

R syntax for the estimation of the internal consistency of essentially unidimensional measures according to three compatible measurement models as described in Viladrich, C., Angulo-Brunet, A., & Doval, E. (2017). A journey around alpha and omega to estimate internal consistency reliability. *Annals of Psychology*, 33(3), 755-782. doi: 10.6018/analesps.33.3.268401
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
```