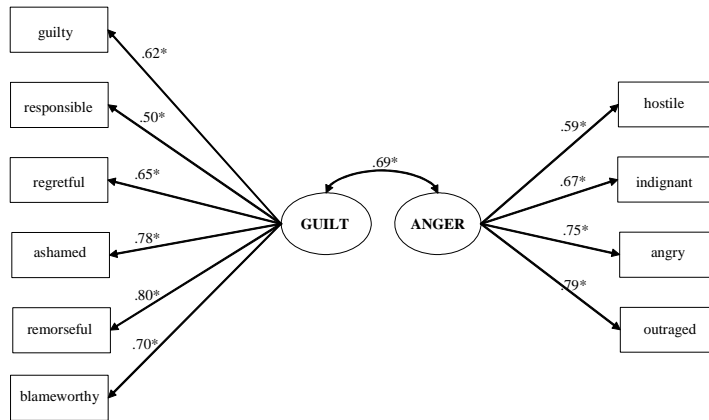


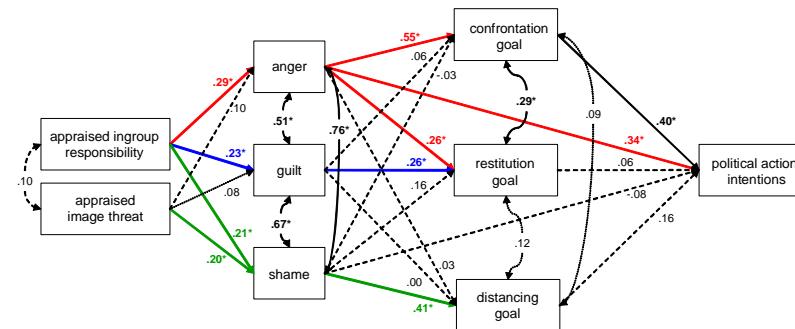
STATISTICS WORKSHOP



Confirmatory Factor Analysis (CFA)

&

Structural Equation Modelling (SEM)



AMOS

- Latest manual (includes tutorials):

www.washington.edu/uware/spss/docs/Amos16.0.pdf

- Student version available at:

<http://www.amosdevelopment.com/download/index.htm>

- Additional sites:

