Specification of Analyses

The following tables summarize the analyses that can be performed for the major types of proximity matrices that you can use with ALSCAL, list the specifications needed to produce these analyses for nonmetric models, and list the specifications for metric models. You can include additional specifications to control the precision of your analysis with CRITERIA.

Table 11-3
Models for types of matrix input

Matrix mode	Matrix form	Model class	Single matrix	Replications of single matrix	Two or more individual matrices
Object by object	Symmetric	Multidimensional scaling	CMDS Classical multidimensional scaling	RMDS Replicated multidimensional scaling	WMDS(INDSCAL) Weighted multidimensional scaling
	Asymmetric single process	Multidimensional scaling	CMDS(row conditional) Classical row conditional multidimensional scaling	RMDS(row conditional) Replicated row conditional multi dimensional scaling	WMDS(row conditional) Weighted row conditional multidimensional scaling
	Asymmetric multiple process	Internal asymmetric multidimensional scaling	CAMDS Classical asymmetric multidimensional scaling	RAMDS Replicated asymmetric multidimensional scaling	WAMDS Weighted asymmetric multidimensional scaling
		External asymmetric multidimensional scaling	CAMDS(external) Classical external asymmetric multidimensional scaling	RAMDS(external) Replicated external asymmetric multidimensional scaling	WAMDS(external) Weighted external asymmetric multidimensional scaling
Object by attribute	Rectangular	Internal unfolding	CMDU Classical internal multidimensional unfolding	RMDU Replicated internal multidimensional unfolding	WMDU Weighted internal multidimensional unfolding
		External unfolding	CMDU(external) Classical external multidimensional unfolding	RMDU(external) Replicated external multidimensional unfolding	WMDU(external) Weighted external multidimensional unfolding

Table 11-4
ALSCAL specifications for nonmetric models

Matrix mode	Matrix form	Model class	Single matrix	Replications of single matrix	Two or more individual matrices
Object by object	Symmetric	Multidimensional scaling	`ALSCAL VAR= varlist.`	`ALSCAL VAR= varlist.`	`ALSCAL VAR= varlist /MODEL=INDSCAL.`
	Asymmetric single process	Multidimensional scaling	`ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /CONDITION=ROW.`	`ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /CONDITION=ROW.`	`ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /CONDITION=ROW /MODEL=INDSCAL.`
	Asymmetric multiple process	Internal asymmetric multidimensional scaling	`ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /MODEL=ASCAL.`	`ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /MODEL=ASCAL.`	`ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /MODEL=AINDS.`

Matrix mode	Matrix form	Model class	Single matrix	Replications of single matrix	Two or more individual matrices
		External asymmetric multidimensional scaling	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /MODEL=ASCAL /FILE=file COLCONF(FIX).	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /MODEL=ASCAL /FILE=file COLCONF(FIX).	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /MODEL=AINDS /FILE=file COLCONF(FIX).
Object by attribute	Rectangular	Internal unfolding	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW.	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION(ROW).	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /MODEL=INDSCAL.
		External unfolding	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /FILE=file ROWCONF(FIX).	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /FILE=file ROWCONF(FIX).	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /FILE=file ROWCONF(FIX) /MODEL=INDSCAL.

Table 11-5
ALSCAL specifications for metric models

Matrix mode	Matrix form	Model class	Single matrix	Replications of single matrix	Two or more individual matrices
Object by object	Symmetric	Multidimensional scaling	ALSCAL VAR= varlist /LEVEL=INT.	ALSCAL VAR= varlist /LEVEL=INT.	ALSCAL VAR= varlist /LEVEL=INT /MODEL=INDSCAL.
	Asymmetric single process	Multidimensional scaling	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /CONDITION=ROW /LEVEL=INT.	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /CONDITION=ROW /LEVEL=INT.	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /CONDITION=ROW /LEVEL=INT /MODEL=INDSCAL.
	Asymmetric multiple process	Internal asymmetric multidimensional scaling	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /LEVEL=INT /MODEL=ASCAL.	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /LEVEL=INT /MODEL=ASCAL.	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /LEVEL=INT /MODEL=AINDS.
		External asymmetric multidimensional scaling	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /LEVEL=INT /MODEL=ASCAL /FILE=file COLCONF(FIX).	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /LEVEL=INT /MODEL=ASCAL /FILE=file COLCONF(FIX).	ALSCAL VAR= varlist /SHAPE=ASYMMETRIC /LEVEL=INT /MODEL=AINDS /FILE=file COLCONF(FIX).
Object by attribute	Rectangular	Internal unfolding	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /LEVEL=INT.	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /LEVEL=INT.	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /LEVEL=INT /MODEL=INDSCAL.
		External unfolding	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /LEVEL=INT /FILE=file ROWCONF(FIX).	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /LEVEL=INT /FILE=file ROWCONF(FIX).	ALSCAL VAR= varlist /SHAPE=REC /INP=ROWS /CONDITION=ROW /LEVEL=INT /FILE=file ROWCONF(FIX) /MODEL=INDSCAL.

References

Carroll, J. D., and J. J. Chang. 1970. Analysis of individual differences in multidimensional scaling via an n-way generalization of “Eckart-Young” decomposition. *Psychometrika*, 35, 238–319.

Johnson, R., and D. W. Wichern. 1982. *Applied multivariate statistical analysis*. Englewood Cliffs, N.J.: Prentice-Hall.

Kruskal, J. B. 1964. Multidimensional scaling by optimizing goodness of fit to a nonmetric hypothesis. *Psychometrika*, 29, 1–28.

Kruskal, J. B. 1964. Nonmetric multidimensional scaling: A numerical method. *Psychometrika*, 29, 115–129.

Takane, Y., F. W. Young, and J. de Leeuw. 1977. Nonmetric individual differences multidimensional scaling: An alternating least squares method with optimal scaling features. *Psychometrika*, 42, 7–67.

Young, F. W. 1975. An asymmetric Euclidean model for multiprocess asymmetric data. In: *Proceedings of U.S.–Japan Seminar on Multidimensional Scaling,* San Diego: .