R version 3.3.2 (2016-10-31) -- "Sincere Pumpkin Patch"

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Platform: x86\_64-apple-darwin13.4.0 (64-bit)

R es un software libre y viene sin GARANTIA ALGUNA.

Usted puede redistribuirlo bajo ciertas circunstancias.

Escriba 'license()' o 'licence()' para detalles de distribucion.

R es un proyecto colaborativo con muchos contribuyentes.

Escriba 'contributors()' para obtener m'as informaci'on y

'citation()' para saber c'omo citar R o paquetes de R en publicaciones.

Escriba 'demo()' para demostraciones, 'help()' para el sistema on-line de ayuda,

o 'help.start()' para abrir el sistema de ayuda HTML con su navegador.

Escriba 'q()' para salir de R.

Durante la inicializaci'on - Warning messages:

1: Setting LC\_CTYPE failed, using "C"

2: Setting LC\_COLLATE failed, using "C"

3: Setting LC\_TIME failed, using "C"

4: Setting LC\_MESSAGES failed, using "C"

5: Setting LC\_MONETARY failed, using "C"

[Workspace loaded from ~/.RData]

> library(haven)

> Caso\_SEM\_evaluacion\_1\_ <- read\_sav("~/Downloads/Caso\_SEM\_evaluacion\_1\_, ")

> View(Caso\_SEM\_evaluacion\_1\_)

>

> library(lavaan)

This is lavaan 0.5-22

lavaan is BETA software! Please report any bugs.

> library(semPlot)

> library(semTools)

###############################################################################

This is semTools 0.4-14

All users of R (or SEM) are invited to submit functions or ideas for functions.

###############################################################################

>

> #modelosemevaluciónmodeloCFA

>

> modelo\_cfaevalucion<- '

+

+ #varianzas de errores

+

+ JS1~~JS1

+ JS2~~JS2

+ JS3~~JS3

+ JS4~~JS4

+ JS5~~JS5

+

+ OC1~~OC1

+ OC2~~OC2

+ OC3~~OC3

+ OC4~~OC4

+

+ SI1~~SI1

+ SI2~~SI2

+ SI3~~SI3

+ SI4~~SI4

+

+ EP1~~EP1

+ EP2~~EP2

+ EP3~~EP3

+ EP4~~EP4

+

+ AC1~~AC1

+ AC2~~AC2

+ AC3~~AC3

+ AC4~~AC4

+

+ #COMO ANALIZAR LAS CARGAS O REGRESIONES

+

+ js=~JS1+JS2+JS3+JS4+JS5

+ oc=~OC1+OC2+OC3+OC4

+ si=~SI1+SI2+SI3+SI4

+ ep=~EP1+EP2+EP3+EP4

+ ac=~AC1+AC2+AC3+AC4

+

+ #VARIANZA DE LOS FACTORES

+

+ js~~js

+ oc~~oc

+ si~~si

+ ep~~ep

+ ac~~ac

+

+ #COVARIANZAS

+

+ js~~oc

+ js~~si

+ js~~ep

+ js~~ac

+ oc~~si

+ oc~~ep

+ oc~~ac

+ si~~ep

+ si~~ac

+ ep~~ac

+

+

+ '

>

> #estimación del modelo

>

> fit<-lavaan(modelo\_cfaevalucion,data=Caso\_SEM\_evaluacion\_1\_, std.lv = TRUE, mimic = "eqs", estimator = "ml", verbose = TRUE, warn = TRUE)

Quasi-Newton steps using NLMINB:

Objective function = 1.7851100530155506

Objective function = 1.4714740642799597

Objective function = 1.0361909236802376

Objective function = 1.0638063852119899

Objective function = 0.9241601612076735

Objective function = 0.7592459609606337

Objective function = 0.6481957587103402

Objective function = 0.5919458816234311

Objective function = 0.5623792592204957

Objective function = 0.5599844868117501

Objective function = 0.5454556905910266

Objective function = 0.5474812582326081

Objective function = 0.5418538988327235

Objective function = 0.5401976801778403

Objective function = 0.5384605227509631

Objective function = 0.5368710483237216

Objective function = 0.5355456911834153

Objective function = 0.5318659236200354

Objective function = 0.5213683592954901

Objective function = 0.5019939568599234

Objective function = 0.4811335042353875

Objective function = 0.4221050244570073

Objective function = 0.3678027289341550

Objective function = 0.3391984414817664

Objective function = 0.3161169313275209

Objective function = 0.3058440056146488

Objective function = 0.2989814161427020

Objective function = 0.2938150097311372

Objective function = 0.2912586260417953

Objective function = 0.2900624641277396

Objective function = 0.2894906829414161

Objective function = 0.2893355841633536

Objective function = 0.2892971876555670

Objective function = 0.2892853414049767

Objective function = 0.2892828964465863

Objective function = 0.2892818985036314

Objective function = 0.2892815120447487

Objective function = 0.2892814629591385

Objective function = 0.2892814518097389

Objective function = 0.2892814496236404

Objective function = 0.2892814488349806

Objective function = 0.2892814487126074

Objective function = 0.2892814486125985

Objective function = 0.2892814485675430

Objective function = 0.2892814485531154

Objective function = 0.2892814485531154

convergence status (0=ok): 0

nlminb message says: relative convergence (4)

number of iterations: 40

number of function evaluations [objective, gradient]: 45 41

Computing VCOV for se = standard ... done.

Computing TEST for test = standard ... done.

>

> #peticion de elementos en la salida

>

> summary(fit, fit.measures=TRUE,standardized=TRUE, rsquare=TRUE)

lavaan (0.5-22) converged normally after 40 iterations

Used Total

Number of observations 398 400

Estimator ML

Minimum Function Test Statistic 229.689

Degrees of freedom 179

P-value (Chi-square) 0.006

Model test baseline model:

Minimum Function Test Statistic 4439.239

Degrees of freedom 210

P-value 0.000

User model versus baseline model:

Comparative Fit Index (CFI) 0.988

Tucker-Lewis Index (TLI) 0.986

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) NA

Loglikelihood unrestricted model (H1) NA

Number of free parameters 52

Akaike (AIC) NA

Bayesian (BIC) NA

Root Mean Square Error of Approximation:

RMSEA 0.027

90 Percent Confidence Interval 0.015 0.036

P-value RMSEA <= 0.05 1.000

Standardized Root Mean Square Residual:

