CHAPTER 20
A SUMMARY OF THE Mplus LANGUAGE

This chapter contains a summary of the commands, options, and settings of the Mplus language. For each command, default settings are found in the last column. Commands and options can be shortened to four or more letters. Option settings can be referred to by either the complete word or the part of the word shown in bold type.

THE TITLE COMMAND

TITLE:	title for the analysis	

THE DATA COMMAND

DATA:		
FILE IS	file name;	
FORMAT IS	format statement; FREE;	FREE
TYPE IS	**IND**IVIDUAL; **COVA**RIANCE; **CORR**ELATION; FULLCOV; FULLCORR; MEANS; **STD**EVIATIONS; **MONTE**CARLO; **IMP**UTATION;	INDIVIDUAL
NOBSERVATIONS ARE	number of observations;	
NGROUPS =	number of groups;	1
LISTWISE =	ON; OFF;	OFF
SWMATRIX =	file name;	
VARIANCES =	CHECK; **NOCH**ECK;	CHECK

DATA IMPUTATION:		
IMPUTE =	names of variables for which missing values will be imputed;	
NDATASETS =	number of imputed data sets;	5
SAVE =	names of files in which imputed data sets are stored;	
FORMAT =	format statement;	F10.3
MODEL =	**COVA**RIANCE; **SEQ**UENTIAL; **REG**RESSION;	depends on analysis type
VALUES =	values imputed data can take;	no restrictions
ROUNDING =	number of decimals for imputed continuous variables;	3
THIN =	k where every k-th imputation is saved;	100
DATA WIDETOLONG:		
WIDE =	names of old wide format variables;	
LONG =	names of new long format variables;	
IDVARIABLE =	name of variable with ID information;	
REPETITION =	name of variable with repetition information;	
DATA LONGTOWIDE:		
LONG =	names of old long format variables;	
WIDE =	names of new wide format variables;	
IDVARIABLE =	name of variable with ID information;	
REPETITION =	name of variable with repetition information (values);	0, 1, 2, etc.
DATA TWOPART:		
NAMES =	names of variables used to create a set of binary and continuous variables;	
CUTPOINT =	value used to divide the original variables into a set of binary and continuous variables;	0
BINARY =	names of new binary variables;	
CONTINUOUS =	names of new continuous variables;	
TRANSFORM =	function to use to transform new continuous variables;	LOG
DATA MISSING:		
NAMES =	names of variables used to create a set of binary variables;	
BINARY =	names of new binary variables;	
TYPE =	**MISS**ING; SDROPOUT; DDROPOUT;	
DESCRIPTIVE =	sets of variables for additional descriptive statistics separated by the | symbol;	

DATA SURVIVAL:		
NAMES =	names of variables used to create a set of binary event-history variables;	
CUTPOINT =	value used to create a set of binary event-history variables from a set of original variables;	
BINARY =	names of new binary variables;	
DATA COHORT:		
COHORT IS	name of cohort variable (values);	
COPATTERN IS	name of cohort/pattern variable (patterns);	
COHRECODE =	(old value = new value);	
TIMEMEASURES =	list of sets of variables separated by the | symbol;	
TNAMES =	list of root names for the sets of variables in TIMEMEASURES separated by the | symbol;	

THE VARIABLE COMMAND

VARIABLE:		
NAMES ARE	names of variables in the data set;	
USEOBSERVATIONS ARE	conditional statement to select observations;	all observations in data set
USEVARIABLES ARE	names of analysis variables;	all variables in NAMES
MISSING ARE	variable (#); . ; * ; BLANK;	
CENSORED ARE	names, censoring type, and inflation status for censored dependent variables;	
CATEGORICAL ARE	names of binary and ordered categorical (ordinal) dependent variables;	
NOMINAL ARE	names of unordered categorical (nominal) dependent variables;	
COUNT ARE	names of count variables (model);	
DSURVIVAL ARE	names of discrete-time survival variables;	
GROUPING IS	name of grouping variable (labels);	
IDVARIABLE IS	name of ID variable; _RECNUM;	
FREQWEIGHT IS	name of frequency (case) weight variable;	
	names of observed variables with information	

