

# How to run the app in R

**Step 1:** Install R. Mac users also need to install XQuartz. (<https://www.xquartz.org/releases/XQuartz-2.7.7.html>)

**Step 2:** Open R






**Step 3:** Run this code:

```
install.packages("lavaan") #Even if you already installed lavaan, you need to update it.  
install.packages("connet")  
library(connet)  
run_connet()
```

**Step 4:** Wait until application opens. R will first install all packages necessary for the app to launch. Next time you run the app R will not need to install all the packages, so it will start up faster.

**Step 5:** To open the app again in the future, you can just run these two lines:

```
library(connet)  
run_connet()
```

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Choose an SPSS or Excel file

Browse...

No file selected



First you will need to upload your data

Automatically Search for Factors

Manually Select Factors

READ ME

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## Choose an SPSS or Excel file

Browse...

Example Data.sav

Upload complete

Automatically Search for Factors


Manually Select Factors

## Select all items for the measurement model

Nothing selected

Extract Factors

Preview of Proposed Measurement Model



Once the data is uploaded, you can select items from your measurement model.

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## Choose an SPSS or Excel file

Browse...

Example Data.sav

Upload complete

Automatically Search for Factors

Manually Select Factors

## Select all items for the measurement model

Passion1, Passion2, Passion3, NeedForCalling

Select All

Deselect All

ParticipantID

College

StudyDomain

Passion1



Passion2



Passion3



NeedForCalling1



NeedForCalling2



NeedForCalling3



NeedForCalling4



NeedForCalling5



NeedForCalling6



NeedForCalling7



CallingInflex1



CallingInflex2



CallingInflex3



CallingInflex4



Preview of Proposed Measurement Model

You can simply select all the items. The model will be automatically created based on the names of the items.

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## Choose an SPSS or Excel file

Browse...

Example Data.sav

Upload complete

Automatically Search for Factors

Manually Select Factors

## Select all items for the measurement model

Passion1, Passion2, Passion3, NeedForCalling

Extract Factors

## Preview of Proposed Measurement Model

$$\text{Passion} = \sim \text{Passion1} + \text{Passion2} + \text{Passion3}$$
$$\text{NeedForCalling} = \sim \text{NeedForCalling1} + \text{NeedForCalling2} + \text{NeedForCalling3} + \text{NeedForCalling4} + \text{NeedForCalling5} + \text{NeedFor}$$
$$\text{CallingInflex} = \sim \text{CallingInflex1} + \text{CallingInflex2} + \text{CallingInflex3} + \text{CallingInflex4} + \text{CallingInflex5}$$
$$\text{ClarityID} = \sim \text{ClarityID1} + \text{ClarityID2} + \text{ClarityID3} + \text{ClarityID4}$$

Once you have selected your items, you need to click on “Extract Factors”. A preview of the proposed measurement model is displayed in the grey box on the right. This will not yet run the actual CFA, here you only indicate which items belong to which factors.

You can also create factors manually in the “Manually Select Factors” tab.

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Load Data and Select Items

**Descriptive Statistics**

Confirmatory Factor Analysis

About

## Choose an SPSS or Excel file

Browse...

Example Data.sav

Upload complete

Automatically Search for Factors

Manually Select Factors

## Select all items for the measurement model

Passion1, Passion2, Passion3, NeedForCalling

Extract Factors

## Preview of Proposed Measurement Model

 $\text{Passion} = \sim \text{Passion1} + \text{Passion2} + \text{Passion3}$  $\text{NeedForCalling} = \sim \text{NeedForCalling1} + \text{NeedForCalling2} + \text{NeedForCalling3} + \text{NeedForCalling4} + \text{NeedForCalling5} + \text{NeedFor}$  $\text{CallingInflex} = \sim \text{CallingInflex1} + \text{CallingInflex2} + \text{CallingInflex3} + \text{CallingInflex4} + \text{CallingInflex5}$  $\text{ClarityID} = \sim \text{ClarityID1} + \text{ClarityID2} + \text{ClarityID3} + \text{ClarityID4}$ 

If you want, you can already look at some basic descriptive statistics of your items.

