# Successuful Aging

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## Contents



All files used here are availible in a public repository licensed under MIT Licences and accessible by the following url:

https://github.com/crepeia/saging

## Preparing new analysis

## Loading required packages

## Preparing all data

```
#Setting Directory
setwd("~/successful_aging")

#Importing SPSS file .sav
base.dat <- read.spss("Base.sav", to.data.frame = T, use.missings = T)
```

## Selecting only working variables

```
saging <- base.dat[ ,c(3,6:27)]


saging <- base.dat[ ,c(2,4,5,6,7,8,9,3,10:27)]

#As dataframe
saging<-as.data.frame(saging)
```

```r
#As factor

saging[,c(1)]<-as.factor(saging[,c(1)])
saging[,c(2)]<-as.factor(saging[,c(2)])
saging[,c(3)]<-as.factor(saging[,c(3)])
saging[,c(4)]<-as.factor(saging[,c(4)])
saging[,c(5)]<-as.factor(saging[,c(5)])
saging[,c(6)]<-as.factor(saging[,c(6)])
saging[,c(7)]<-as.factor(saging[,c(7)])

saging<-as.data.frame(saging)

#As numeric
for (i in c(7:26)) {
saging[,c(i)]<-as.numeric(saging[,c(i)])
}

#Sabedoria
saging$sabed<- saging$X.3dwscogAFC + saging$X.3dwsrefAFC + saging$X.3dwsafeAFC
```