www.amosdevelopment.com/video/index.htm

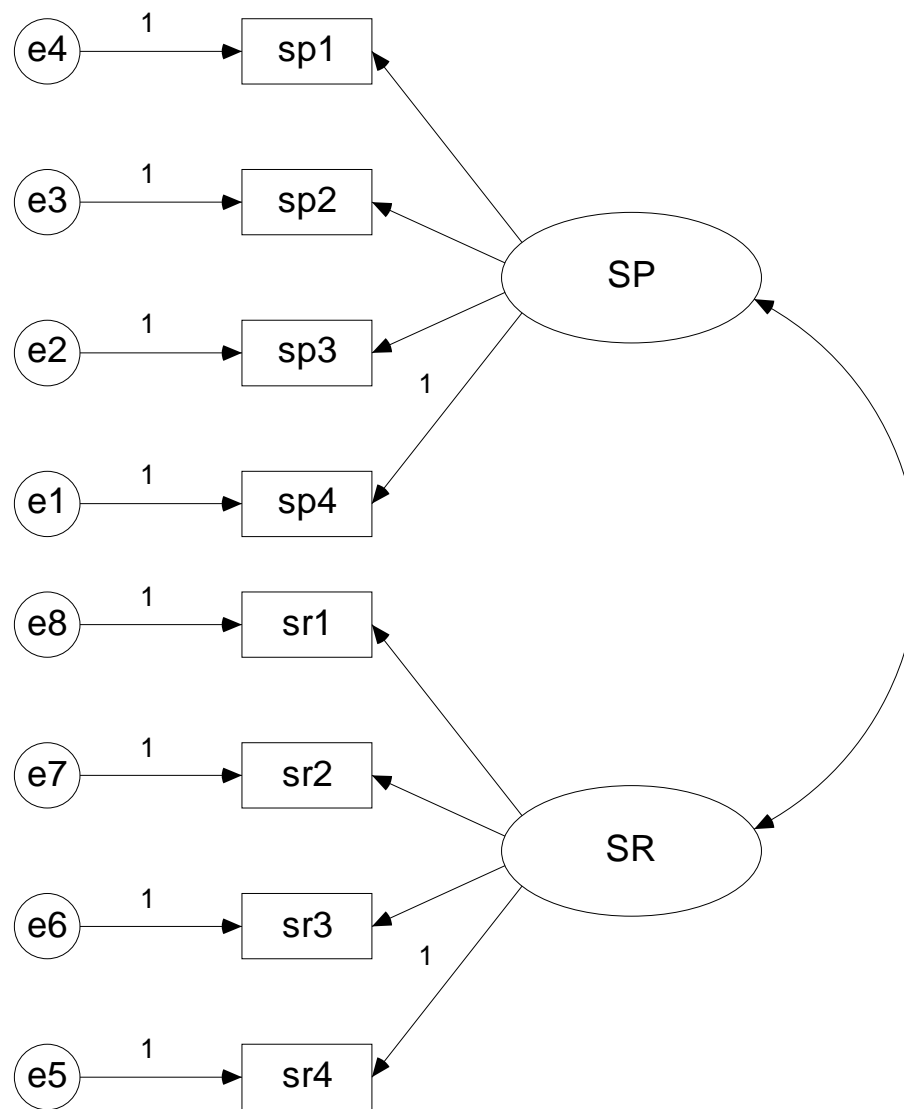
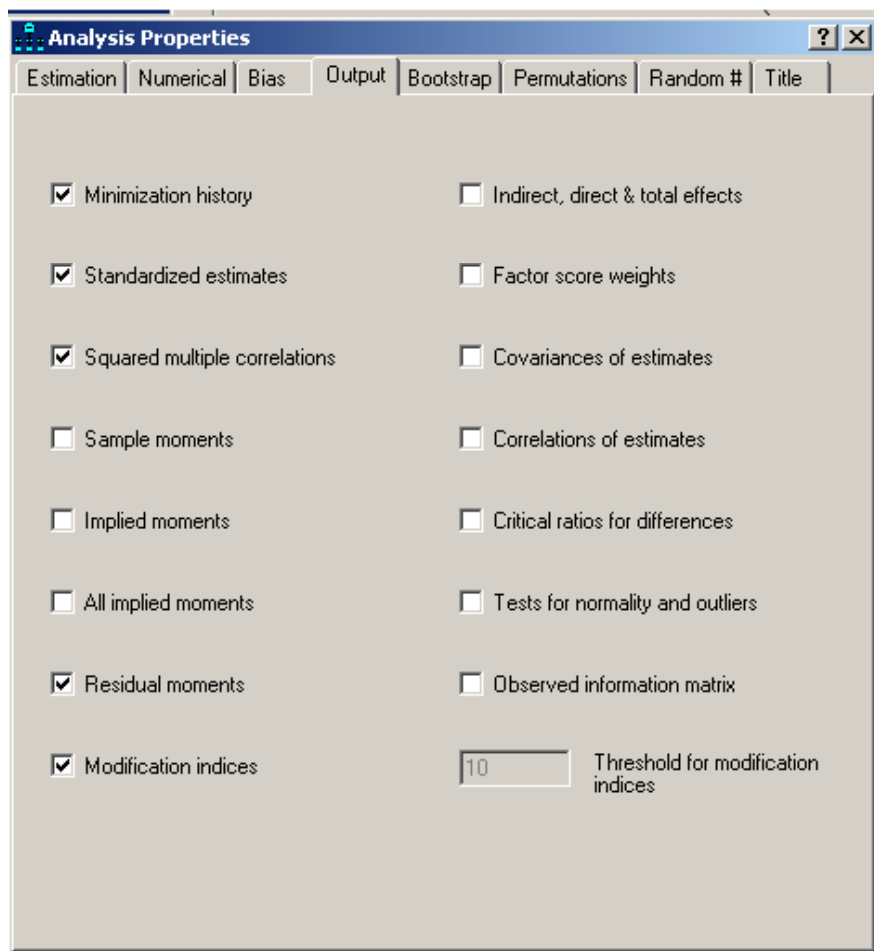
www.structuralequations.com/resources/Introduction+to+Amos.pps