READ ME

Load Data and Select Items

Descriptive Statistics

Item Correlations

Item Summary Statistics

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About

Please select the columns you want to display

No, Variable, M, SD, Passion1, Passion2, Passi

Download Correlation Table

Download APA-style Correlation Table

Show 50 entries

Search:

No	Variable	M	SD	Passion1	Passion2	Passion3	NeedForCalling1	NeedForCalling2	NeedForCalling3	NeedForCalling4	NeedForCalling5
1	Passion1	5.59	1.33	1.00	0.74***	0.66***	0.19***	-0.02	0.23***	0.29***	0.22***
2	Passion2	4.84	1.51	0.74***	1.00	0.68***	0.21***	0.02	0.21***	0.30***	0.21***
3	Passion3	4.95	1.49	0.66***	0.68***	1.00	0.20***	0.03	0.21***	0.29***	0.20***
4	NeedForCalling1	5.79	1.35	0.19***	0.21***	0.20***	1.00	0.38***	0.43***	0.45***	0.37***
5	NeedForCalling2	5.04	1.8	-0.02	0.02	0.03	0.38***	1.00	0.38***	0.35***	0.34***
6	NeedForCalling3	6.28	1.15	0.23***	0.21***	0.21***	0.43***	0.38***	1.00	0.58***	0.49***
7	NeedForCalling4	5.97	1.26	0.29***	0.30***	0.29***	0.45***	0.35***	0.58***	1.00	0.58***
8	NeedForCalling5	6.21	1.07	0.22***	0.21***	0.20***	0.37***	0.34***	0.49***	0.58***	1.00
9	NeedForCalling6	5.17	1.68	0.22***	0.22***	0.24***	0.21***	0.21***	0.30***	0.46***	0.37***
10	NeedForCalling7	5.04	1.51	0.22***	0.22***	0.24***	0.21***	0.37***	0.29***	0.40***	0.38***
11	NeedForCalling8	5.04	1.51	-0.06*	0.11***	0.16***	0.11***	-0.09**	-0.07**	-0.03	0.00
12	NeedForCalling9	5.04	1.51	-0.04	0.05	0.11***	0.12***	-0.04	0.05	0.11***	0.12***
13	NeedForCalling10	5.04	1.51	0.06*	0.13***	0.28***	0.19***	0.06*	0.13***	0.28***	0.19***
14	CallingInflex4	3.44	1.93	0.39***	0.45***	0.37***	0.20***	0.06*	0.13***	0.28***	0.19***
15	CallingInflex5	3.86	1.71	0.18***	0.19***	0.14***	0.00	-0.12***	-0.03	0.03	0.03

In the tab “Item Correlations” you can already see Means, SDs, and the Pearson correlations between the items. This table can also be downloaded in an APA-style table.

READ ME

Load Data and Select Items




Descriptive Statistics

Item Correlations

Item Summary Statistics

Confirmatory Factor Analysis

About

No	Variable	Label	Stats / Values	Freqs (% of Valid)	Graph	Missing
1	Passion1 [numeric]	I am passionate about what I am studying	Mean (SD) : 5.59 (1.331)  Min < Med < Max < : 1 < 6 < 7  IQR (CV) : 2 (0.238)	1 : 11 ( 0.8%) 2 : 22 ( 1.7%) 3 : 70 ( 5.4%) 4 : 145 (11.1%) 5 : 291 (22.3%) 6 : 366 (28.1%) 7 : 399 (30.6%)		392 (23.1%)
2	Passion2 [numeric]	I enjoy what I study more than anything else	Mean (SD) : 4.835 (1.513)  Min < Med < Max < : 1 < 5 < 7  IQR (CV) : 2 (0.313)	1 : 30 ( 2.3%) 2 : 75 ( 5.7%) 3 : 155 (11.9%) 4 : 227 (17.4%) 5 : 326 (25.0%) 6 : 317 (24.3%) 7 : 175 (13.4%)		391 (23.1%)
3	Passion3 [numeric]	This line of studies gives me immense personal satisfaction	Mean (SD) : 4.952 (1.488)  Min < Med < Max < : 1 < 5 < 7  IQR (CV) : 2 (0.301)	1 : 22 ( 1.7%) 2 : 73 ( 5.6%) 3 : 125 ( 9.6%) 4 : 237 (18.2%) 5 : 316 (24.3%) 6 : 325 (25.0%) 7 : 203 (15.6%)		395 (23.3%)

