
See http://ddd.uab.cat/record/173917 for the dataset headed with the variable names and Table 1 and Table 2 in the paper for selected output obtained running the first measurement model.

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#Starting R
#Defining the working directory
setwd("C:\workingdirectory")

#Installing packages needed to perform the analyses
#Don't run if already installed!
install.packages("reshape2", dependencies = TRUE)
install.packages("psych", dependencies = TRUE)
install.packages("lavaan", dependencies = TRUE)
install.packages("semTools", dependencies = TRUE)

#Loading packages needed to perform the analyses
#Run at the beginning of every new working session
library(reshape2)
library(psych)
library(lavaan)
library(semTools)

#Case 3: Essentially unidimensional measures
#Reading data
C3<-read.table("Case3.txt", header=TRUE)

#Phase 1
#Response percentages
table(melt(C3))
prop.table(table(melt(C3)),1)*100
#Other univariate statistics
describeBy(C3)
#Pearson correlations
cor(C3)

# Measures with correlated errors
#Phase 2
#Specification, estimation and fit of the measurement model with correlated errors
C3err_corr <- 'Factor1 =~ Y1 + Y2 + Y3 + Y4 + Y5 + Y6
Y4 ~~ Y5
Y4 ~~ Y6
Y5 ~~ Y6'
CFA_C3err_corr <- cfa(C3err_corr, C3, std.lv = TRUE)
summary(CFA_C3err_corr, fit.measures=TRUE)

#Phase 3
#Point estimation of coefficients alpha and omega
reliability(CFA_C3err_corr)
#Interval estimation not included
# Confirmatory bifactor measurement model

# Phase 2
# Specification, estimation and fit of the confirmatory bifactor measurement
# model
C3bi <- 'FactorG =~ Y1 + Y2 + Y3 + Y4 + Y5 + Y6
FactorS =~ Y4 + Y5 + Y6
FactorG ~~ 0*Factors'
CFA_C3bi <- cfa(C3bi, C3)
summary(CFA_C3bi, fit.measures=TRUE, standardized = TRUE)

# Phase 3
# Point estimation of coefficients omega hierarchical and omega total
reliability(CFA_C3bi)
# Interval estimation not included

# Exploratory bifactor measurement model
# Estimation and fit of the exploratory bifactor measurement model
# and point estimation of coefficient omega
omega(C3)
# Interval estimation not included