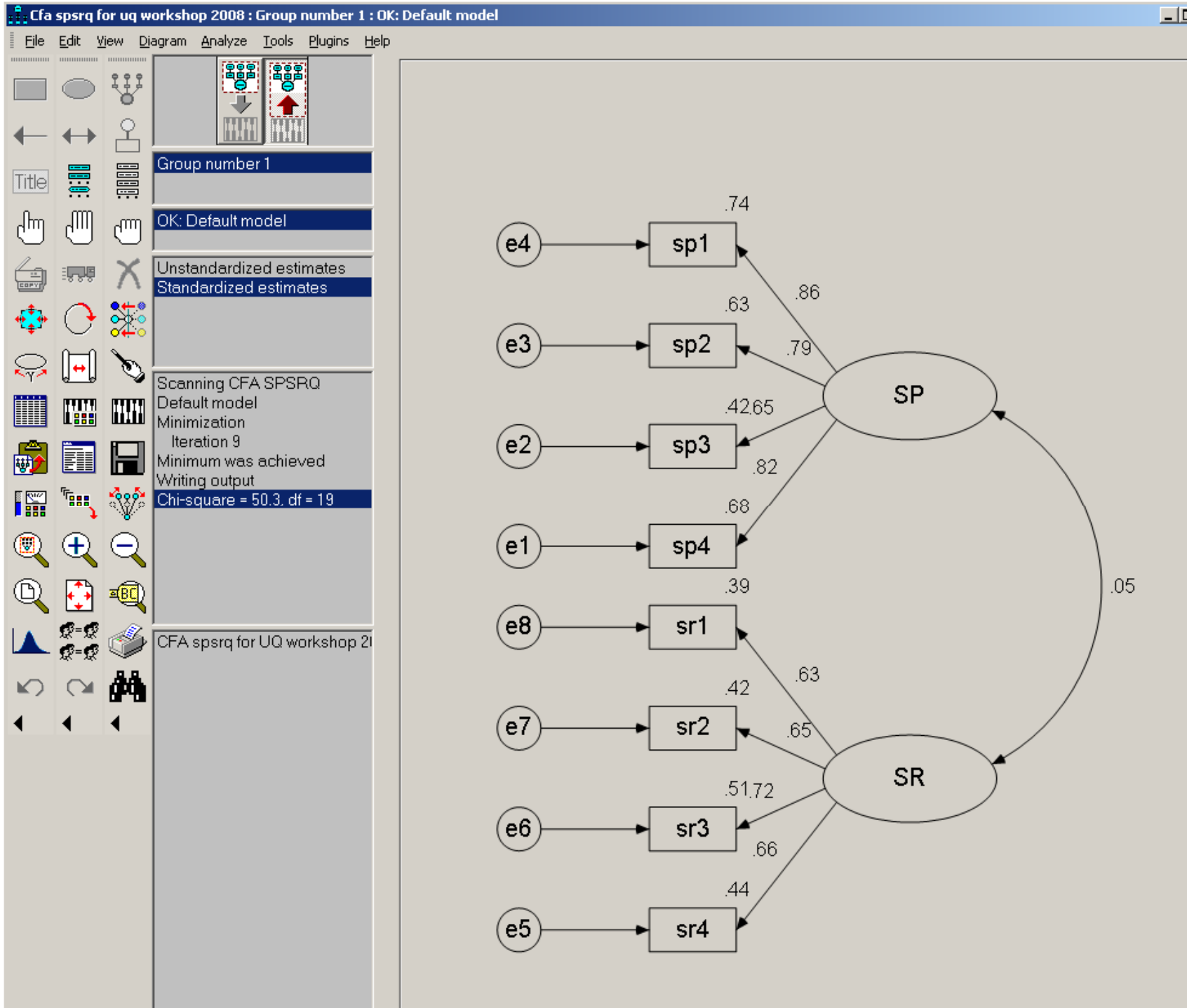
<http://ssc.utexas.edu/consulting/tutorials/stat/amos/>

