

ML-SEM.annotated.code.pdf. This is a single .pdf file containing annotated code for all conceptual and empirical examples used in the text. It is written to be as independent from the main manuscript as possible. The file describes the following models:

- a. Univariate random-intercepts model in SAS Proc MIXED

The data as well as the script is embedded in the text.

- b. Univariate random-intercepts model in MX I

The data as well as the script is embedded in the text.

- c. Univariate random-intercepts model in MX II

The data as well as the script is embedded in the text.

- d. Bivariate random-intercepts model in SAS Proc MIXED

The data as well as the script is embedded in the text.

- e. Bivariate random-intercepts model in Mx

The data as well as the script is embedded in the text.

- f. ML-CFA Model With Across-Level Measurement Invariance in Mplus

The SAS script for running univariate and multivariate mixed-effects models as well as for producing the corresponding Mplus dataset is in ***PAVT.mlcfa.mixed.sas***. The corresponding SAS dataset is ***pavt_mlcfa.sas7bdat***. This sas script produces a dataset called ***PAVT_mlcfa.dat*** which is used in the Mplus scripts for fitting ML-CFA script. ***PAVT_mlcfa.dat*** contains a header line with variable names. These can be deleted to produce ***PAVT_mlcfa.txt*** file which is used in the Mplus examples.

Separate Mplus scripts for fitting a ML-CFA model with or without constraints is in:

- i. ***PAVT.mlcfa1.mplus.inp***

- ii. ***PAVT.mlcfa2.mplus.inp***

The annotated code in ***ML-SEM.annotated.code.pdf*** describes the second script which from a pedagogical perspective subsumes the first script.

- g. Univariate random-slopes model in Mx

The data as well as the script is embedded in the text.

h. Bivariate random-slopes model in Mplus for real data

The data for this example is in *bpa_m.txt*. The corresponding script is in file: *reads_reade_uc.inp*