SRMR 0.035

Parameter Estimates:

Information Expected

Standard Errors Standard

Latent Variables:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

js =~

JS1 0.996 0.062 16.098 0.000 0.996 0.743

JS2 1.027 0.063 16.243 0.000 1.027 0.748

JS3 0.896 0.063 14.307 0.000 0.896 0.680

JS4 0.905 0.060 14.999 0.000 0.905 0.705

JS5 15.143 0.952 15.909 0.000 15.143 0.736

oc =~

OC1 1.471 0.122 12.055 0.000 1.471 0.582

OC2 1.940 0.092 21.189 0.000 1.940 0.888

OC3 1.157 0.082 14.060 0.000 1.157 0.658

OC4 1.727 0.088 19.525 0.000 1.727 0.840

si =~

SI1 0.708 0.037 18.978 0.000 0.708 0.811

SI2 0.760 0.036 20.893 0.000 0.760 0.864

SI3 0.754 0.045 16.648 0.000 0.754 0.741

SI4 0.827 0.040 20.457 0.000 0.827 0.852

ep =~

EP1 1.281 0.085 15.108 0.000 1.281 0.699

EP2 1.326 0.071 18.648 0.000 1.326 0.813

EP3 1.032 0.059 17.563 0.000 1.032 0.779

EP4 1.149 0.061 18.984 0.000 1.149 0.823

ac =~

AC1 1.145 0.060 19.226 0.000 1.145 0.821

AC2 1.418 0.074 19.178 0.000 1.418 0.820

AC3 1.187 0.060 19.761 0.000 1.187 0.837

AC4 1.311 0.069 18.980 0.000 1.311 0.814

Covariances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

js ~~

oc 0.209 0.056 3.730 0.000 0.209 0.209

si 0.230 0.055 4.186 0.000 0.230 0.230

ep 0.241 0.056 4.320 0.000 0.241 0.241

ac 0.050 0.058 0.863 0.388 0.050 0.050

oc ~~

si 0.552 0.041 13.349 0.000 0.552 0.552

ep 0.495 0.045 10.926 0.000 0.495 0.495

ac 0.305 0.052 5.877 0.000 0.305 0.305

si ~~

ep 0.562 0.041 13.610 0.000 0.562 0.562

ac 0.308 0.051 6.002 0.000 0.308 0.308

ep ~~

ac 0.253 0.054 4.692 0.000 0.253 0.253

Variances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.JS1 0.805 0.074 10.906 0.000 0.805 0.448

.JS2 0.830 0.077 10.808 0.000 0.830 0.441

.JS3 0.935 0.079 11.887 0.000 0.935 0.538

.JS4 0.830 0.072 11.552 0.000 0.830 0.503

.JS5 193.449 17.541 11.029 0.000 193.449 0.458

.OC1 4.223 0.321 13.153 0.000 4.223 0.661

.OC2 1.009 0.147 6.849 0.000 1.009 0.211

.OC3 1.750 0.138 12.671 0.000 1.750 0.566

.OC4 1.248 0.137 9.095 0.000 1.248 0.295

.SI1 0.260 0.023 11.087 0.000 0.260 0.342

.SI2 0.196 0.021 9.451 0.000 0.196 0.253

.SI3 0.467 0.038 12.220 0.000 0.467 0.451

.SI4 0.257 0.026 9.898 0.000 0.257 0.273

.EP1 1.722 0.142 12.147 0.000 1.722 0.512

.EP2 0.903 0.090 10.033 0.000 0.903 0.339

.EP3 0.688 0.063 10.885 0.000 0.688 0.392

.EP4 0.630 0.065 9.722 0.000 0.630 0.323

.AC1 0.632 0.060 10.527 0.000 0.632 0.325

.AC2 0.979 0.093 10.564 0.000 0.979 0.328

.AC3 0.604 0.060 10.075 0.000 0.604 0.300

.AC4 0.873 0.082 10.713 0.000 0.873 0.337

js 1.000 1.000 1.000

oc 1.000 1.000 1.000

si 1.000 1.000 1.000

ep 1.000 1.000 1.000

ac 1.000 1.000 1.000

R-Square:

Estimate

JS1 0.552

JS2 0.559

JS3 0.462

JS4 0.497

JS5 0.542

OC1 0.339

OC2 0.789

OC3 0.434

OC4 0.705

SI1 0.658

SI2 0.747

SI3 0.549

SI4 0.727

EP1 0.488

EP2 0.661

EP3 0.608

EP4 0.677

AC1 0.675

AC2 0.672

AC3 0.700

AC4 0.663

> resid(fit,type="standardized")

$type

[1] "standardized"