TSCORES ARE	on individually-varying times of observation;	
AUXILIARY =	names of auxiliary variables;	
	names of auxiliary variables (M);	
	names of auxiliary variables (**R3**STEP);	
	names of auxiliary variables (R);	
	names of auxiliary variables (BCH);	
	names of auxiliary variables (**DU3**STEP);	
	names of auxiliary variables (**DCAT**EGORICAL);	
	names of auxiliary variables (**DE3**STEP);	
	names of auxiliary variables (**DCON**TINUOUS);	
	names of auxiliary variables (E);	
CONSTRAINT =	names of observed variables that can be used in the MODEL CONSTRAINT command;	
PATTERN IS	name of pattern variable (patterns);	
STRATIFICATION IS	name of stratification variable;	
CLUSTER IS	name of cluster variables;	
WEIGHT IS	name of sampling weight variable;	
WTSCALE IS	UNSCALED;	CLUSTER
	CLUSTER;	
	ECLUSTER;	
BWEIGHT	name of between-level sampling weight variable;	
B2WEIGHT IS	name of the level 2 sampling weight variable;	
B3WEIGHT IS	name of the level 3 sampling weight variable;	
BWTSCALE IS	**UNSC**ALED;	SAMPLE
	SAMPLE;	
REPWEIGHTS ARE	names of replicate weight variables;	
SUBPOPULATION IS	conditional statement to select subpopulation;	all observations in data set
FINITE =	name of variable;	FPC
	name of variable (**FPC**);	
	name of variable (**SFRAC**TION);	
	name of variable (**POP**ULATION);	
CLASSES =	names of categorical latent variables (number of latent classes);	
KNOWNCLASS =	name of categorical latent variable with known class membership (labels);	
TRAINING =	names of training variables;	MEMBERSHIP
	names of variables (**MEMB**ERSHIP);	
	names of variables (**PROB**ABILITIES);	
	names of variables (**PRIOR**S);	
WITHIN ARE	names of individual-level observed variables;	
WITHIN ARE (label)	names of individual-level observed variables;	

BETWEEN ARE	names of cluster-level observed variables;	
BETWEEN ARE (label)	names of cluster-level observed variables;	
SURVIVAL ARE	names and time intervals for time-to-event variables;	
TIMECENSORED ARE	names and values of variables that contain right censoring information;	(0 = NOT 1 = RIGHT)
LAGGED ARE	names of lagged variables (lag);	
TINTERVAL IS	name of time variable (interval);	

THE DEFINE COMMAND

DEFINE:

variable = mathematical expression;

IF (conditional statement) THEN transformation statements;

_MISSING
variable = MEAN (list of variables);
variable = SUM (list of variables);
CUT variable or list of variables (cutpoints);
variable = CLUSTER_MEAN (variable);
CENTER variable or list of variables (**GRAND**MEAN);
CENTER variable or list of variables (**GROUP**MEAN);
CENTER variable or list of variables (**GROUP**MEAN label);
STANDARDIZE variable or list of variables;
DO (number, number) expression;
DO ($, number, number) DO (#, number, number) expression;

THE ANALYSIS COMMAND

ANALYSIS:		
TYPE =	**GEN**ERAL; **BAS**IC; **RAND**OM; **COM**PLEX; **MIX**TURE; **BAS**IC; **RAND**OM; **COM**PLEX; **TWO**LEVEL; **BAS**IC; **RAND**OM; **MIX**TURE; **COM**PLEX; **THREE**LEVEL; **BAS**IC; **RAND**OM; **COM**PLEX; **CROSS**CLASSIFIED; **RAND**OM; EFA # # #; **BAS**IC; **MIX**TURE; **COM**PLEX; **TWO**LEVEL; EFA # # UW* # # UB*; EFA # # UW # # UB;	GENERAL
ESTIMATOR =	ML; MLM; MLMV; MLR; MLF; MUML; WLS; WLSM; WLSMV; ULS; ULSMV; GLS; BAYES;	depends on analysis type

