

## SIMPLIS Guide

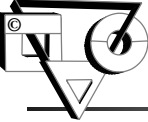
- This introductory guide to the SIMPLIS command language of LISREL is not intended to replace the detailed information available in the following publications and online resources from Scientific Software, Inc.:
  - *LISREL 8: User's Reference Guide*
  - *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*
  - *Interactive LISREL: User's Guide*

For trial or free student version download information, click [here](#).

The information presented is generic and intended only as a general orientation to the program applicable to the present chapters. More specific aspects of SIMPLIS syntax and output files are presented in the context of examples and exercises discussed in the various chapters.

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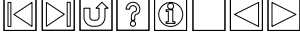
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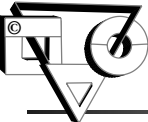
## SIMPLIS Features & Syntax Structure

- Most interface and many statistical features of LISREL are not utilized in chapter examples and exercises and, thus, are not introduced in this section. Instead, we concentrate on basic LISREL programming with the SIMPLIS command language and encourage you to explore LISREL/SIMPLIS to its fullest as you gain structural equation modeling knowledge and experience.
- The LISREL program contains two command languages, classic LISREL and SIMPLIS: the former is matrix-based and not introduced here; the latter, SIMPLIS (SIMple LISrel), is easier to master since it consists of non-matrix based, sentence-like syntax statements.

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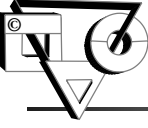
## SIMPLIS Features & Syntax Structure

- SIMPLIS syntax files can be created directly from within the LISREL program or prepared by using any standard word-processing software (e.g., Microsoft® Word) and then copied into an empty syntax file in the program's interface. Before running the program, the syntax file must be saved as a SIMPLIS (.spl) file.
- SIMPLIS syntax files are divided into sections that are indicated by a header line (i.e., keyword), followed by model-specific information.

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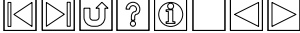
## Major SIMPLIS Input Headers

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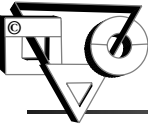
- **[Title]**
  - A descriptive program title can be specified on the first line of an syntax file.
- **OBSERVED VARIABLES [or LABELS]**
  - A list of observed (measured) variable names follows which determines both the number of variables and their order in the data input.
- **RAW DATA FROM FILE *filename***
  - Here, a file can be specified that contains raw data on the observed variables.

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## Major SIMPLIS Input Headers

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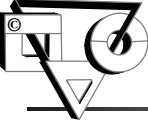
- **COVARIANCE MATRIX [or CORRELATION MATRIX]**
  - Instead of raw data, summary statistics can be used as input, either in the form of a covariance or correlation matrix.
- **STANDARD DEVIATIONS [and/or MEANS]**
  - If a correlation matrix is used as input data and a covariance matrix is to be analyzed, standard deviations must be given. When models with mean structures are analyzed, the observed means must be specified as well.
- **SAMPLE SIZE = *n* [or SAMPLE SIZE IS *n*]**
  - The sample size, *n*, is specified here.

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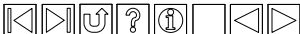


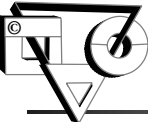
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## Major SIMPLIS Input Headers

- **LATENT VARIABLES [or UNOBSERVED VARIABLES]**
  - Here, descriptive labels can be given to the latent factors in the model, if any.
- **RELATIONSHIPS [or EQUATIONS]**
  - This section contains the structural equations that define the model. In addition, covariances of independent variables are specified to be free (to be estimated by LISREL) or fixed (to a specific value).
- **PATH DIAGRAM**
  - If desired, SIMPLIS will draw a path diagram with the option of displaying various main results (e.g., un/standardized estimates, test statistics, modification indices) with the diagram.
- **END OF PROBLEM**
  - This header signifies the end of the SIMPLIS program.

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## Example of a SIMPLIS Syntax File: Major Headers (Keywords)

```

Multiple Linear Regression Example
OBSERVED VARIABLES:
READSC1 MATHSC1 GOALS2
COVARIANCE MATRIX:
1.623
-.308 1.951
.198 .290 1.627
SAMPLE SIZE:
1000
RELATIONSHIPS:
GOALS2 = READSC1 MATHSC1
METHOD: Maximum Likelihood
PATH DIAGRAM
END OF PROBLEM