$cov

JS1 JS2 JS3 JS4 JS5 OC1 OC2 OC3 OC4 SI1 SI2 SI3 SI4

JS1 NA

JS2 0.117 NA

JS3 0.498 -0.632 NA

JS4 -0.784 -0.186 1.371 NA

JS5 0.438 0.602 -1.639 -0.209 NA

OC1 -0.620 -0.858 -0.179 -0.613 -0.209 NA

OC2 0.227 -1.612 0.175 -0.842 1.421 0.507 NA

OC3 1.357 0.193 -0.220 0.779 1.036 2.098 -5.410 NA

OC4 0.907 -1.203 -0.176 -0.826 1.366 -0.144 NA 0.879 NA

SI1 -0.705 -0.461 0.595 -0.344 1.154 -2.189 1.354 -2.049 0.128 NA

SI2 -1.008 -0.690 -0.856 -1.461 0.710 -2.619 2.158 -1.036 -0.582 2.396 NA

SI3 -2.121 -0.608 1.114 0.654 0.073 -2.742 -0.046 -1.872 -1.325 -1.706 -1.853 NA

SI4 -0.121 0.121 1.259 0.855 1.941 -2.906 1.743 -1.482 0.787 NA NA 2.327 NA

EP1 -1.573 1.062 0.784 -0.126 0.982 -2.236 -1.755 0.184 -0.395 0.721 1.037 1.111 1.355

EP2 -0.666 0.633 -0.345 -0.638 -0.016 -0.107 0.812 2.780 1.376 -0.770 -0.142 0.310 2.281

EP3 -0.843 0.497 0.530 -0.414 1.695 -2.848 -0.065 1.855 -0.900 -2.193 -2.143 -0.803 -0.378

EP4 -1.595 0.423 0.387 -0.427 0.234 -0.214 -1.287 2.729 -0.547 0.757 -1.319 0.566 -0.096

AC1 0.347 -0.978 0.404 0.504 2.089 -2.304 1.355 -0.747 -1.940 0.765 -0.649 0.403 -0.484

AC2 -0.722 -1.291 -0.442 -0.394 1.244 -1.085 -0.526 -1.959 -1.301 -0.300 -0.941 -0.642 -0.373

AC3 -1.388 -1.680 -0.979 0.500 0.416 -1.443 1.534 -1.183 -0.174 -0.109 -0.433 0.242 0.858

AC4 -0.221 -0.633 1.043 0.619 2.196 -0.459 2.182 0.003 1.231 0.108 0.265 0.226 1.264

EP1 EP2 EP3 EP4 AC1 AC2 AC3 AC4

JS1

JS2

JS3

JS4

JS5

OC1

OC2

OC3

OC4

SI1

SI2

SI3

SI4

EP1 NA

EP2 1.648 NA

EP3 -2.034 -0.745 NA

EP4 -0.624 NA 2.299 NA

AC1 -0.053 0.213 0.514 -1.100 NA

AC2 0.437 0.280 -1.092 -0.391 -0.155 NA

AC3 0.320 -0.165 -0.637 -1.633 0.329 0.391 NA

AC4 0.334 1.895 0.515 1.038 0.008 0.203 -1.027 NA

$mean

JS1 JS2 JS3 JS4 JS5 OC1 OC2 OC3 OC4 SI1 SI2 SI3 SI4 EP1 EP2 EP3 EP4 AC1 AC2 AC3 AC4

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

>

> #Generacion del grafico

> semPaths(fit,what = "paths", style = "lisrel", layout = "tree")

+ OC1~~OC1

+ OC2~~OC2

+ OC3~~OC3

+ OC4~~OC4

+

+ SI1~~SI1

+ SI2~~SI2

+ SI3~~SI3

+ SI4~~SI4

+

+ EP1~~EP1

+ EP2~~EP2

+ EP3~~EP3

+ EP4~~EP4

+

+ AC1~~AC1

+ AC2~~AC2

+ AC3~~AC3

+ AC4~~AC4

+

+ #COMO ANALIZAR LAS CARGAS O REGRESIONES

+

+ js=~1\*JS1+JS2+JS3+JS4+JS5

+ oc=~1\*OC1+OC2+OC3+OC4

+ si=~1\*SI1+SI2+SI3+SI4

+ ep=~1\*EP1+EP2+EP3+EP4

+ ac=~1\*AC1+AC2+AC3+AC4

+

+ # ecuación modelo estructural

+ si~js+oc

+ oc~ep+ac+js

+ js~ep+ac

+

+ #VARIANZA DE LOS FACTORES

+

+ js~~js

+ oc~~oc

+ si~~si

+ ep~~ep

+ ac~~ac

+

+ #COVARIANZAS

+

+ js~~oc

+ js~~si

+ js~~ep

+ js~~ac

+ oc~~si

+ oc~~ep

+ oc~~ac

+ si~~ep

+ si~~ac

+ ep~~ac

+

+

+ '

>

> #estimación del modelo

>

> fit<-lavaan(modelo\_cfaevalucion,data=Caso\_SEM\_evaluacion\_1\_, std.lv = FALSE, mimic = "eqs", estimator = "ml", verbose = TRUE, warn = TRUE)

Quasi-Newton steps using NLMINB:

Objective function = 6.5595502354855597

Objective function = 3.3527273596254723

Objective function = 2.1360203212778011

Objective function = 1.0253627141437924

Objective function = Inf

Objective function = 0.9294300905128807

Objective function = 0.7817549703315052

Objective function = 0.8514088851782979

Objective function = 0.5792671882238487

Objective function = 0.5555180290551398

Objective function = 0.4786528996481962

Objective function = 0.5275511290351709

Objective function = 0.3854288172812517

Objective function = 0.3328365054781344

Objective function = 0.3291546520579907

Objective function = 0.3125372567562579

Objective function = 0.3062874421010271

Objective function = 0.3069621381367966

Objective function = 0.3008128090953264

Objective function = 0.2990872902901813

Objective function = 0.2983975124356064

Objective function = 0.2972038191531006

Objective function = 0.2964835234099006

Objective function = 0.2955788086462867

Objective function = 0.2942228149786530

Objective function = 0.2932763197175419

Objective function = 0.2914524470616868

Objective function = 0.2906113948338955

Objective function = 0.2902732194559476

Objective function = 0.2900431166145054

Objective function = 0.2897061287542684

Objective function = 0.2894888379077436

Objective function = 0.2893766548762180

Objective function = 0.2893421674361321

Objective function = 0.2893300446797653

Objective function = 0.2893223031502181

Objective function = 0.2893162287338917

Objective function = 0.2893070681551393

Objective function = 0.2892988964005596

Objective function = 0.2892879028593534

Objective function = 0.2892836233658862

Objective function = 0.2892818848100696

Objective function = 0.2892815890180955

Objective function = 0.2892815256398613

Objective function = 0.2892814892309374

Objective function = 0.2892814710526714

Objective function = 0.2892814600413267

Objective function = 0.2892814538130750

Objective function = 0.2892814501092715

Objective function = 0.2892814490278930

Objective function = 0.2892814486995015

Objective function = 0.2892814485818072

Objective function = 0.2892814485548598

Objective function = 0.2892814485548598

convergence status (0=ok): 0

nlminb message says: relative convergence (4)

number of iterations: 47

number of function evaluations [objective, gradient]: 53 48

Computing VCOV for se = standard ... done.

Computing TEST for test = standard ... done.

Warning message:

In lav\_model\_vcov(lavmodel = lavmodel, lavsamplestats = lavsamplestats, :

lavaan WARNING: could not compute standard errors!

lavaan NOTE: this may be a symptom that the model is not identified.

