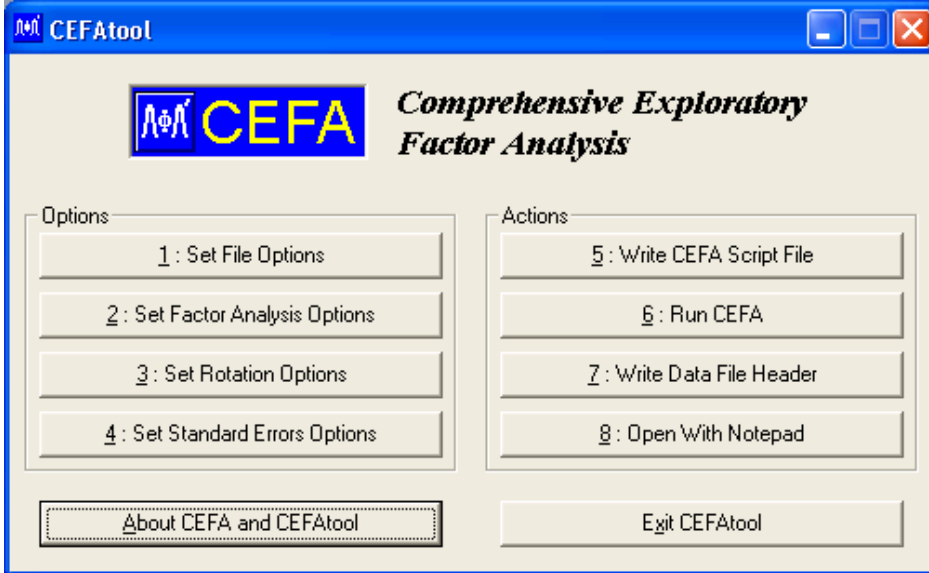


A Brief Introduction to CEFA

Comprehensive Exploratory Factor Analysis or CEFA, is a Windows program for estimating factor loadings, rotating factor matrices orthogonally or obliquely and calculating standard errors of rotated factor loadings and factor correlations. It may be downloaded for free from <http://faculty.psy.ohio-state.edu/browne/software.php>

Once installed, clicking on the program would bring up the window shown below:



Running an exploratory factor analysis with CEFA can be broken down into two portions:

- (a) Setting up the Data File Header
- (b) Changing the Options

Data File Header Setup

Step 1: Click on 7: Write Data File Header, and a window will pop up:

Enter the Number of Observations, Number of Variables and select Type of Input Data.

There are four types of input data:

- 1 = Correlations/Covariance
- 2 = Raw data
- 3 = Factor loading matrix
- 4 = Polychoric data.

Variable Labels and Factor Labels may be entered after checking their respective boxes.

When Finished is clicked, you will be prompted to save the Data File with extension .inp.

Step 2: Click on 8: Open with Notepad and open the .inp file just recently saved. At the end of the file, type or paste the data. Save the file again. An example of how this looks is provided below:

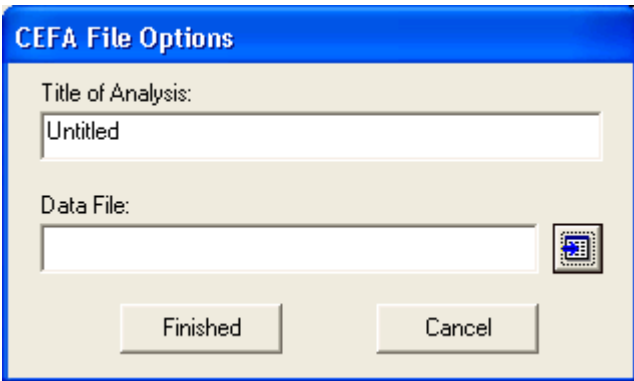
```


88 5          (NObs, NVar)
1            (DataType)
0 0          (PRNG Seed)
1            (VarNames supplied?)
mechanics vectors algebra analysis statistics
1            (FacNames supplied?)
One Two
0            (Order/Target matrix supplied?)
1.00000
0.55341 1.00000
0.54675 0.60964 1.00000
0.40939 0.48508 0.71081 1.00000
0.38910 0.43645 0.66474 0.60717 1.00000

```

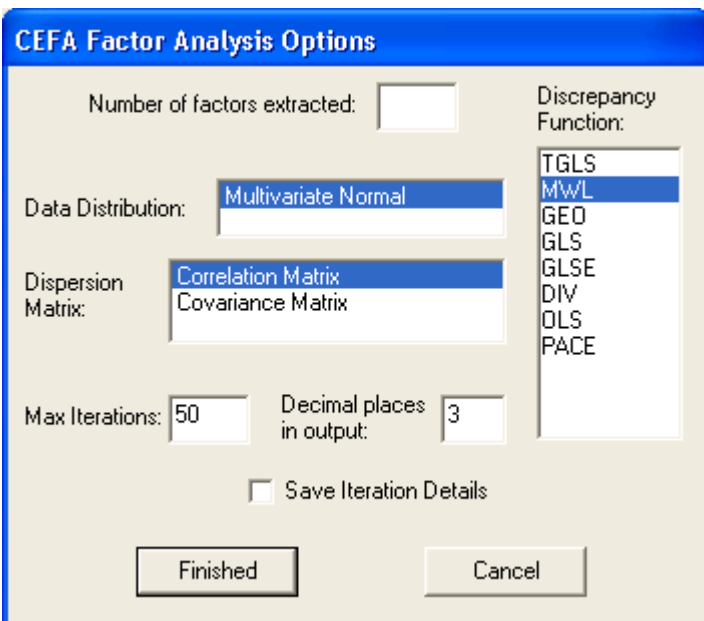
Note that the data pasted into this file has to coincide with DataType as defined above in Step 1.