## Variables Summary - Descriptive Stats

```r
#Status Social Economic - Variables

##Descriptive
describe(saging)
```

```
## saging
##
##  27  Variables      303  Observations
## ---------------------------------------------------------------------------
## sexo
##       n missing  unique
##     303       0       2
##
## 1 (73, 24%), 2 (230, 76%)
## ---------------------------------------------------------------------------
## escol
##       n missing  unique
##     303       0       5
##
##            1   2  3  4  5
## Frequency 66 130 31 38 38
## %         22  43 10 13 13
## ---------------------------------------------------------------------------
## estcivil
##       n missing  unique
##     303       0       5
##
##             1  2  3   4 5
```

```
## Frequency 123 35 26 114 5
## %          41 12  9  38 2
## ------------------------------------------------------------------------
## autosaude
##       n missing  unique
##     303       0       5
##
##            1   2   3 4 5
## Frequency 56 115 118 9 5
## %         18  38  39 3 2
## ------------------------------------------------------------------------
## constab
##       n missing  unique
##     303       0       3
##
## 1 (23, 8%), 2 (75, 25%), 3 (205, 68%)
## ------------------------------------------------------------------------
## consalco
##       n missing  unique
##     303       0       3
##
## 1 (251, 83%), 2 (50, 17%), 3 (2, 1%)
## ------------------------------------------------------------------------
## consfrveg
##       n missing  unique    Info    Mean
##     303       0       4    0.67   1.389
##
## 1 (206, 68%), 2 (77, 25%), 3 (19, 6%), 4 (1, 0%)
## ------------------------------------------------------------------------
## idade
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      32       1   70.79    61.0    62.0    65.0    70.0
##     .75     .90     .95
##    75.0    82.0    85.9
##
## lowest : 60 61 62 63 64, highest: 87 88 89 91 99
## ------------------------------------------------------------------------
## meemtotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      16    0.99   25.93      20      22      24      27
##     .75     .90     .95
##      28      29      30
##
##           14 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
## Frequency  2  1  2  1  5  6 13 15 14 24 34 26 44 55 40 21
## %          1  0  1  0  2  2  4  5  5  8 11  9 15 18 13  7
## ------------------------------------------------------------------------
## voctotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      47       1   22.51     8.1    11.0    15.0    22.0
##     .75     .90     .95
##    29.0    35.8    42.0
##
## lowest :  1  2  4  6  7, highest: 45 46 47 48 50
```

```
## ---------------------------------------------------------------------------
## rmtotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      25    0.99   7.079     1.0     2.2     4.0     6.0
##     .75     .90     .95
##     8.0    15.0    19.0
##
## lowest :  0  1  2  3  4, highest: 20 21 22 23 24
## ---------------------------------------------------------------------------
## esvtotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      24    0.98   29.91      20      23      27      31
##     .75     .90     .95
##      34      35      35
##
## lowest :  6 10 12 13 14, highest: 31 32 33 34 35
## ---------------------------------------------------------------------------
## partidtotal
##       n missing  unique    Info    Mean
##     303       0       6     0.9   1.086
##
##             0   1  2  3 4 5
## Frequency 105 112 50 29 5 2
## %          35  37 17 10 2 1
## ---------------------------------------------------------------------------
## eaertotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      19    0.99   32.24      26      27      29      32
##     .75     .90     .95
##      35      38      39
##
##           19 22 23 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
## Frequency  1  1  2  7  7 17 15 27 40 20 27 17 32 24 15 18 15  5 13
## %          0  0  1  2  2  6  5  9 13  7  9  6 11  8  5  6  5  2  4
## ---------------------------------------------------------------------------
## qsvpresenca
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      23    0.99   29.54      21      23      27      30
##     .75     .90     .95
##      34      35      35
##
## lowest : 10 13 14 16 17, highest: 31 32 33 34 35
## ---------------------------------------------------------------------------
## qsvbusca
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      31       1   22.18     5.0     8.2    14.5    24.0
##     .75     .90     .95
##    30.0    34.0    35.0
##
## lowest :  5  6  7  8  9, highest: 31 32 33 34 35
## ---------------------------------------------------------------------------
## qsvtotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      40       1   51.73    37.1    40.0    45.0    52.0
```

```
##     .75     .90     .95
##    59.0    64.0    67.0
##
## lowest : 24 30 31 34 35, highest: 66 67 68 69 70
## ---------------------------------------------------------------------------
## qpdtotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      11    0.97   3.568       1       1       2       3
##     .75     .90     .95
##       5       6       7
##
##           0  1  2  3  4  5  6  7 8 9 13
## Frequency 5 42 50 58 57 47 19 19 3 2  1
## %         2 14 17 19 19 16  6  6 1 1  0
## ---------------------------------------------------------------------------
## assptotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      12    0.96   17.26      12      13      15      18
##     .75     .90     .95
##      20      20      20
##
##           8 10 11 12 13 14 15 16 17 18 19 20
## Frequency 1  4  8  7 12 16 30 32 20 54 23 96
## %         0  1  3  2  4  5 