**Tests for the app Statsomat/CFA**

**Preliminary information**

Focus on the app about Confirmatory Factor Analysis which you can find here:

https://statsomat.shinyapps.io/confirmatory-factor-analysis/.

This app is in development. Ca. 50% of the planned functionalities are still to be developed. We already need testing cases based on literature. A testing case is made of:

* a testing dataset with measured variables (CSV file)
* a model syntax in lavaan syntax (saved as a TXT)
* details and possibly an interpretation from a book or URL (saved as TXT, PDF etc.)

Please mention the number of variables and the factors in the name of the folder for a case.

**Issues**

1. Understanding: Inspect the CFA app by using the available testing cases (datasets, model syntax and interpretation). Understand the functionality of the app. Understand the output tables of the app. Understand the statistical interpretation delivered by the app. Compare it to the available sources (book or URL).

Take the file lavaan\_cfa\_settings file, the data and the model syntax of the case 1 and execute each block. Compare the results between the blocks. Understand the differences between the outputs. Take a look here and understand the estimators and other settings of the cfa function: https://lavaan.ugent.be/tutorial/est.html

1. Create testing cases for CFA from the book:

<http://sites.bu.edu/tabrown/cfabook/>

(You have the book also as a kindle e-book)

1. Create testing cases for CFA from the book:

<https://www.guilford.com/companion-site/Principles-and-Practice-of-Structural-Equation-Modeling-Fourth-Edition/9781462523344/files>

1. Create other testing cases

* <http://md.psych.bio.uni-goettingen.de/mv/unit/cfa/cfa.html#beispiel-emotionale-intelligenz-als-cfa-mit-librarylavaan>
* Several CFA calls, try all of them:

https://stats.idre.ucla.edu/spss/seminars/introduction-to-factor-analysis/a-practical-introduction-to-factor-analysis-confirmatory-factor-analysis/

* <https://bookdown.org/MathiasHarrer/Doing_Meta_Analysis_in_R/confirmatory-factor-analysis.html>
* Complex, several CFA calls, try all of them: http://faculty.missouri.edu/huangf/data/mcfa/MCFA%20in%20R%20HUANG.pdf

1. Simulate datasets for testing cases (given covariance or correlation matrices plus mean vectors). Simulate the number of observations shown in the book. Try this link:
   1. <https://www.r-bloggers.com/simulating-random-multivariate-correlated-data-continuous-variables/>
2. Test the app by using the Excel sheet. Compare the output of the app with the output from the book and make your comments. Mark with blue/green/yellow/red. Each case should have its own Github issue for discussions – please create the issues if not available.