Step 3: Click on 1: Set File Options.



Fill in the box Title of Analysis and use  to locate the Data File. The Data File refers to the saved file with extension .inp.

Step 4: Click on 2: Set Factor Analysis Options.



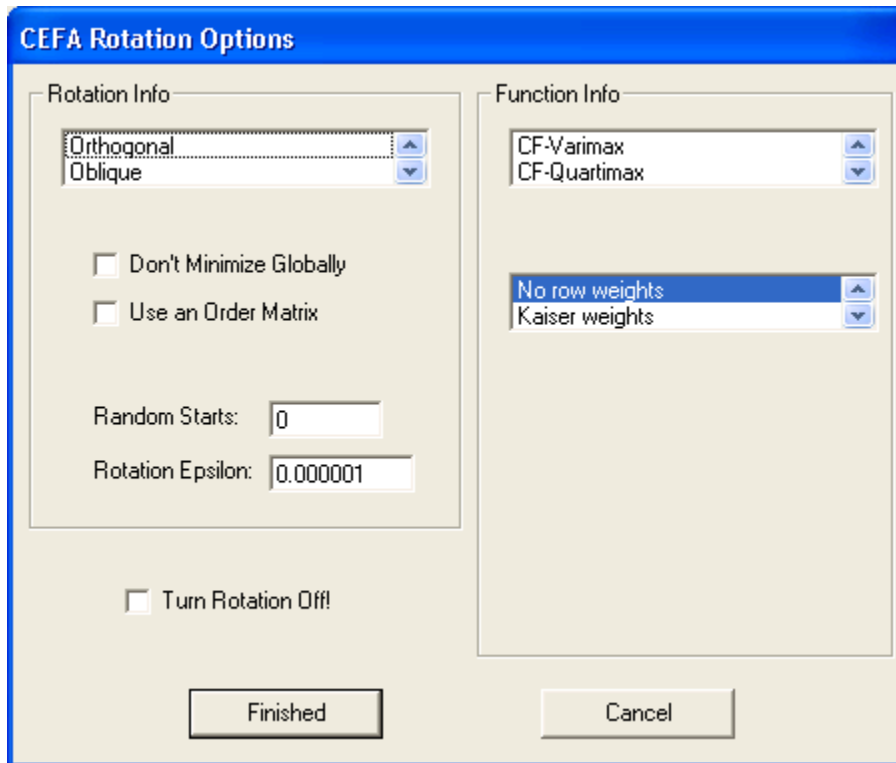
Enter a number for Number of factors extracted.

Select the type of matrix to be analyzed under Dispersion Matrix.

Specify the Discrepancy Function to be used.

- MWL = Maximum Likelihood
- GLS = Generalized Least Squares
- OLS = Ordinary Least Squares
- PACE = Partitioned Covariance Estimator

Step 5: Click on 3: Set Rotation Options.

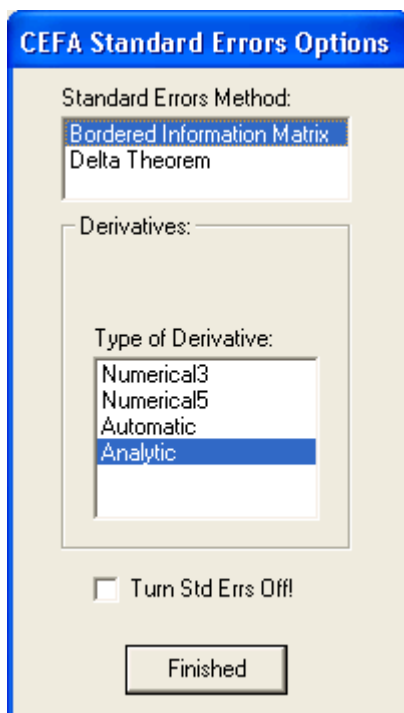


Select general type of rotation under Rotation Info. Note that there are more than two types of rotations here.

Select Function Info which determines the specific type of rotation. Again, there are more than two options here.

Checking on Turn Rotation Off! will display only unrotated solutions.

Step 6: Click on 4: Set Standard Errors Options.



These options allow you to change the method of computing standard errors and the type of derivatives used for their computation.

Checking on Turn Std Errs Off! suppresses information on one-at-a-time standard errors associated with each factor loading.

Step 7: Click on 5: Write CEFA Script File. This step creates a script file which contains all the information for the analysis to be conducted. Name and save the script file which will have the extension .cmd.

Step 8: Click on 6: Run CEFA. You will be prompted for the name of the script file. Once the script file is selected, you will be prompted for a name of the output file which will have extension .out.

Step 9: Click on 8: Open With Notepad. Select the .out file and view the results!

Changing Options for Other Analyses on the Same Data

Skip Step 1 and Step 2. Start from Step 3 and move through to Step 9.