10 11  7 18  8 32
## ---------------------------------------------------------------------------
## aivdptotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      13    0.58  0.8911     0.0     0.0     0.0     0.0
##     .75     .90     .95
##     0.5     2.8     5.0
##
##             0  1  2 3 4 5 6 7 8 9 11 17 18
## Frequency 227 25 20 6 6 5 3 3 1 3  1  1  2
## %          75  8  7 2 2 2 1 1 0 1  0  0  1
## ---------------------------------------------------------------------------
## gdstotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      13    0.98    3.29       0       1       2       3
##     .75     .90     .95
##       4       6       7
##
##           0  1  2  3  4  5  6 7 8 9 11 13 14
## Frequency 23 40 62 56 47 34 20 8 3 5  2  2  1
## %          8 13 20 18 16 11  7 3 1 2  1  1  0
## ---------------------------------------------------------------------------
## qcspatotal
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      14    0.98   5.624       2       3       4       5
##     .75     .90     .95
##       7       8       9
##
##           0 1  2  3  4  5  6  7  8  9 10 11 12 14
## Frequency 2 2 15 28 56 53 41 49 32 11  7  3  2  2
## %         1 1  5  9 18 17 14 16 11  4  2  1  1  1
```

```
## ---------------------------------------------------------------------------
## X.3dwscogAFC
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      26       1   2.726   1.571   1.857   2.286   2.714
##     .75     .90     .95
##   3.286   3.829   4.000
##
## lowest : 1.000 1.143 1.286 1.571 1.714
## highest: 4.143 4.286 4.429 4.571 4.857
## ---------------------------------------------------------------------------
## X.3dwsafeAFC
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      15    0.98   4.045    2.50    3.00    3.50    4.25
##     .75     .90     .95
##    4.75    5.00    5.00
##
##           1 1.5 2 2.25 2.5 2.75  3 3.25 3.5 3.75  4 4.25 4.5 4.75  5
## Frequency 2   1 9    1   4    8 13   19  32   16 37   48  31   17 65
## %         1   0 3    0   1    3  4    6  11    5 12   16  10    6 21
## ---------------------------------------------------------------------------
## X.3dwsrefAFC
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0      24       1   3.162   1.667   2.000   2.500   3.167
##     .75     .90     .95
##   3.833   4.333   4.500
##
## lowest : 1.000 1.167 1.333 1.500 1.667
## highest: 4.167 4.333 4.500 4.667 5.000
## ---------------------------------------------------------------------------
## X.3dwstotalAFC
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0     241       1   3.311   2.240   2.460   2.944   3.365
##     .75     .90     .95
##   3.734   4.065   4.238
##
## lowest : 1.159 1.222 1.333 1.540 1.817
## highest: 4.500 4.508 4.603 4.698 4.841
## ---------------------------------------------------------------------------
## sabed
##       n missing  unique    Info    Mean     .05     .10     .25     .50
##     303       0     242       1   9.933   6.719   7.379   8.833  10.095
##     .75     .90     .95
##  11.202  12.195  12.713
##
## lowest :  3.476  3.667  4.000  4.619  5.452
## highest: 13.500 13.524 13.810 14.095 14.524
## ---------------------------------------------------------------------------
```

```
summary(saging)
```

```
##  sexo    escol   estcivil autosaude constab consalco   consfrveg
##  1: 73   1: 66   1:123    1: 56     1: 23   1:251    Min.   :1.000
##  2:230   2:130   2: 35    2:115     2: 75   2: 50    1st Qu.:1.000
##          3: 31   3: 26    3:118     3:205   3:  2    Median :1.000
```

```
##          4: 38   4:114    4:  9                      Mean   :1.389
##          5: 38   5:  5    5:  5                      3rd Qu.:2.000
##                                                      Max.   :4.000
##      idade         meemtotal        voctotal        rmtotal
##  Min.   :60.00   Min.   :14.00   Min.   : 1.00   Min.   : 0.000
##  1st Qu.:65.00   1st Qu.:24.00   1st Qu.:15.00   1st Qu.: 4.000
##  Median :70.00   Median :27.00   Median :22.00   Median : 6.000
##  Mean   :70.79   Mean   :25.93   Mean   :22.51   Mean   : 7.079
##  3rd Qu.:75.00   3rd Qu.:28.00   3rd Qu.:29.00   3rd Qu.: 8.000
##  Max.   :99.00   Max.   :30.00   Max.   :50.00   Max.   :24.000
##     esvtotal      partidtotal      eaertotal      qsvpresenca
##  Min.   : 6.00   Min.   :0.000   Min.   :19.00   Min.   :10.00
##  1st Qu.:27.00   1st Qu.:0.000   1st Qu.:29.00   1st Qu.:27.00
##  Median :31.00   Median :1.000   Median :32.00   Median :30.00
##  Mean   :29.91   Mean   :1.086   Mean   :32.24   Mean   :29.54
##  3rd Qu.:34.00   3rd Qu.:2.000   3rd Qu.:35.00   3rd Qu.:34.00
##  Max.   :35.00   Max.   :5.000   Max.   :40.00   Max.   :35.00
##     qsvbusca        qsvtotal        qpdtotal        assptotal
##  Min.   : 5.00   Min.   :24.00   Min.   : 0.000   Min.   : 8.00
##  1st Qu.:14.50   1st Qu.:45.00   1st Qu.: 2.000   1st Qu.:15.00
##  Median :24.00   Median :52.00   Median : 3.000   Median :18.00
##  Mean   :22.18   Mean   :51.73   Mean   : 3.568   Mean   :17.26
##  3rd Qu.:30.00   3rd Qu.:59.00   3rd Qu.: 5.000   3rd Qu.:20.00
##  Max.   :35.00   Max.   :70.00   Max.   :13.000   Max.   :20.00
##    aivdptotal         gdstotal       qcspatotal      X.3dwscogAFC
##  Min.   : 0.0000   Min.   : 0.00   Min.   : 0.000   Min.   :1.000
##  1st Qu.: 0.0000   1st Qu.: 2.00   1st Qu.: 4.000   1st Qu.:2.286
##  Median : 0.0000   Median : 3.00   Median : 5.000   Median :2.714
##  Mean   : 0.8911   Mean   : 3.29   Mean   : 5.624   Mean   :2.726
##  3rd Qu.: 0.5000   3rd Qu.: 4.00   3rd Qu.: 7.000   3rd Qu.:3.286
##  Max.   :18.0000   Max.   :14.00   Max.   :14.000   Max.   :4.857
##   X.3dwsafeAFC    X.3dwsrefAFC   X.3dwstotalAFC      sabed
##  Min.   :1.000   Min.   :1.000   Min.   :1.159   Min.   : 3.476
##  1st Qu.:3.500   1st Qu.:2.500   1st Qu.:2.944   1st Qu.: 8.833
##  Median :4.250   Median :3.167   Median :3.365   Median :10.095
##  Mean   :4.045   Mean   :3.162   Mean   :3.311   Mean   : 9.933
##  3rd Qu.:4.750   3rd Qu.:3.833   3rd Qu.:3.734   3rd Qu.:11.202
##  Max.   :5.000   Max.   :5.000   Max.   :4.841   Max.   :14.524
```