MODEL =	CONFIGURAL;	
	METRIC;	
	SCALAR;	
	NOMEANSTRUCTURE;	means
	NOCOVARIANCES;	covariances
	ALLFREE;	equal
ALIGNMENT =	FIXED;	last class CONFIGURAL
	FIXED (reference class **CONFIG**URAL);	
	FIXED (reference class BSEM);	
	FREE;	last class CONFIGURAL
	FREE (reference class **CONFIG**URAL);	
	FREE (reference class BSEM);	
DISTRIBUTION =	NORMAL;	NORMAL
	SKEWNORMAL;	
	TDISTRIBUTION;	
	SKEWT;	
PARAMETERIZATION =	DELTA;	DELTA
	THETA;	
	LOGIT;	LOGIT
	LOGLINEAR;	
	PROBABILITY;	
	RESCOVARIANCES;	RESCOV
LINK =	**LOG**IT;	LOGIT
	PROBIT;	
ROTATION =	**GEO**MIN;	GEOMIN (OBLIQUE value)
	GEOMIN (**OB**LIQUE value);	
	GEOMIN (**OR**THOGONAL value);	
	QUARTIMIN;	OBLIQUE
	CF-VARIMAX;	OBLIQUE
	CF-VARIMAX (**OB**LIQUE);	
	CF-VARIMAX (**OR**THOGONAL);	
	CF-QUARTIMAX;	OBLIQUE
	CF- QUARTIMAX (**OB**LIQUE);	
	CF- QUARTIMAX (**OR**THOGONAL);	
	CF-EQUAMAX;	OBLIQUE
	CF- EQUAMAX (**OB**LIQUE);	
	CF- EQUAMAX (**OR**THOGONAL);	
	CF-PARSIMAX;	OBLIQUE
	CF- PARSIMAX (**OB**LIQUE);	
	CF- PARSIMAX (**OR**THOGONAL);	

	CF-FACPARSIM;	OBLIQUE
	CF- FACPARSIM (**OB**LIQUE);	
	CF- FACPARSIM (**OR**THOGONAL);	
	CRAWFER;	OBLIQUE 1/p
	CRAWFER (**OB**LIQUE value);	
	CRAWFER (**OR**THOGONAL value);	
	OBLIMIN;	OBLIQUE 0
	OBLIMIN (**OB**LIQUE value);	
	OBLIMIN (**OR**THOGONAL value);	
	VARIMAX;	
	PROMAX;	
	TARGET;	
	BI-GEOMIN;	OBLIQUE
	BI-GEOMIN (**OB**LIQUE);	
	BI-GEOMIN (**OR**THOGONAL);	
	BI-CF-QUARTIMAX;	OBLIQUE
	BI-CF-QUARTIMAX (**OB**LIQUE);	
	BI-CF-QUARTIMAX (**OR**THOGONAL);	
ROWSTANDARDIZATION =	**CORR**ELATION;	CORRELATION
	KAISER;	
	COVARIANCE;	
PARALLEL =	number;	0
REPSE =	**BOOT**STRAP;	
	JACKKNIFE;	
	JACKKNIFE**1**;	
	JACKKNIFE**2**;	
	BRR;	
	FAY (#);	.3
BASEHAZARD =	ON;	depends on
	OFF;	analysis type
	ON (**EQ**UAL);	EQUAL
	ON (**UNEQ**UAL);	
	OFF (**EQ**UAL);	EQUAL
	OFF (**UNEQ**UAL);	
CHOLESKY =	ON;	depends on
	OFF;	analysis type
ALGORITHM =	EM;	depends on
	EMA;	analysis type
	FS;	
	ODLL;	
	INTEGRATION;	