In the 'Item Summary Statistics' tab you can find additional information at the item level. This can be helpful in deciding whether you should consider the non-normality of the items.



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About

No	Variable	Label	Stats / Values	Freqs (% of Valid)	Graph	Missing
1	Passion1 [numeric]	I am passionate about what I am	Mean (SD) : 5.59 (1.331) Min < Med < Max < : 0.238)	1 : 11 ( 0.8%) 2 : 22 ( 1.7%) 3 : 70 ( 5.4%) 4 : 145 (11.1%) 5 : 291 (22.3%) 6 : 366 (28.1%) 7 : 399 (30.6%)		392 (23.1%)
2	Passion2 [numeric]	I enjoy what I study more than anything else	Mean (SD) : 4.835 (1.513) Min < Med < Max < : 1 < 5 < 7 IQR (CV) : 2 (0.313)	1 : 30 ( 2.3%) 2 : 75 ( 5.7%) 3 : 155 (11.9%) 4 : 227 (17.4%) 5 : 326 (25.0%) 6 : 317 (24.3%) 7 : 175 (13.4%)		391 (23.1%)
3	Passion3 [numeric]	This line of studies gives me immense personal satisfaction	Mean (SD) : 4.952 (1.488) Min < Med < Max < : 1 < 5 < 7 IQR (CV) : 2 (0.301)	1 : 22 ( 1.7%) 2 : 73 ( 5.6%) 3 : 125 ( 9.6%) 4 : 237 (18.2%) 5 : 316 (24.3%) 6 : 325 (25.0%) 7 : 203 (15.6%)		395 (23.3%)

You can start the CFA by clicking on this tab.

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About

## Select the estimator

ML

Run CFA with these settings

## Is the data clustered?

☒ No ☐ Yes

## Orthogonal

☒ FALSE ☐ TRUE

## Mimic

☒ lavaan ☐ Mplus ☐ EQS

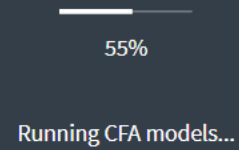
## Which models do you want to include?

- ☒ Proposed Measurement Model
- ☒ All models where two constructs are merged into one
- ☒ Harman's single factor test
- ☐ Proposed model with unmeasured latent methods factor
- ☐ Proposed model with unmeasured latent methods factor with fixed factor loadings

The CFA Specification tab allows you to specify the settings of the models you want to run.

Here you can decide which estimator to use, whether to run a clustered CFA, and which models to include in the table.

Once you have made your decisions, you can click on "Run CFA with these settings".



A loading screen will then appear while the app runs all your models and places them in a table.

This is often done within a few seconds

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About

Please select the columns you want to display

chisq, df, cfi, rmsea, srmr, chisqBydf, Chisq.Di ▼

Download Measurement Table

Show 50 entries

Search:

	chisq	df	cfi	rmsea	srmr	chisqBydf	Chisq.Diff
ProposedModel	1093.708	146	0.918	0.078	0.07	7.491	
Passion_and_NeedForCalling	2564.182	149	0.792	0.123	0.107	17.209	1470.474***
Passion_and_CallingInflex	2110.387	149	0.831	0.111	0.085	14.164	1016.679***
Passion_and_ClarifyID	2754.365	149	0.775	0.128	0.121	18.486	1660.657***
NeedForCalling_and_CallingInflex	2994.58	149	0.754	0.133	0.137	20.098	1900.872***
NeedForCalling_and_ClarifyID	2955.874	149	0.758	0.133	0.137	19.838	1862.166***
CallingInflex_and_ClarifyID	2709.79	149	0.779	0.127	0.116	18.187	1616.082***
Harmans_OneFactor	5903.95	152	0.504	0.188	0.173	38.842	4810.242***

Showing

In this table common indices of the proposed and nested measurement models are reported. All models are also compared to the proposed measurement model (i.e. Chisq.Diff).