```
#Saging

#Saging - First Model

saging1 <- '

# measurement model
envels =~ esvtotal + autosaude + gdstotal


# regressions
envels ~ voctotal + rmtotal + qsvpresenca + qsvbusca + X.3dwstotalAFC + qcspatotal


#correlations and residuals
```

```
gdstotal ~~ gdstotal
esvtotal ~~ esvtotal
autosaude ~~ autosaude
envels ~~ envels




#Mod Index

'

fitsaging1 <- sem(saging1, estimator="WLSMVS", mimic = "Mplus", data = saging,
        ordered=c("autosaude"))
```

```
## Found more than one class "Model" in cache; using the first, from namespace 'MatrixModels'
```

```
#Model Summary
summary(fitsaging1, standardized=T, fit.measures=T, rsquare=T)
```

```
## lavaan (0.5-20) converged normally after  79 iterations
##
##   Number of observations                           303
##
##   Estimator                                       DWLS      Robust
##   Minimum Function Test Statistic                28.940      35.696
##   Degrees of freedom                                 12          10
##   P-value (Chi-square)                            0.004       0.000
##   Scaling correction factor                                   0.811
##     for the mean and variance adjusted correction (WLSMV)
##
## Model test baseline model:
##
##   Minimum Function Test Statistic               230.281     165.031
##   Degrees of freedom                                 21          15
##   P-value                                         0.000       0.000
##
## User model versus baseline model:
##
##   Comparative Fit Index (CFI)                     0.919       0.829
##   Tucker-Lewis Index (TLI)                        0.858       0.743
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                           0.068       0.092
##   90 Percent Confidence Interval          0.037   0.101       0.057   0.130
##   P-value RMSEA <= 0.05                           0.153       0.025
##
## Weighted Root Mean Square Residual:
##
##   WRMR                                            0.999       0.999
##
```

```
## Parameter Estimates:
##
##   Information                                 Expected
##   Standard Errors                           Robust.sem
##
## Latent Variables:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##   envels =~
##     esvtotal          1.000                               3.255    0.628
##     autosaude        -0.198    0.029   -6.859    0.000   -0.644   -0.610
##     gdstotal         -0.479    0.072   -6.672    0.000   -1.560   -0.704
##
## Regressions:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##   envels ~
##     voctotal         -0.030    0.028   -1.090    0.276   -0.009   -0.092
##     rmtotal           0.065    0.059    1.096    0.273    0.020    0.099
##     qsvpresenca       0.217    0.048    4.489    0.000    0.067    0.322
##     qsvbusca         -0.034    0.027   -1.277    0.201   -0.010   -0.095
##     X.3dwstotalAFC    1.143    0.421    2.717    0.007    0.351    0.218
##     qcspatotal        0.267    0.100    2.662    0.008    0.082    0.184
##
## Intercepts:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     esvtotal         18.960    2.239    8.470    0.000   18.960    3.656
##     autosaude         0.000                               0.000    0.000
##     gdstotal          9.278    1.073    8.649    0.000    9.278    4.188
##     envels            0.000                               0.000    0.000
##
## Thresholds:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     autosaude|t1     -2.315    0.570   -4.062    0.000   -2.315   -2.192
##     autosaude|t2     -1.176    0.563   -2.088    0.037   -1.176   -1.114
##     autosaude|t3      0.454    0.541    0.839    0.401    0.454    0.430
##     autosaude|t4      0.909    0.572    1.588    0.112    0.909    0.861
##
## Variances:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     gdstotal          2.473    0.314    7.888    0.000    2.473    0.504
##     esvtotal         16.306    1.541   10.585    0.000   16.306    0.606
##     autosaude         0.700                               0.700    0.628
##     envels            7.657    1.637    4.679    0.000    0.723    0.723
##
## Scales y*:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     autosaude         1.000                               1.000    1.000
##
## R-Square:
##                   Estimate
##     gdstotal          0.496
##     esvtotal          0.394
##     autosaude         0.372
##     envels            0.277
```

```r
#Model Fit Measures
fitMeasures(fitsaging1, c("chisq","df","rmsea","rmsea.ci.lower", "rmsea.ci.upper", "srmr", "cfi", "tli"
```

```
##          chisq             df          rmsea rmsea.ci.lower rmsea.ci.upper
##         28.940         12.000          0.068          0.037          0.101
##           srmr            cfi            tli            nfi           ecvi
##          1.224          0.919          0.858          0.874             NA
```

```r
#Parameters Estimates
EstPCA2rf <- parameterEstimates(fitsaging1, standardized=T, ci=F)
subset(EstPCA2rf, op == "=~")
```

```
##      lhs op       rhs    est    se      z pvalue std.lv std.all std.nox
## 1 envels =~  esvtotal  1.000 0.000     NA     NA  3.255   0.628   0.628
## 2 envels =~ autosaude -0.198 0.029 -6.859      0 -0.644  -0.610  -0.610
## 3 envels =~  gdstotal -0.479 0.072 -6.672      0 -1.560  -0.704  -0.704
```

```r
#Modification Index
MIPCA2rf<-modindices(fitsaging1)
MIIPCA2rf<- MIPCA2rf[which(MIPCA2rf$mi>10),]
print(MIIPCA2rf)
```

