  - Author: W.J. Trochim (Cornell University; wmt1ATcornell.edu
    - http://www.conceptsystems.com/
  - provides for computer capture of sorting data by "drag and drop" allocation of icons to piles
  - scaling and HCS analysis internal to the package.

A.2 Data Input and Checking

- GOMDS-20.EXE, Version 2.0 (TurboPascal in MS-DOS)
  - Author: J. M. Martz (University of North Carolina at Chapel Hill; JOHN_MARTZATUNC.EDU)
    - http://www.ibiblio.org/pub/academic/data_analysis/gomd-20.iafa
  - A data-entry aid for free-sorting data, producing (1,0) similarity matrices as ASCII files for input into MDS programs. Consistency checks are also performed.
  - Freeware.

B: Web-based Sorting data-collection and analysis

Recently there has been an increase in software designed primarily for web-based Information-Architect and User-centred Design, using Card Sorting Software: In

[8] See Kane, M., & Trochim, W. (2006). Concept mapping for planning and evaluation. Thousand Oaks, CA: Sage Publications

particular:

- EZSort, EZCalc: Most popular Card Sorting Software .exe files, emanating from IBM, but no longer supported; (but see WebSort below)
- CardSort (http://www.cardsort.net/index.php) Free and Fixed sorting data collection for up to 100 objects; output compatible with subsequent EZCalc analysis. Freeware
- CardZort (http://www.cardzort.com/cardzort/index.htm) Sorting data collection and group-naming, combined with CardCluster (average-link HCS) for analysis. Commercial: $50 individual academic user, $150 Professional)
- WebSort (http://websort.net) web-based Card Sorting company that enables researchers to perform remote card sort studies. Includes creation of a study, sending to participants, and analysis of the results. Subscription service: 1-study $99; 3-month $499. Free limited demonstration service. N.b. WebSort hosts the free download for IBM®'s EZ-Calc.
- Xsort (http://www.ipragma.com/xsort). The main MAC platform card-sorting program. Integrated collection and analysis. Free and fixed sorting. Free demonstration copy. Single-copy: $29.
- uzCardSort (http://uzilla.mozdev.org/cardsort.html) An open source, MPL licensed, Mozilla based tool for conducting and analyzing card sorts. It runs on Windows, Macintosh, and Linux versions of Mozilla and in other Gecko runtimes supporting XPInstall. Features include: Drag and drop sorting; fixed and free sorting, with naming. Produces similarity matrix and Non-hierarchical cluster analysis . Freeware.
- WebCAT (http://zing.ncsl.nist.gov/WebTools/WebCAT/) Designed primarily for

those testing an existing/proposed category system, but usable more widely. Considerable user-control of form and content of data collection and analysis. (Free; in public domain).

- Socratic CardSort (http://www.sotech.com/main/eval.asp?pID=123) Online graphical (drag and drop) card sorting. Commercial soiftware

C: GENERAL ANALYSIS PACKAGES

Once sortings data are in the form of a matrix of dis/similarities between objects and/or subjects, general analysis packages can be used to produce a scaling, clustering or tree representation. Most such programs and packages (SPSS, SAS etc) provide at least for standard non-metric multidimensional scaling and hierarchical clustering, and other special purpose programs (mostly emanating from the Bell Laboratories group) are available both as packages and/or as down-loadable programs from the Web.

A: SPSS http://www.spss.com

Currently version 15. "Categories" sub-module contains a number of sorting-relevant programs, such as Homogeneity Analysis, and excellent general-purpose MDS program (PROXSCAL), much preferable to older ALSCAL.

B: NEWMDSX for Windows http://www.newmdsx.com

Currently version 4. Contains 20 MDS scaling, cluster and related programs, including Takane's MDSORT, Partition-search clustering and Procrustes Individual Differences Scaling.

C: HUDAP (Hebrew University Data Analysis Package)
http://www.europhd.net/html/_onda02/07/PDF/HUDAP%20Manual.pdf

Batch and Interactive implementation of a number of scaling programs in the Guttman

tradition, several of which are applicable to Sorting Data.

D: NETLIB http://www.netlib.org

Mostly Fortran programs under MS-DOS, including MDS source programs and several additive tree programs . Documentation. Information and download (FTP) from:

E: MASSORT

Implements the New Zealand tradition of augmenting a fixed sorting by one which asks subjects to agglomerate and to divide the final sorting. Runs under MS-DOS. Documentation. Obtainable (and further information) through email:

J.Kirkland@massey.ac.nz

ADDITIONAL BIBLIOGRAPHY

Harloff, J. & Coxon, A. P. M. (2005). How to Sort. A Short Guide on Sorting Investigations / Eine kurze Anleitung für Sortier-Untersuchungen. Version 1.0. - GNU Free Documentation Licence, available on http://www.methodofsorting.com .

NOTE: Neither the author nor the publishers of this book assume responsibility for the exhaustiveness or accuracy of the software listed here.