INTEGRATION =	number of integration points; **STAND**ARD (number of integration points) ; **GAUSS**HERMITE (number of integration points) ; **MONTE**CARLO (number of integration points);	STANDARD depends on analysis type 15 depends on analysis type
MCSEED =	random seed for Monte Carlo integration;	0
ADAPTIVE =	ON; OFF;	ON
INFORMATION =	**OBS**ERVED; **EXP**ECTED; **COMB**INATION;	depends on analysis type
BOOTSTRAP =	number of bootstrap draws; number of bootstrap draws (**STAND**ARD); number of bootstrap draws (**RES**IDUAL):	STANDARD
LRTBOOTSTRAP =	number of bootstrap draws for TECH14;	depends on analysis type
STARTS =	number of initial stage starts and number of final stage optimizations;	depends on analysis type
STITERATIONS =	number of initial stage iterations;	10
STCONVERGENCE =	initial stage convergence criterion;	1
STSCALE =	random start scale;	5
STSEED =	random seed for generating random starts;	0
OPTSEED =	random seed for analysis;	
K-1STARTS =	number of initial stage starts and number of final stage optimizations for the k-1 class model for TECH14;	20 4
LRTSTARTS =	number of initial stage starts and number of final stage optimizations for TECH14;	0 0 40 8
RSTARTS =	number of random starts for the rotation algorithm and number of factor solutions printed for exploratory factor analysis;	depends on analysis type
ASTARTS =	number of random starts for the alignment optimization;	30
H1STARTS =	Number of initial stage starts and number of final stage optimizations for the H1 model;	0 0
DIFFTEST =	file name;	
MULTIPLIER =	file name;	
COVERAGE =	minimum covariance coverage with missing data;	.10
ADDFREQUENCY =	value divided by sample size to add to cells with zero frequency;	.5

ITERATIONS =	maximum number of iterations for the Quasi-Newton algorithm for continuous outcomes;	1000
SDITERATIONS =	maximum number of steepest descent iterations for the Quasi-Newton algorithm for continuous outcomes;	20
H1ITERATIONS =	maximum number of iterations for unrestricted model with missing data;	2000
MITERATIONS =	number of iterations for the EM algorithm;	500
MCITERATIONS =	number of iterations for the M step of the EM algorithm for categorical latent variables;	1
MUITERATIONS =	number of iterations for the M step of the EM algorithm for censored, categorical, and count outcomes;	1
RITERATIONS =	maximum number of iterations in the rotation algorithm for exploratory factor analysis;	10000
AITERATIONS =	maximum number of iterations in the alignment optimization;	5000
CONVERGENCE =	convergence criterion for the Quasi-Newton algorithm for continuous outcomes;	depends on analysis type
H1CONVERGENCE =	convergence criterion for unrestricted model with missing data;	.0001
LOGCRITERION =	likelihood convergence criterion for the EM algorithm;	depends on analysis type
RLOGCRITERION =	relative likelihood convergence criterion for the EM algorithm;	depends on analysis type
MCONVERGENCE =	convergence criterion for the EM algorithm;	depends on analysis type
MCCONVERGENCE =	convergence criterion for the M step of the EM algorithm for categorical latent variables;	.000001
MUCONVERGENCE =	convergence criterion for the M step of the EM algorithm for censored, categorical, and count outcomes;	.000001
RCONVERGENCE =	convergence criterion for the rotation algorithm for exploratory factor analysis;	.00001
ACONVERGENCE =	convergence criterion for the derivatives of the alignment optimization;.	.001
MIXC =	**ITER**ATIONS; **CONV**ERGENCE; M step iteration termination based on number of iterations or convergence for categorical latent variables;	ITERATIONS