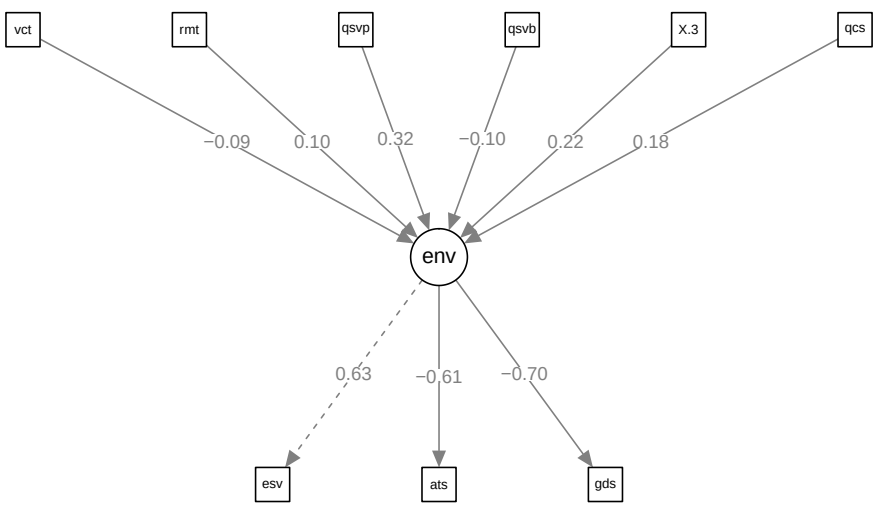
```
## [1] lhs       op        rhs       mi        mi.scaled epc       sepc.lv
## [8] sepc.all  sepc.nox
## <0 rows> (or 0-length row.names)
```

```r
#Model Plot
semPaths(fitsaging1, what="path", whatLabels ="std", edge.label.cex = 0.7, exoVar = F, exoCov = T, layou

#Define Title
title(main = "Figure 1. Structural Equation Model For Successful Aging", line = 1)

#Define Subtitle
title(sub = expression("Fit measures:" ~ chi^2~(31)==272,039 ~", p<0.001, n=303; CFI=0.360; TLI=0.401; R
```