>

> #peticion de elementos en la salida

>

> summary(fit, fit.measures=TRUE,standardized=TRUE, rsquare=TRUE)

lavaan (0.5-22) converged normally after 47 iterations

Used Total

Number of observations 398 400

Estimator ML

Minimum Function Test Statistic 229.689

Degrees of freedom 172

P-value (Chi-square) 0.002

Model test baseline model:

Minimum Function Test Statistic 4439.239

Degrees of freedom 210

P-value 0.000

User model versus baseline model:

Comparative Fit Index (CFI) 0.986

Tucker-Lewis Index (TLI) 0.983

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) NA

Loglikelihood unrestricted model (H1) NA

Number of free parameters 59

Akaike (AIC) NA

Bayesian (BIC) NA

Root Mean Square Error of Approximation:

RMSEA 0.029

90 Percent Confidence Interval 0.018 0.038

P-value RMSEA <= 0.05 1.000

Standardized Root Mean Square Residual:

SRMR 0.035

Parameter Estimates:

Information Expected

Standard Errors Standard

Latent Variables:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

js =~

JS1 1.000 0.996 0.743

JS2 1.031 NA 1.027 0.748

JS3 0.900 NA 0.896 0.680

JS4 0.908 NA 0.905 0.705

JS5 15.205 NA 15.143 0.736

oc =~

OC1 1.000 1.471 0.582

OC2 1.319 NA 1.940 0.888

OC3 0.787 NA 1.157 0.658

OC4 1.174 NA 1.727 0.840

si =~

SI1 1.000 0.708 0.811

SI2 1.073 NA 0.760 0.864

SI3 1.065 NA 0.754 0.741

SI4 1.167 NA 0.827 0.852

ep =~

EP1 1.000 1.281 0.699

EP2 1.035 NA 1.326 0.813

EP3 0.805 NA 1.032 0.779

EP4 0.897 NA 1.149 0.823

ac =~

AC1 1.000 1.145 0.821

AC2 1.238 NA 1.418 0.820

AC3 1.036 NA 1.187 0.837

AC4 1.145 NA 1.311 0.814

Regressions:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

si ~

js 0.015 NA 0.021 0.021

oc 0.082 NA 0.171 0.171

oc ~

ep 0.425 NA 0.370 0.370

ac 0.211 NA 0.164 0.164

js 0.114 NA 0.077 0.077

js ~

ep 0.108 NA 0.139 0.139

ac -0.026 NA -0.030 -0.030

Covariances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.js ~~

.oc 0.039 NA 0.032 0.032

.si 0.081 NA 0.129 0.129

ep 0.139 NA 0.112 0.112

ac 0.050 NA 0.045 0.045

.oc ~~

.si 0.153 NA 0.190 0.190

ep 0.122 NA 0.077 0.077

ac 0.074 NA 0.052 0.052

.si ~~

ep 0.428 NA 0.517 0.517

ac 0.207 NA 0.279 0.279

ep ~~

ac 0.371 NA 0.253 0.253

Variances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.JS1 0.805 NA 0.805 0.448

.JS2 0.830 NA 0.830 0.441

.JS3 0.935 NA 0.935 0.538

.JS4 0.830 NA 0.830 0.503

.JS5 193.449 NA 193.449 0.458

.OC1 4.223 NA 4.223 0.661

.OC2 1.009 NA 1.009 0.211

.OC3 1.750 NA 1.750 0.566

.OC4 1.248 NA 1.248 0.295

.SI1 0.260 NA 0.260 0.342

.SI2 0.196 NA 0.196 0.253

.SI3 0.467 NA 0.467 0.451

.SI4 0.257 NA 0.257 0.273

.EP1 1.722 NA 1.722 0.512

.EP2 0.903 NA 0.903 0.339

.EP3 0.688 NA 0.688 0.392

.EP4 0.630 NA 0.630 0.323

.AC1 0.632 NA 0.632 0.325

.AC2 0.979 NA 0.979 0.328

.AC3 0.604 NA 0.604 0.300

.AC4 0.873 NA 0.873 0.337

.js 0.946 NA 0.954 0.954

.oc 1.551 NA 0.716 0.716

.si 0.418 NA 0.833 0.833

ep 1.641 NA 1.000 1.000

ac 1.312 NA 1.000 1.000

R-Square:

Estimate

JS1 0.552

JS2 0.559

JS3 0.462

JS4 0.497

JS5 0.542

OC1 0.339

OC2 0.789

OC3 0.434

OC4 0.705

SI1 0.658

SI2 0.747

SI3 0.549

SI4 0.727

EP1 0.488

EP2 0.661

EP3 0.608

EP4 0.677

AC1 0.675

AC2 0.672

AC3 0.700

AC4 0.663

js 0.046

oc 0.284

si 0.167

> resid(fit,type="standardized")

Error in Delta[[g]] %\*% VarCov :

requires numeric/complex matrix/vector arguments

Adem'as: Warning message:

In lav\_model\_vcov(lavmodel = object@Model, lavdata = object@Data, :

lavaan WARNING: could not compute standard errors!

lavaan NOTE: this may be a symptom that the model is not identified.

>

> #Generacion del grafico

> semPaths(fit,what = "paths", style = "lisrel", layout = "tree")

> library(haven)

> Caso\_SEM\_evaluacion\_1\_ <- read\_sav("~/Downloads/Caso\_SEM\_evaluacion\_1\_, ")

> View(Caso\_SEM\_evaluacion\_1\_)

>

> library(lavaan)

> library(semPlot)

> library(semTools)

>

> #modelosemevaluciónmodeloCFA

>

>

>

> modelo\_cfaevalucion<- '

+

+ #varianzas de errores

+

+ JS1~~JS1

+ JS2~~JS2

+ JS3~~JS3

+ JS4~~JS4

+ JS5~~JS5

+

+ OC1~~OC1

+ OC2~~OC2

+ OC3~~OC3

+ OC4~~OC4

+

+ SI1~~SI1

+ SI2~~SI2

+ SI3~~SI3

+ SI4~~SI4

+

+ EP1~~EP1

+ EP2~~EP2

+ EP3~~EP3

+ EP4~~EP4

+

+ AC1~~AC1

+ AC2~~AC2

+ AC3~~AC3

+ AC4~~AC4

+

+ #COMO ANALIZAR LAS CARGAS O REGRESIONES

+

+ js=~1\*JS1+JS2+JS3+JS4+JS5

+ oc=~1\*OC1+OC2+OC3+OC4

+ si=~1\*SI1+SI2+SI3+SI4

+ ep=~1\*EP1+EP2+EP3+EP4

+ ac=~1\*AC1+AC2+AC3+AC4

+

+ # ecuación modelo estructural

+ si~js+oc

+ oc~ep+ac+js

+ js~ep+ac

+

+ #VARIANZA DE LOS FACTORES

+

+ js~~js

+ oc~~oc

+ si~~si

+ ep~~ep

+ ac~~ac

+

+ #COVARIANZAS

+

+ #js~~oc

+ #js~~si

+ #js~~ep

+ #js~~ac

+ #oc~~si

+ #oc~~ep

+ #oc~~ac

+ #si~~ep

+ #si~~ac

+ ep~~ac

+

+

+ '