```

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## The LISREL Command Interface: Running a Syntax File

```

Multiple Linear Regression
OBSERVED VARIABLES:
READSC1 MATHSC1 GOALS2
COVARIANCE MATRIX:
1.623
-.308 1.951
.198 .290 1.627
SAMPLE SIZE:
1000
RELATIONSHIPS:
GOALS2 = READSC1 MATHSC1
METHOD: Maximum Likelihood
PATH DIAGRAM
END OF PROBLEM
    
```

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## The LISREL Command Interface: Selected Portions of an Output

**LISREL Estimates (Maximum Likelihood)**

Structural Equations

GOALS2 = 0.15\*READSC1 + 0.17\*MATHSC1, Errorvar.= 1.55 , R<sup>2</sup> = 0.050  
 (0.031) (0.029) (0.069)  
 4.93 6.05 22.33

Covariance Matrix of Independent Variables

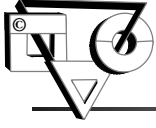
	READSC1	MATHSC1
READSC1	1.62 (0.07) 22.33	
MATHSC1	-0.31 (0.06) -5.39	1.95 (0.09) 22.33

Path Diagram (Sample Program.PTH):

```


graph LR
    E1((.62)) --> READSC1[READSC1]
    E2((.95)) --> MATHSC1[MATHSC1]
    READSC1 --> GOALS2[GOALS2]
    MATHSC1 --> GOALS2
    GOALS2 --> E3((1.55))
    
```

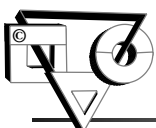
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Header	Options or Alternatives	Comment
[title]		Optional section but in multi-group analyses, the title is required and must start with the word <i>Group</i> . Specifies a title consisting of one or more lines.
OBSERVED VARIABLES	[or] LABELS	Required section. List the names of all observed variables in free format and in the same order as the input data.
RAW DATA FROM FILE <i>filename</i>		Optional section. Specifies the location of the raw data file.
COVARIANCE MATRIX	[or] CORRELATION MATRIX	Required section if raw data is not used. Specifies a lower-diagonal covariance or correlation matrix in free format.

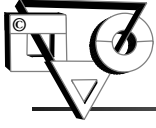
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## SIMPLIS Quick Reference Guide

Header	Options or Alternatives	Comment
STANDARD DEVIATIONS  [and/or] MEANS		Optional sections. If a correlation matrix is used as input and a covariance matrix is analyzed, standard deviations must be specified here. When models with mean structures are analyzed, observed means must be provided as well.
SAMPLE SIZE = <i>n</i>	[or] SAMPLE SIZE IS <i>n</i>	Required section unless raw data is used. The sample size, <i>n</i> , is specified here.
LATENT VARIABLES	[or] UNOBSERVED VARIABLES	Optional section. If the model contains latent factors, descriptive labels can be given here.


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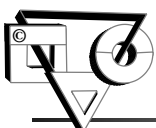
## SIMPLIS Quick Reference Guide

Header	Options or Alternatives	Comment
RELATIONSHIPS [or] EQUATIONS	[form:] <i>dependent variable = list of independent variables</i>	Required section. Here, the structural equations—one for each endogenous observed or latent variable—are specified.
	V1 = 1*F1 V2 = F1 V3 = F1	Example of specifying a observed variable, V1, as the reference variable for a latent factor, F1, that has three observed indicator variables.
	LET THE ERRORS BETWEEN V1 AND V2 CORRELATE	Example of correlated error terms between errors of two observed (measured) variables.
	SET THE COVARIANCE OF F1 AND F2 TO 0	Example of specifying the association between two latent factors, F1 and F2, to be zero.

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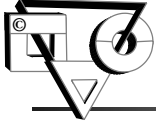
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Header	Options or Alternatives	Comment
[options]	NUMBER OF DECIMALS = <i>n</i>  METHOD = <i>estimation method</i>  MI  EF	Optional section. Various options can be specified. For example, number of decimals, <i>n</i> , can be changed from its default value, <i>n</i> = 2; the estimation method can be specified; modification indices can be requested for each fixed parameter; effect decompositions (indirect, total) can be requested.
PATH DIAGRAM		Optional header. If desired an interactive path diagram can be requested.

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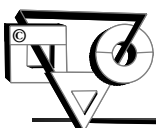


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Header	Options or Alternatives	Comment
LISREL OUTPUT	LISREL OUTPUT: SS SC EF	Optional section. If desired, classic LISREL output can be requested. In this example, Standardized Solutions (only latent variables are standardized), Standardized Completely solutions (both latent and observed variables are standardized), and EFfect decompositions are specified.
END OF PROBLEM		This header signifies the end of the program.

Consult *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*, published by [Scientific Software, Inc.](#), for more detailed information about SIMPLIS.

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**End of Section. Exit:** 

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