## Figure 1. Structural Equation Model For Successful Aging




```
moreFitIndices(fitsaging1, fit.measures = "all", nPrior = 303)
```

```
##       gammaHat    adjGammaHat baseline.rmsea
##      0.9639532      0.9819766      0.1813568
```

```
#Saging

#Saging - First Model

saging1 <- '

# measurement model
envels =~ esvtotal + autosaude + gdstotal


# regressions
envels ~ voctotal + rmtotal + qsvbusca + qsvpresenca + X.3dwstotalAFC + qcspatotal


#correlations and residuals

gdstotal ~~ gdstotal
esvtotal ~~ esvtotal
autosaude ~~ autosaude
envels ~~ envels
```

```r
#Mod Index

'

fitsaging1 <- sem(saging1, estimator="WLSMVS", mimic = "Mplus", data = saging,
        ordered=c("autosaude"))

#Model Summary
summary(fitsaging1, standardized=T, fit.measures=T, rsquare=T)
```

```
## lavaan (0.5-20) converged normally after  79 iterations
##
##   Number of observations                           303
##
##   Estimator                                       DWLS      Robust
##   Minimum Function Test Statistic               28.940      35.696
##   Degrees of freedom                               12          10
##   P-value (Chi-square)                          0.004       0.000
##   Scaling correction factor                                 0.811
##     for the mean and variance adjusted correction (WLSMV)
##
## Model test baseline model:
##
##   Minimum Function Test Statistic              230.281     165.031
##   Degrees of freedom                               21          15
##   P-value                                       0.000       0.000
##
## User model versus baseline model:
##
##   Comparative Fit Index (CFI)                   0.919       0.829
##   Tucker-Lewis Index (TLI)                      0.858       0.743
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                         0.068       0.092
##   90 Percent Confidence Interval          0.037 0.101       0.057 0.130
##   P-value RMSEA <= 0.05                         0.153       0.025
##
## Weighted Root Mean Square Residual:
##
##   WRMR                                          0.999       0.999
##
## Parameter Estimates:
##
##   Information                                 Expected
##   Standard Errors                           Robust.sem
##
## Latent Variables:
##                   Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##   envels =~
##     esvtotal          1.000                               3.255    0.628
##     autosaude        -0.198    0.029   -6.859    0.000   -0.644   -0.610
##     gdstotal         -0.479    0.072   -6.672    0.000   -1.560   -0.704
```

```
##
## Regressions:
##                    Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##   envels ~
##     voctotal         -0.030    0.028   -1.090    0.276   -0.009   -0.092
##     rmtotal           0.065    0.059    1.096    0.273    0.020    0.099
##     qsvbusca         -0.034    0.027   -1.277    0.201   -0.010   -0.095
##     qsvpresenca       0.217    0.048    4.489    0.000    0.067    0.322
##     X.3dwstotalAFC    1.143    0.421    2.717    0.007    0.351    0.218
##     qcspatotal        0.267    0.100    2.662    0.008    0.082    0.184
##
## Intercepts:
##                    Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     esvtotal         18.960    2.239    8.470    0.000   18.960    3.656
##     autosaude         0.000                              0.000    0.000
##     gdstotal          9.278    1.073    8.649    0.000    9.278    4.188
##     envels            0.000                              0.000    0.000
##
## Thresholds:
##                    Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     autosaude|t1     -2.315    0.570   -4.062    0.000   -2.315   -2.192
##     autosaude|t2     -1.176    0.563   -2.088    0.037   -1.176   -1.114
##     autosaude|t3      0.454    0.541    0.839    0.401    0.454    0.430
##     autosaude|t4      0.909    0.572    1.588    0.112    0.909    0.861
##
## Variances:
##                    Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     gdstotal          2.473    0.314    7.888    0.000    2.473    0.504
##     esvtotal         16.306    1.541   10.585    0.000   16.306    0.606
##     autosaude         0.700                              0.700    0.628
##     envels            7.657    1.637    4.679    0.000    0.723    0.723
##
## Scales y*:
##                    Estimate  Std.Err  Z-value  P(>|z|)   Std.lv  Std.all
##     autosaude         1.000                              1.000    1.000
##
## R-Square:
##                    Estimate
##     gdstotal          0.496
##     esvtotal          0.394
##     autosaude         0.372
##     envels            0.277
```

```
#Model Fit Measures
fitMeasures(fitsaging1, c("chisq","df","rmsea","rmsea.ci.lower", "rmsea.ci.upper", "srmr", "cfi", "tli"
```

```
##          chisq             df          rmsea rmsea.ci.lower rmsea.ci.upper
##         28.940         12.000          0.068          0.037          0.101
##           srmr            cfi            tli            nfi           ecvi
##          1.224          0.919          0.858          0.874             NA
```

```
moreFitIndices(fitsaging1, fit.measures = "all", nPrior = 303)
```

```
##       gammaHat    adjGammaHat baseline.rmsea
```

```
##       0.9639532       0.9819766       0.1813568
```

```
#Parameters Estimates
EstPCA2rf <- parameterEstimates(fitsaging1, standardized=T, ci=F)
subset(EstPCA2rf, op == "=~")
```

```
##      lhs op       rhs    est    se      z pvalue std.lv std.all std.nox
## 1 envels =~  esvtotal  1.000 0.000     NA     NA  3.255   0.628   0.628
## 2 envels =~ autosaude -0.198 0.029 -6.859      0 -0.644  -0.610  -0.610
## 3 envels =~  gdstotal -0.479 0.072 -6.672      0 -1.560  -0.704  -0.704
```

```
#Modification Index
MIPCA2rf<-modindices(fitsaging1)
MIIPCA2rf<- MIPCA2rf[which(MIPCA2rf$mi>10),]
print(MIIPCA2rf)
```