>

> #estimación del modelo

>

> fit<-lavaan(modelo\_cfaevalucion,data=Caso\_SEM\_evaluacion\_1\_, std.lv = FALSE, mimic = "eqs", estimator = "ml", verbose = TRUE, warn = TRUE)

Quasi-Newton steps using NLMINB:

Objective function = 6.5595502354855597

Objective function = 2.3572700631779107

Objective function = 1.0387950280156844

Objective function = 9.4061842491490317

Objective function = 0.9402547629095039

Objective function = 0.7878033044593309

Objective function = 0.7458405801177932

Objective function = 0.6816137906532589

Objective function = 0.5011133838905515

Objective function = 0.4255018662305403

Objective function = 0.3905171157734060

Objective function = 0.3824775127563029

Objective function = 0.3614023842888763

Objective function = 0.3586112670988868

Objective function = 0.3565268297943192

Objective function = 0.3546529565589616

Objective function = 0.3539422937897427

Objective function = 0.3534250564254684

Objective function = 0.3523704518455872

Objective function = 0.3515184801842715

Objective function = 0.3506953341967822

Objective function = 0.3493420269087473

Objective function = 0.3487168021478375

Objective function = 0.3484312692891933

Objective function = 0.3483393322468231

Objective function = 0.3482722822701305

Objective function = 0.3482132252598440

Objective function = 0.3481670279019689

Objective function = 0.3481307279885186

Objective function = 0.3481031463464106

Objective function = 0.3480879152073406

Objective function = 0.3480800918316937

Objective function = 0.3480764269612813

Objective function = 0.3480746446595759

Objective function = 0.3480731762204705

Objective function = 0.3480721962357229

Objective function = 0.3480717848189840

Objective function = 0.3480716666034489

Objective function = 0.3480716289542478

Objective function = 0.3480716130200214

Objective function = 0.3480716028134196

Objective function = 0.3480715920158808

Objective function = 0.3480715702088411

Objective function = 0.3480715513580286

Objective function = 0.3480715349469783

Objective function = 0.3480715262739729

Objective function = 0.3480715239667482

Objective function = 0.3480715233947258

Objective function = 0.3480715233006677

Objective function = 0.3480715232804847

Objective function = 0.3480715232804847

convergence status (0=ok): 0

nlminb message says: relative convergence (4)

number of iterations: 47

number of function evaluations [objective, gradient]: 50 48

Computing VCOV for se = standard ... done.

Computing TEST for test = standard ... done.

>

> #peticion de elementos en la salida

>

> summary(fit, fit.measures=TRUE,standardized=TRUE, rsquare=TRUE)

lavaan (0.5-22) converged normally after 47 iterations

Used Total

Number of observations 398 400

Estimator ML

Minimum Function Test Statistic 276.369

Degrees of freedom 181

P-value (Chi-square) 0.000

Model test baseline model:

Minimum Function Test Statistic 4439.239

Degrees of freedom 210

P-value 0.000

User model versus baseline model:

Comparative Fit Index (CFI) 0.977

Tucker-Lewis Index (TLI) 0.974

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) NA

Loglikelihood unrestricted model (H1) NA

Number of free parameters 50

Akaike (AIC) NA

Bayesian (BIC) NA

Root Mean Square Error of Approximation:

RMSEA 0.036

90 Percent Confidence Interval 0.028 0.045

P-value RMSEA <= 0.05 0.997

Standardized Root Mean Square Residual:

SRMR 0.060

Parameter Estimates:

Information Expected

Standard Errors Standard

Latent Variables:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

js =~

JS1 1.000 0.994 0.741

JS2 1.034 0.076 13.685 0.000 1.027 0.748

JS3 0.902 0.072 12.503 0.000 0.896 0.680

JS4 0.910 0.070 12.942 0.000 0.904 0.705

JS5 15.246 1.130 13.495 0.000 15.149 0.737

oc =~

OC1 1.000 1.455 0.576

OC2 1.331 0.110 12.047 0.000 1.937 0.886

OC3 0.794 0.078 10.197 0.000 1.156 0.657

OC4 1.181 0.100 11.786 0.000 1.719 0.836

si =~

SI1 1.000 0.710 0.813

SI2 1.076 0.055 19.596 0.000 0.764 0.869

SI3 1.058 0.066 15.920 0.000 0.751 0.738

SI4 1.159 0.061 19.066 0.000 0.823 0.848

ep =~

EP1 1.000 1.270 0.693

EP2 1.043 0.074 14.165 0.000 1.324 0.812

EP3 0.818 0.059 13.794 0.000 1.039 0.785

EP4 0.905 0.063 14.311 0.000 1.150 0.823

ac =~

AC1 1.000 1.145 0.821

AC2 1.238 0.068 18.276 0.000 1.418 0.820

AC3 1.036 0.055 18.721 0.000 1.186 0.836

AC4 1.146 0.063 18.126 0.000 1.312 0.815

Regressions:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

si ~

js 0.087 0.036 2.378 0.017 0.121 0.121

oc 0.269 0.033 8.246 0.000 0.552 0.552

oc ~

ep 0.515 0.078 6.627 0.000 0.449 0.449

ac 0.255 0.068 3.745 0.000 0.201 0.201

js 0.126 0.078 1.620 0.105 0.086 0.086

js ~

ep 0.196 0.049 4.024 0.000 0.250 0.250

ac -0.009 0.051 -0.167 0.867 -0.010 -0.010

Covariances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

ep ~~

ac 0.367 0.088 4.171 0.000 0.252 0.252

Variances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.JS1 0.809 0.074 10.942 0.000 0.809 0.451