MIXU =	**ITER**ATIONS; **CONV**ERGENCE; M step iteration termination based on number of iterations or convergence for censored, categorical, and count outcomes;	ITERATIONS
LOGHIGH =	max value for logit thresholds;	+15
LOGLOW =	min value for logit thresholds;	- 15
UCELLSIZE =	minimum expected cell size;	.01
VARIANCE =	minimum variance value;	.0001
SIMPLICITY =	SQRT; **FOUR**THRT;	SQRT
TOLERANCE =	simplicity tolerance value;	.0001
METRIC=	**REFG**ROUP; **PROD**UCT;	REFGROUP
MATRIX =	**COVA**RIANCE; **CORR**ELATION;	COVARIANCE
POINT =	**MED**IAN; MEAN; MODE;	MEDIAN
CHAINS =	number of MCMC chains;	2
BSEED =	seed for MCMC random number generation;	0
STVALUES =	**UNPER**TURBED; **PERT**URBED; ML;	UNPERTURBED
PREDICTOR =	**LAT**ENT; **OBS**ERVED;	depends on analysis type
ALGORITHM =	GIBBS; GIBBS (PX1); GIBBS (PX2); GIBBS (PX3); GIBBS (RW); MH;	GIBBS (PX1)
BCONVERGENCE =	MCMC convergence criterion using Gelman-Rubin PSR;	.05
BITERATIONS =	maximum and minimum number of iterations for each MCMC chain when Gelman-Rubin PSR is used;	50000 0
FBITERATIONS =	fixed number of iterations for each MCMC chain when Gelman-Rubin PSR is not used;	
THIN =	k where every k-th MCMC iteration is saved;	1
MDITERATIONS =	maximum number of iterations used to compute the Bayes multivariate mode;	10000
KOLMOGOROV =	number of draws from the MCMC chains;	100

PRIOR =	number of draws from the prior distribution;	1000
INTERACTIVE =	file name;	
PROCESSORS =	# of processors # of threads;	1 1

THE MODEL COMMAND

MODEL:	
BY	short for measured by -- defines latent variables example: f1 BY y1-y5;
ON	short for regressed on -- defines regression relationships example: f1 ON x1-x9;
PON	short for regressed on -- defines paired regression relationships example: f2 f3 PON f1 f2;
WITH	short for correlated with -- defines correlational relationships example: f1 WITH f2;
PWITH	short for correlated with -- defines paired correlational relationships example: f1 f2 f3 PWITH f4 f5 f6;
list of variables;	refers to variances and residual variances example: f1 y1-y9;
[list of variables];	refers to means, intercepts, thresholds example: [f1, y1-y9];
*	frees a parameter at a default value or a specific starting value example: y1* y2*.5;
@	fixes a parameter at a default value or a specific value example: y1@ y2@0;
(number)	constrains parameters to be equal example: f1 ON x1 (1); f2 ON x2 (1);
variable$number	label for the threshold of a variable
variable#number	label for nominal observed or categorical latent variable
variable#1	label for censored or count inflation variable
variable#number	label for baseline hazard parameters
variable#number	label for a latent class
(name)	label for a parameter
{list of variables};	refers to scale factors example: {y1-y9};
|	names and defines random effect variables example: s | y1 ON x1;
AT	short for measured at -- defines random effect variables example: s | y1-y4 AT t1-t4;
XWITH	defines interactions between variables;

MODEL INDIRECT:	describes the relationships for which indirect and total effects are requested
IND	describes a specific indirect effect or a set of indirect effects when there is no moderation;
VIA	describes a set of indirect effects that includes specific mediators;
MOD	describes a specific indirect effect when there is moderation;
MODEL CONSTRAINT:	describes linear and non-linear constraints on parameters
NEW	assigns labels to parameters not in the analysis model;
DO	describes a do loop or double do loop;
PLOT	describes y-axis variables;
LOOP	describes x-axis variables;
MODEL TEST:	describes restrictions on the analysis model for the Wald test
DO	describes a do loop or double do loop;
MODEL PRIORS:	specifies the prior distribution for the parameters
COVARIANCE	assigns a prior to the covariance between two parameters;
DO	describes a do loop or double do loop;
DIFFERENCE	assigns priors to differences between parameters;
MODEL:	describes the analysis model
MODEL label:	describes the group-specific model in multiple group analysis and the model for each categorical latent variable and combinations of categorical latent variables in mixture modeling
MODEL:	
%OVERALL%	describes the overall part of a mixture model
%class label%	describes the class-specific part of a mixture model
MODEL:	
%WITHIN%	describes the individual-level model
%BETWEEN%	describes the cluster-level model for a two-level model
%BETWEEN label%	describes the cluster-level model for a three-level or cross-classified model
MODEL POPULATION:	describes the data generation model
MODEL POPULATION-label:	describes the group-specific data generation model in multiple group analysis and the data generation model for each categorical latent variable and combinations of categorical latent variables in mixture modeling
MODEL POPULATION:	
%OVERALL%	describes the overall data generation model for a mixture model
%class label%	describes the class-specific data generation model for a mixture model