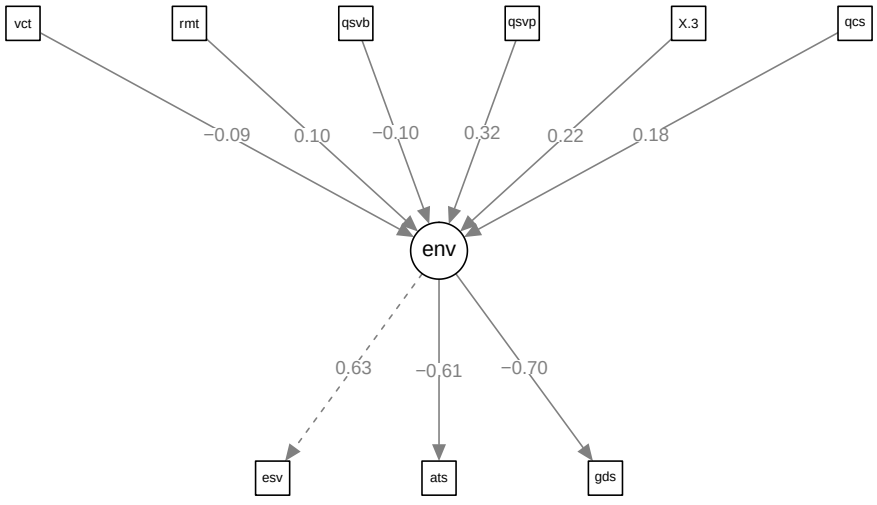
```
## [1] lhs       op        rhs       mi        mi.scaled epc       sepc.lv
## [8] sepc.all  sepc.nox
## <0 rows> (or 0-length row.names)
```

```
#Model Plot
semPaths(fitsaging1, what="path", whatLabels ="std", edge.label.cex = 0.7, exoVar = F, exoCov = T, layou

#Define Title
title(main = "Figure 1. Structural Equation Model For Successful Aging", line = 1)

#Define Subtitle
title(sub = expression("Fit measures: n=303; CFI=0.919; TLI=0.858; NFI=0.874; RMSEA=0.068; 90%CI(0.037-0
```