For example, “*Passion\_and\_NeedForCalling*” refers to the CFA model in which all items of ‘*Passion*’ and ‘*NeedForCalling*’ are indicators of the same factor. In the table we can see that this did not improve the fit.

You can add more indices using the column selector at the top.

AutoSave 

Off

cfa-table-2021-06-10.xlsx - Excel

Search

File

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This is what the table looks like when you download it.

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Detailed CFA Summary

Syntax Lavaan Models

Reliabilities, AVE, SV and ICC

About

Please select a measurement model

ProposedModel

Download summary output of all models

###

Measurement Model: ProposedModel

###

lavaan 0.6-8 ended normally after 52 iterations

Estimator	ML	
Optimization method	NLMINB	
Number of model parameters	63	
	Used	Total
Number of observations	1073	1696

Model Test User Model:

Test statistic	1093.708
Degrees of freedom	146
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	11759.579
Degrees of freedom	171
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.918
Tucker-Lewis Index (TLI)	0.904

Loglikelihood and Information Criteria:

Here we can look at the detailed CFA output. This is the output you would get if you ran the CFA in R using the lavaan package (Rosseel, 2012). ConMet also uses the lavaan package.

You can choose which measurement model you want to look at.

In this output you can also look at all the factor loadings and correlations between latent factors.

The output can be downloaded in a .txt-file.

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Download all lavaan models

###

Measurement Model:ProposedModel

###

Passion=~Passion1+Passion2+Passion3

NeedForCalling=~NeedForCalling1+NeedForCalling2+NeedForCalling3+NeedForCalling4+NeedForCalling5+NeedForCalling6+NeedForCalling7

CallingInflex=~CallingInflex1+CallingInflex2+CallingInflex3+CallingInflex4+CallingInflex5

ClarityID=~ClarityID1+ClarityID2+ClarityID3+ClarityID4

You can also download the lavaan-model code that was used to create the models. This is helpful if you want to reproduce the results in R.

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Please select a measurement model

ProposedModel

Download Reliability Table

## Reliabilities

	alpha	omega	AVE	SV_Passion	SV_NeedForCalling	SV_CallingInflex	SV_ClarifyID
Passion	0.871	0.874	0.699	1	0.168	0.332	0.171
NeedForCalling	0.788	0.783	0.344	0.168	1	0.051	0.061
CallingInflex	0.787	0.8	0.482	0.332	0.051	1	0.189
ClarityID	0.947	0.949	0.824	0.171	0.061	0.189	1

You can also check the reliabilities (Cronbach's Alpha and McDonald Omega), the Average Variance Extracted (e.g., how much variance of the latent construct does the average item explain) and the Shared Variance between the constructs.

This is helpful if you want to look at other indices of convergent and discriminant validity.



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About

Please select a measurement model

ProposedModel

Download Reliability Table

Download ICC Table

## Reliabilities

	alpha	omega	AVE	SV_Passion	SV_NeedForCalling	SV_CallingInflex	SV_ClarifyID
Passion	0.871	0.874	0.699	1	0.168	0.332	0.171
NeedForCalling	0.788	0.783	0.344	0.168	1	0.051	0.061
CallingInflex	0.787	0.8	0.482	0.332	0.051	1	0.061
ClarityID	0.947	0.949	0.824	0.171	0.061	0.061	1

## Intraclass correlations

	Passion	NeedForCalling	CallingInflex	ClarityID
ICC1	0.106	0.059	0.062	0.091
ICC2	0.825	0.712	0.724	0.799

When the data is clustered, the output also shows the amount of variance explained by group membership (ICC1) and the reliability of the group means (ICC2).