MODEL POPULATION:	
%WITHIN%	describes the individual-level data generation model for a multilevel model
%BETWEEN%	describes the cluster-level data generation model for a two-level model
%BETWEEN label%	describes the cluster-level data generation model for a three-level or cross-classified model
MODEL COVERAGE:	describes the population parameter values for a Monte Carlo study
MODEL COVERAGE-label:	describes the group-specific population parameter values in multiple group analysis and the population parameter values for each categorical latent variable and combinations of categorical latent variables in mixture modeling for a Monte Carlo study
MODEL COVERAGE:	
%OVERALL%	describes the overall population parameter values of a mixture model for a Monte Carlo study
%class label%	describes the class-specific population parameter values of a mixture model
MODEL COVERAGE:	
%WITHIN%	describes the individual-level population parameter values for coverage
%BETWEEN%	describes the cluster-level population parameter values for a two-level model for coverage
%BETWEEN label%	describes the cluster-level population parameter values for a three-level or cross-classified model for coverage
MODEL MISSING:	describes the missing data generation model for a Monte Carlo study
MODEL MISSING-label:	describes the group-specific missing data generation model for a Monte Carlo study
MODEL MISSING:	
%OVERALL%	describes the overall data generation model of a mixture model
%class label%	describes the class-specific data generation model of a mixture model

THE OUTPUT COMMAND

OUTPUT:		
	SAMPSTAT;	
	CROSSTABS;	ALL
	CROSSTABS (ALL);	
	CROSSTABS (COUNT);	
	CROSSTABS (%ROW);	

	CROSSTABS **(%COL**UMN);	
	CROSSTABS (%TOTAL);	
	STANDARDIZED;	
	STDYX;	
	STDY**;**	
	STDY**;**	
	STANDARDIZED (**CLUS**TER);	
	STDYX (**CLUS**TER);	
	STDY (**CLUS**TER);	
	STD (**CLUS**TER);	
	RESIDUAL;	
	RESIDUAL (**CLUS**TER);	
	MODINDICES (minimum chi-square);	10
	MODINDICES (ALL);	
	MODINDICES (ALL minimum chi-square);	10
	CINTERVAL;	SYMMETRIC
	CINTERVAL (**SYM**METRIC);	
	CINTERVAL (**BOOT**STRAP);	
	CINTERVAL (**BCBOOT**STRAP);	
	CINTERVAL (**EQ**TAIL);	EQTAIL
	CINTERVAL (**HPD**);	
	SVALUES;	
	NOCHISQUARE;	
	NOSERROR;	
	H1SE**;**	
	H1TECH3;	
	H1MODEL;	COVARIANCE
	H1MODEL (**COVA**RIANCE);	
	H1MODEL (**SEQ**UENTIAL);	
	PATTERNS;	
	FSCOEFFICIENT;	
	FSDETERMINACY;	
	FSCOMPARISON;	
	BASEHAZARD;	
	LOGRANK;	
	ALIGNMENT;	
	ENTROPY;	
	TECH1**;**	
	TECH2;	
	TECH3;	
	TECH4;	
	TECH4 (**CLUS**TER);	
	TECH5;	
	TECH6;	