## Figure 1. Structural Equation Model For Successful Aging




Fit measures: n=303; CFI=0.919; TLI=0.858; NFI=0.874; RMSEA=0.068; 90%CI(0.037−0.057) $\chi^2$ (31) = 272.039

```r
sagingcorr <- saging[ ,c("esvtotal", "autosaude", "gdstotal", "voctotal", "rmtotal", "qsvbusca", "qsvpr

sagingcorr[,c("autosaude")]<-as.numeric(sagingcorr[,c("autosaude")])
tcor<-corr.test(sagingcorr)

r<-tcor$r
r <- txtRound(r, 2)
htmlTable(r)
```

esvtotal

autosaude

gdstotal

voctotal

rmtotal

qsvbusca

qsvpresenca

X.3dwstotalAFC

qcspatotal

esvtotal

1.00

-0.33

-0.37

-0.06

-0.02

-0.04

0.30

0.11

0.01

autosaude

-0.33

1.00

0.40

-0.16

-0.21

0.18

-0.10

-0.25

-0.17

gdstotal

-0.37

0.40

1.00

-0.13

-0.11

0.19

-0.29

-0.29

-0.29

voctotal

-0.06

-0.16

-0.13

1.00

0.50

-0.22

0.06

0.38

0.26

rmtotal

-0.02

-0.21

-0.11

0.50

1.00

-0.10

-0.02

0.29

0.22

qsvbusca

-0.04

0.18

0.19

-0.22

-0.10

1.00

-0.23

-0.29

-0.04

qsvpresenca

0.30

-0.10

-0.29

0.06

-0.02

-0.23

1.00

0.22

0.06

X.3dwstotalAFC

0.11

-0.25

-0.29

0.38

0.29

-0.29

0.22

1.00

0.23

qcspatotal

0.01

-0.17

-0.29

0.26

0.22

-0.04

0.06

0.23

1.00

```
p<-tcor$p
p <- txtRound(p, 2)
htmlTable(p)
```

esvtotal

autosaude

gdstotal

voctotal

rmtotal

qsvbusca

qsvpresenca

X.3dwstotalAFC

qcspatotal

esvtotal

0.00

0.00

0.00

1.00

1.00

1.00

0.00

0.78

1.00

autosaude

0.00

0.00

0.00

0.06

0.00

0.03

0.78

0.00

0.06

gdstotal

0.00

0.00

0.00

0.29

0.78

0.02

0.00

0.00

0.00

voctotal

0.31

0.00

0.02

0.00

0.00

0.00

1.00

0.00

0.00

rmtotal

0.77

0.00

0.07

0.00

0.00

0.78

1.00

0.00

0.00

qsvbusca

0.45

0.00

0.00

0.00

0.07

0.00

0.00

0.00

0.00

1.00

qsvpresenca

0.00

0.07

0.00

0.26

0.73

0.00

0.00

0.00

1.00

X.3dwstotalAFC

0.07

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

qcspatotal

0.93

0.00

0.00

0.00

0.00

0.00

0.50

0.30

0.00

0.00

```
q <- txtRound(EstPCA2rf, 2)
htmlTable(q)
```

lhs

op

rhs

est

se

z

pvalue

std.lv

std.all

std.nox

1

envels

=~

esvtotal

1.00

0.00

3.25

0.63

0.63

2

envels

=~

autosaude

-0.20

0.03

-6.86

0.00

-0.64

-0.61

-0.61

3

envels

=~

gdstotal

-0.48

0.07

-6.67

0.00

-1.56

-0.70

-0.70

4

envels

~

voctotal

-0.03

0.03

-1.09

0.28

-0.01

-0.09

-0.01

5

envels

~

rmtotal

0.06

0.06

1.10

0.27

0.02

0.10

0.02

6

envels

~

qsvbusca

-0.03

0.03

-1.28

0.20

-0.01

-0.10

-0.01

7

envels

~

qsvpresenca

0.22

0.05

4.49

0.00

0.07

0.32

0.07

8

envels

~

0.30

1.14

0.42

2.72

0.01

0.35

0.22

0.35

9

envels

~

qcspatotal

0.27

0.10

2.66

0.01

0.08

0.18

0.08

10

gdstotal

~~

gdstotal

2.47

0.31

7.89

0.00

2.47

0.50

0.50

11

esvtotal

~~

esvtotal

16.31

1.54

10.58

0.00

16.31

0.61

0.61

12

autosaude

~~

autosaude

0.70

0.00

0.70

0.63

0.63

13

envels

~~

envels

7.66

1.64

4.68

0.00

0.72

0.72

0.72

14

autosaude

|
1.00
-2.31
0.57
-4.06
0.00
-2.31
-2.19
-2.19
15
autosaude
|
2.00
-1.18
0.56
-2.09
0.04
-1.18
-1.11
-1.11
16
autosaude
|
3.00
0.45
0.54
0.84
0.40
0.45
0.43
0.43
17
autosaude
|
4.00
0.91

0.57

1.59

0.11

0.91

0.86

0.86

18

autosaude

~*~

autosaude

1.00

0.00

1.00

1.00

1.00

19

esvtotal

1.00

18.96

2.24

8.47

0.00

18.96

3.66

3.66

20

autosaude

1.00

0.00

0.00

0.00

0.00

0.00

21

gdstotal

1.00

9.28

1.07

8.65

0.00

9.28

4.19

4.19

22

envels

1.00

0.00

0.00

0.00

0.00

0.00