.JS2 0.829 0.077 10.804 0.000 0.829 0.440

.JS3 0.935 0.079 11.888 0.000 0.935 0.538

.JS4 0.830 0.072 11.556 0.000 0.830 0.504

.JS5 193.248 17.526 11.026 0.000 193.248 0.457

.OC1 4.270 0.324 13.199 0.000 4.270 0.669

.OC2 1.023 0.143 7.159 0.000 1.023 0.214

.OC3 1.754 0.138 12.704 0.000 1.754 0.568

.OC4 1.276 0.135 9.429 0.000 1.276 0.302

.SI1 0.258 0.024 10.972 0.000 0.258 0.339

.SI2 0.190 0.021 9.148 0.000 0.190 0.246

.SI3 0.472 0.039 12.214 0.000 0.472 0.455

.SI4 0.264 0.027 9.941 0.000 0.264 0.280

.EP1 1.750 0.144 12.167 0.000 1.750 0.520

.EP2 0.907 0.091 9.959 0.000 0.907 0.341

.EP3 0.672 0.063 10.678 0.000 0.672 0.384

.EP4 0.629 0.065 9.600 0.000 0.629 0.322

.AC1 0.633 0.060 10.519 0.000 0.633 0.325

.AC2 0.978 0.093 10.552 0.000 0.978 0.327

.AC3 0.606 0.060 10.080 0.000 0.606 0.301

.AC4 0.871 0.081 10.691 0.000 0.871 0.336

.js 0.927 0.116 7.956 0.000 0.938 0.938

.oc 1.448 0.249 5.817 0.000 0.684 0.684

.si 0.329 0.037 8.917 0.000 0.653 0.653

ep 1.613 0.216 7.456 0.000 1.000 1.000

ac 1.312 0.136 9.610 0.000 1.000 1.000

R-Square:

Estimate

JS1 0.549

JS2 0.560

JS3 0.462

JS4 0.496

JS5 0.543

OC1 0.331

OC2 0.786

OC3 0.432

OC4 0.698

SI1 0.661

SI2 0.754

SI3 0.545

SI4 0.720

EP1 0.480

EP2 0.659

EP3 0.616

EP4 0.678

AC1 0.675

AC2 0.673

AC3 0.699

AC4 0.664

js 0.062

oc 0.316

si 0.347

> resid(fit,type="standardized")

$type

[1] "standardized"

$cov

JS1 JS2 JS3 JS4 JS5 OC1 OC2 OC3 OC4 SI1 SI2

JS1 NA

JS2 0.180 NA

JS3 0.549 -0.657 NA

JS4 -0.696 -0.202 1.368 NA

JS5 0.497 0.569 -1.662 -0.221 NA

OC1 -0.584 -0.827 -0.153 -0.584 -0.181 NA

OC2 0.255 -1.593 0.190 -0.824 1.437 0.964 NA

OC3 1.372 0.202 -0.211 0.789 1.046 2.223 -3.379 NA

OC4 0.937 -1.172 -0.153 -0.797 1.386 0.312 0.731 1.032 NA

SI1 -0.814 -0.584 0.498 -0.450 1.044 -2.490 0.685 -2.517 -0.478 NA

SI2 -1.151 -0.849 -0.986 -1.605 0.573 -3.003 1.363 -1.564 -1.446 2.197 NA

SI3 -2.185 -0.687 1.047 0.584 -0.004 -2.955 -0.558 -2.199 -1.777 -1.632 -2.129

SI4 -0.206 0.021 1.176 0.767 1.842 -3.171 1.101 -1.886 0.245 -13.739 NA

EP1 -1.627 0.990 0.723 -0.188 0.912 -2.411 -2.223 -0.062 -0.748 3.617 4.032

EP2 -0.777 0.510 -0.448 -0.749 -0.136 -0.356 0.109 2.471 0.840 3.257 3.927

EP3 -0.986 0.352 0.410 -0.550 1.568 -3.190 -0.867 1.496 -1.593 2.159 2.591

EP4 -1.719 0.290 0.277 -0.547 0.105 -0.482 -2.221 2.403 -1.213 4.202 3.399

AC1 0.285 -1.043 0.350 0.447 2.028 -2.422 1.020 -0.937 -2.223 2.426 1.615

AC2 -0.782 -1.357 -0.496 -0.452 1.183 -1.204 -0.884 -2.156 -1.583 1.668 1.422

AC3 -1.447 -1.747 -1.034 0.441 0.351 -1.563 1.183 -1.379 -0.462 1.854 1.813

AC4 -0.282 -0.698 0.990 0.563 2.136 -0.579 1.863 -0.184 0.960 1.939 2.186

SI3 SI4 EP1 EP2 EP3 EP4 AC1 AC2 AC3 AC4

JS1

JS2

JS3

JS4

JS5

OC1

OC2

OC3

OC4

SI1

SI2

SI3 NA

SI4 2.563 NA

EP1 3.647 4.230 NA

EP2 3.545 5.266 1.920 NA

EP3 2.606 3.519 -2.016 -1.347 NA

EP4 3.754 3.971 -0.240 NA 2.121 NA

AC1 2.007 1.703 -0.016 0.224 0.488 -1.098 NA

AC2 1.206 1.771 0.470 0.290 -1.134 -0.389 -0.157 NA

AC3 1.921 2.628 0.357 -0.150 -0.672 -1.626 0.377 0.424 NA

AC4 1.855 2.853 0.365 1.900 0.487 1.038 -0.029 0.158 -1.036 NA

$mean

JS1 JS2 JS3 JS4 JS5 OC1 OC2 OC3 OC4 SI1 SI2 SI3 SI4 EP1 EP2 EP3 EP4 AC1 AC2 AC3 AC4

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

>

> #Generacion del grafico

> semPaths(fit,what = "paths", style = "lisrel", layout = "tree")

Not all of the characters in ~/Documents/Doctorado /Datos/caso en calse /clase lunes .R could be encoded using ASCII. To save using a different encoding, choose "File | Save with Encoding..." from the main menu.Not all of the characters in ~/Documents/Doctorado /Datos/caso en calse /CASO 2/clase lunes ESTRUCTURAL.R could be encoded using ASCII. To save using a different encoding, choose "File | Save with Encoding..." from the main menu.> library(haven)

> Caso\_SEM\_evaluacion\_1\_ <- read\_sav("~/Downloads/Caso\_SEM\_evaluacion\_1\_, ")

> View(Caso\_SEM\_evaluacion\_1\_)

>

> library(lavaan)

> library(semPlot)

> library(semTools)

>

> #modelosemevaluciónmodeloCFA

>

>

>

> modelo\_cfaevalucion<- '