	TECH7;	
	TECH8;	
	TECH9;	
	TECH10;	
	TECH11;	
	TECH12;	
	TECH13;	
	TECH14**;**	
	TECH15**;**	
	TECH16**;**	

THE SAVEDATA COMMAND

SAVEDATA:		
FILE IS	file name;	
FORMAT IS	format statement;	F10.3
	FREE;	
MISSFLAG =	missing value flag;	*
RECORDLENGTH IS	characters per record;	1000
SAMPLE IS	file name;	
COVARIANCE IS	file name;	
SIGBETWEEN IS	file name;	
SWMATRIX IS	file name;	
RESULTS ARE	file name;	
STDRESULTS ARE	file name;	
STDDISTRIBUTION IS	file name;	
ESTIMATES ARE	file name;	
DIFFTEST IS	file name;	
TECH3 IS	file name;	
TECH4 IS	file name;	
KAPLANMEIER IS	file name;	
BASEHAZARD IS	file name;	
ESTBASELINE IS	file name;	
RESPONSE IS	file name;	
MULTIPLIER IS	file name;	
BPARAMETERS IS	file name;	
RANKING IS	file name;	
TYPE IS	**COVA**RIANCE;	varies
	CORRELATION;	
SAVE =	**FS**CORES;	
	FSCORES (# #);	
	LRESPONSES (#);	

	PROPENSITY; **CPROB**ABILITIES; **REPW**EIGHTS; **MAHA**LANOBIS; **LOG**LIKELIHOOD; **INFL**UENCE; COOKS; **BCH**WEIGHTS;	
FACTORS =	names of factors;	
LRESPONSES =	names of latent response variables;	
MFILE =	file name;	
MNAMES =	names of variables in the data set;	
MFORMAT =	format statement; FREE;	FREE
MMISSING =	Variable (#); *; .;	
MSELECT =	names of variables;	all variables in MNAMES

THE PLOT COMMAND

PLOT:		
TYPE IS	PLOT1; PLOT2; PLOT3; **SENS**ITIVITY;	
SERIES IS	list of variables in a series plus x-axis values;	
FACTORS ARE	names of factors (#);	
LRESPONSES ARE	names of latent response variables (#);	
OUTLIERS ARE	**MAHA**LANOBIS; **LOG**LIKELIHOOD; **INFL**UENCE; COOKS;	
MONITOR IS	ON; OFF;	OFF

THE MONTECARLO COMMAND

MONTECARLO:		
NAMES =	names of variables;	
NOBSERVATIONS =	number of observations;	
NGROUPS =	number of groups;	1
NREPS =	number of replications;	1
SEED =	random seed for data generation;	0
GENERATE =	scale of dependent variables for data generation;	
CUTPOINTS =	thresholds to be used for categorization of covariates;	
GENCLASSES =	names of categorical latent variables (number of latent classes used for data generation);	
NCSIZES =	number of unique cluster sizes for each group separated by the | symbol;	
CSIZES =	number (cluster size) for each group separated by the | symbol;	
HAZARDC =	specifies the hazard for the censoring process;	
PATMISS =	missing data patterns and proportion missing for each dependent variable;	
PATPROBS =	proportion for each missing data pattern;	
MISSING =	names of dependent variables that have missing data;	
CENSORED ARE	names and limits of censored-normal dependent variables;	
CATEGORICAL ARE	names of ordered categorical dependent variables;	
NOMINAL ARE	names of unordered categorical dependent variables;	
COUNT ARE	names of count variables;	
CLASSES =	names of categorical latent variables (number of latent classes used for model estimation);	
AUXILIARY =	names of auxiliary variables (**R3**STEP); names of auxiliary variables (R); names of auxiliary variables (BCH); names of auxiliary variables (**DU3**STEP); names of auxiliary variables (**DCAT**EGORICAL); names of auxiliary variables (**DE3**STEP); names of auxiliary variables (**DCON**TINUOUS);	

	names of auxiliary variables (E);
SURVIVAL =	names and time intervals for time-to-event variables;
TSCORES =	names, means, and standard deviations of observed variables with information on individually-varying times of observation;
WITHIN =	names of individual-level observed variables;
BETWEEN =	names of cluster-level observed variables;
POPULATION =	name of file containing population parameter values for data generation;
COVERAGE =	name of file containing population parameter values for computing parameter coverage;
STARTING =	name of file containing parameter values for use as starting values for the analysis;
REPSAVE =	numbers of the replications to save data from or ALL;
SAVE =	name of file in which generated data are stored;
RESULTS =	name of file in which analysis results are stored;
BPARAMETERS =	name of file in which Bayesian posterior parameter values are stored;
LAGGED ARE	names of lagged variables (lag);

CHAPTER 20