+

+ #varianzas de errores

+

+ JS1~~JS1

+ JS2~~JS2

+ JS3~~JS3

+ JS4~~JS4

+ JS5~~JS5

+

+ OC1~~OC1

+ OC2~~OC2

+ OC3~~OC3

+ OC4~~OC4

+

+ SI1~~SI1

+ SI2~~SI2

+ SI3~~SI3

+ SI4~~SI4

+

+ EP1~~EP1

+ EP2~~EP2

+ EP3~~EP3

+ EP4~~EP4

+

+ AC1~~AC1

+ AC2~~AC2

+ AC3~~AC3

+ AC4~~AC4

+

+ #COMO ANALIZAR LAS CARGAS O REGRESIONES

+

+ js=~1\*JS1+JS2+JS3+JS4+JS5

+ oc=~1\*OC1+OC2+OC3+OC4

+ si=~1\*SI1+SI2+SI3+SI4

+ ep=~1\*EP1+EP2+EP3+EP4

+ ac=~1\*AC1+AC2+AC3+AC4

+

+ # ecuación modelo estructural

+ si~js+oc

+ oc~ep+ac+js

+ js~ep+ac

+

+ #VARIANZA DE LOS FACTORES

+

+ js~~js

+ oc~~oc

+ si~~si

+ ep~~ep

+ ac~~ac

+

+ #COVARIANZAS

+

+ #js~~oc

+ #js~~si

+ #js~~ep

+ #js~~ac

+ #oc~~si

+ #oc~~ep

+ #oc~~ac

+ #si~~ep

+ #si~~ac

+ ep~~ac

+

+

+ '

>

> #estimación del modelo

>

> fit<-lavaan(modelo\_cfaevalucion,data=Caso\_SEM\_evaluacion\_1\_, std.lv = FALSE, mimic = "eqs", estimator = "ml", verbose = TRUE, warn = TRUE)

Quasi-Newton steps using NLMINB:

Objective function = 6.5595502354855597

Objective function = 2.3572700631779107

Objective function = 1.0387950280156844

Objective function = 9.4061842491490317

Objective function = 0.9402547629095039

Objective function = 0.7878033044593309

Objective function = 0.7458405801177932

Objective function = 0.6816137906532589

Objective function = 0.5011133838905515

Objective function = 0.4255018662305403

Objective function = 0.3905171157734060

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Objective function = 0.3614023842888763

Objective function = 0.3586112670988868

Objective function = 0.3565268297943192

Objective function = 0.3546529565589616

Objective function = 0.3539422937897427

Objective function = 0.3534250564254684

Objective function = 0.3523704518455872

Objective function = 0.3515184801842715

Objective function = 0.3506953341967822

Objective function = 0.3493420269087473

Objective function = 0.3487168021478375

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Objective function = 0.3482722822701305

Objective function = 0.3482132252598440

Objective function = 0.3481670279019689

Objective function = 0.3481307279885186

Objective function = 0.3481031463464106

Objective function = 0.3480879152073406

Objective function = 0.3480800918316937

Objective function = 0.3480764269612813

Objective function = 0.3480746446595759

Objective function = 0.3480731762204705

Objective function = 0.3480721962357229

Objective function = 0.3480717848189840

Objective function = 0.3480716666034489

Objective function = 0.3480716289542478

Objective function = 0.3480716130200214

Objective function = 0.3480716028134196

Objective function = 0.3480715920158808

Objective function = 0.3480715702088411

Objective function = 0.3480715513580286

Objective function = 0.3480715349469783

Objective function = 0.3480715262739729

Objective function = 0.3480715239667482

Objective function = 0.3480715233947258

Objective function = 0.3480715233006677

Objective function = 0.3480715232804847

Objective function = 0.3480715232804847

convergence status (0=ok): 0

nlminb message says: relative convergence (4)

number of iterations: 47

number of function evaluations [objective, gradient]: 50 48

Computing VCOV for se = standard ... done.

Computing TEST for test = standard ... done.

>

> #peticion de elementos en la salida

>

> summary(fit, fit.measures=TRUE,standardized=TRUE, rsquare=TRUE)

lavaan (0.5-22) converged normally after 47 iterations

Used Total

Number of observations 398 400

Estimator ML

Minimum Function Test Statistic 276.369

Degrees of freedom 181

P-value (Chi-square) 0.000

Model test baseline model:

Minimum Function Test Statistic 4439.239

Degrees of freedom 210

P-value 0.000

User model versus baseline model:

Comparative Fit Index (CFI) 0.977

Tucker-Lewis Index (TLI) 0.974

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) NA

Loglikelihood unrestricted model (H1) NA

Number of free parameters 50

Akaike (AIC) NA

Bayesian (BIC) NA

Root Mean Square Error of Approximation:

RMSEA 0.036

90 Percent Confidence Interval 0.028 0.045

P-value RMSEA <= 0.05 0.997

Standardized Root Mean Square Residual:

SRMR 0.060

Parameter Estimates:

Information Expected

Standard Errors Standard

Latent Variables:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

js =~

JS1 1.000 0.994 0.741

JS2 1.034 0.076 13.685 0.000 1.027 0.748

JS3 0.902 0.072 12.503 0.000 0.896 0.680

JS4 0.910 0.070 12.942 0.000 0.904 0.705

JS5 15.246 1.130 13.495 0.000 15.149 0.737

oc =~

OC1 1.000 1.455 0.576

OC2 1.331 0.110 12.047 0.000 1.937 0.886

OC3 0.794 0.078 10.197 0.000 1.156 0.657

OC4 1.181 0.100 11.786 0.000 1.719 0.836

si =~

SI1 1.000 0.710 0.813

SI2 1.076 0.055 19.596 0.000 0.764 0.869

SI3 1.058 0.066 15.920 0.000 0.751 0.738

SI4 1.159 0.061 19.066 0.000 0.823 0.848

ep =~

EP1 1.000 1.270 0.693

EP2 1.043 0.074 14.165 0.000 1.324 0.812

EP3 0.818 0.059 13.794 0.000 1.039 0.785

EP4 0.905 0.063 14.311 0.000 1.150 0.823

ac =~

AC1 1.000 1.145 0.821

AC2 1.238 0.068 18.276 0.000 1.418 0.820

AC3 1.036 0.055 18.721 0.000 1.186 0.836

AC4 1.146 0.063 18.126 0.000 1.312 0.815

Regressions:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

si ~

js 0.087 0.036 2.378 0.017 0.121 0.121

oc 0.269 0.033 8.246 0.000 0.552 0.552

oc ~

ep 0.515 0.078 6.627 0.000 0.449 0.449

ac 0.255 0.068 3.745 0.000 0.201 0.201

js 0.126 0.078 1.620 0.105 0.086 0.086

js ~

ep 0.196 0.049 4.024 0.000 0.250 0.250

ac -0.009 0.051 -0.167 0.867 -0.010 -0.010

Covariances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

ep ~~

ac 0.367 0.088 4.171 0.000 0.252 0.252

Variances:

Estimate Std.Err z-value P(>|z|) Std.lv Std.all

.JS1 0.809 0.074 10.942 0.000 0.809 0.451

.JS2 0.829 0.077 10.804 0.000 0.829 0.440

.JS3 0.935 0.079 11.888 0.000 0.935 0.538

.JS4 0.830 0.072 11.556 0.000 0.830 0.504

.JS5 193.248 17.526 11.026 0.000 193.248 0.457

.OC1 4.270 0.324 13.199 0.000 4.270 0.669

.OC2 1.023 0.143 7.159 0.000 1.023 0.214

.OC3 1.754 0.138 12.704 0.000 1.754 0.568

.OC4 1.276 0.135 9.429 0.000 1.276 0.302

.SI1 0.258 0.024 10.972 0.000 0.258 0.339

.SI2 0.190 0.021 9.148 0.000 0.190 0.246

.SI3 0.472 0.039 12.214 0.000 0.472 0.455

.SI4 0.264 0.027 9.941 0.000 0.264 0.280

.EP1 1.750 0.144 12.167 0.000 1.750 0.520

.EP2 0.907 0.091 9.959 0.000 0.907 0.341

.EP3 0.672 0.063 10.678 0.000 0.672 0.384

.EP4 0.629 0.065 9.600 0.000 0.629 0.322

.AC1 0.633 0.060 10.519 0.000 0.633 0.325

.AC2 0.978 0.093 10.552 0.000 0.978 0.327

.AC3 0.606 0.060 10.080 0.000 0.606 0.301

.AC4 0.871 0.081 10.691 0.000 0.871 0.336

.js 0.927 0.116 7.956 0.000 0.938 0.938

.oc 1.448 0.249 5.817 0.000 0.684 0.684

.si 0.329 0.037 8.917 0.000 0.653 0.653

ep 1.613 0.216 7.456 0.000 1.000 1.000

ac 1.312 0.136 9.610 0.000 1.000 1.000

R-Square:

Estimate

JS1 0.549

JS2 0.560

JS3 0.462

JS4 0.496

JS5 0.543

OC1 0.331

OC2 0.786

OC3 0.432

OC4 0.698

SI1 0.661

SI2 0.754

SI3 0.545

SI4 0.720

EP1 0.480

EP2 0.659

EP3 0.616

EP4 0.678

AC1 0.675

AC2 0.673

AC3 0.699

AC4 0.664

js 0.062

oc 0.316

si 0.347

> resid(fit,type="standardized")

$type

[1] "standardized"

$cov

JS1 JS2 JS3 JS4 JS5 OC1 OC2 OC3 OC4 SI1 SI2

JS1 NA

JS2 0.180 NA

JS3 0.549 -0.657 NA

JS4 -0.696 -0.202 1.368 NA

JS5 0.497 0.569 -1.662 -0.221 NA

OC1 -0.584 -0.827 -0.153 -0.584 -0.181 NA

OC2 0.255 -1.593 0.190 -0.824 1.437 0.964 NA

OC3 1.372 0.202 -0.211 0.789 1.046 2.223 -3.379 NA

OC4 0.937 -1.172 -0.153 -0.797 1.386 0.312 0.731 1.032 NA

SI1 -0.814 -0.584 0.498 -0.450 1.044 -2.490 0.685 -2.517 -0.478 NA

SI2 -1.151 -0.849 -0.986 -1.605 0.573 -3.003 1.363 -1.564 -1.446 2.197 NA

SI3 -2.185 -0.687 1.047 0.584 -0.004 -2.955 -0.558 -2.199 -1.777 -1.632 -2.129

SI4 -0.206 0.021 1.176 0.767 1.842 -3.171 1.101 -1.886 0.245 -13.739 NA

EP1 -1.627 0.990 0.723 -0.188 0.912 -2.411 -2.223 -0.062 -0.748 3.617 4.032

EP2 -0.777 0.510 -0.448 -0.749 -0.136 -0.356 0.109 2.471 0.840 3.257 3.927

EP3 -0.986 0.352 0.410 -0.550 1.568 -3.190 -0.867 1.496 -1.593 2.159 2.591

EP4 -1.719 0.290 0.277 -0.547 0.105 -0.482 -2.221 2.403 -1.213 4.202 3.399

AC1 0.285 -1.043 0.350 0.447 2.028 -2.422 1.020 -0.937 -2.223 2.426 1.615

AC2 -0.782 -1.357 -0.496 -0.452 1.183 -1.204 -0.884 -2.156 -1.583 1.668 1.422

AC3 -1.447 -1.747 -1.034 0.441 0.351 -1.563 1.183 -1.379 -0.462 1.854 1.813

AC4 -0.282 -0.698 0.990 0.563 2.136 -0.579 1.863 -0.184 0.960 1.939 2.186

SI3 SI4 EP1 EP2 EP3 EP4 AC1 AC2 AC3 AC4

JS1

JS2

JS3

JS4

JS5

OC1

OC2

OC3

OC4

SI1

SI2

SI3 NA

SI4 2.563 NA

EP1 3.647 4.230 NA

EP2 3.545 5.266 1.920 NA

EP3 2.606 3.519 -2.016 -1.347 NA

EP4 3.754 3.971 -0.240 NA 2.121 NA

AC1 2.007 1.703 -0.016 0.224 0.488 -1.098 NA

AC2 1.206 1.771 0.470 0.290 -1.134 -0.389 -0.157 NA

AC3 1.921 2.628 0.357 -0.150 -0.672 -1.626 0.377 0.424 NA

AC4 1.855 2.853 0.365 1.900 0.487 1.038 -0.029 0.158 -1.036 NA

$mean

JS1 JS2 JS3 JS4 JS5 OC1 OC2 OC3 OC4 SI1 SI2 SI3 SI4 EP1 EP2 EP3 EP4 AC1 AC2 AC3 AC4

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

>

> #Generacion del grafico

> semPaths(fit,what = "paths", style = "lisrel", layout = "tree", whatLabels = "std")