Let's test this CFA

Use datafile:

CFA SPSRQ





CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	17	50.262	19	.000	2.645
Saturated model	36	.000	0		
Independence model	8	1258.135	28	.000	44.933

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.091	.971	.946	.513
Saturated model	.000	1.000		
Independence model	.763	.532	.398	.414

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.960	.941	.975	.963	.975
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.679	.651	.661
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

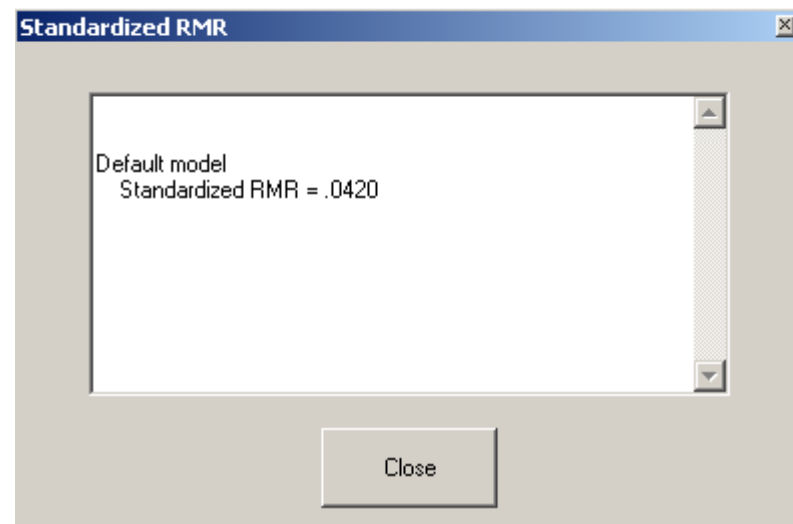
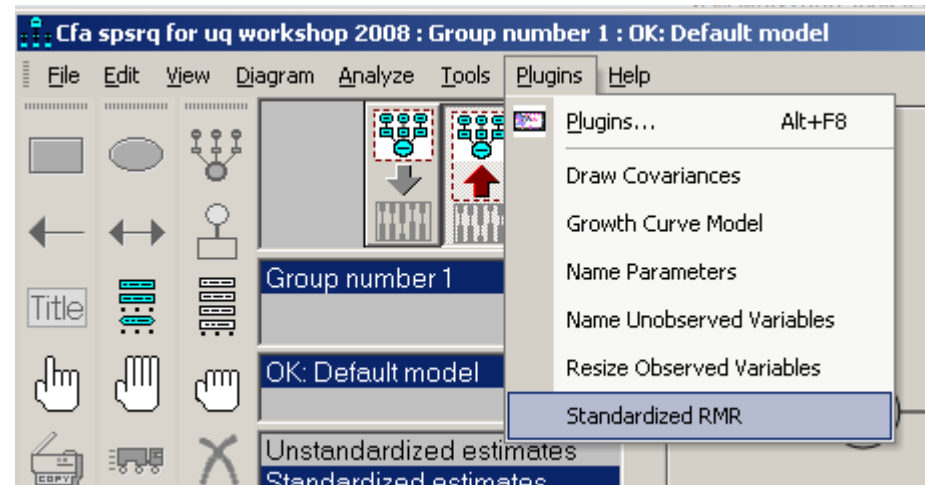
Model	NCP	LO 90	HI 90
Default model	31.262	13.976	56.208
Saturated model	.000	.000	.000
Independence model	1230.135	1117.748	1349.902

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.117	.073	.033	.131
Saturated model	.000	.000	.000	.000
Independence model	2.933	2.867	2.605	3.147

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.062	.041	.083	.158
Independence model	.320	.305	.335	.000



Standardized Regression Weights:

	Estimate
sp4 <--- SP	.823
sp3 <--- SP	.652
sp2 <--- SP	.792
sp1 <--- SP	.863
sr4 <--- SR	.664
sr3 <--- SR	.717
sr2 <--- SR	.651
sr1 <--- SR	.627

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

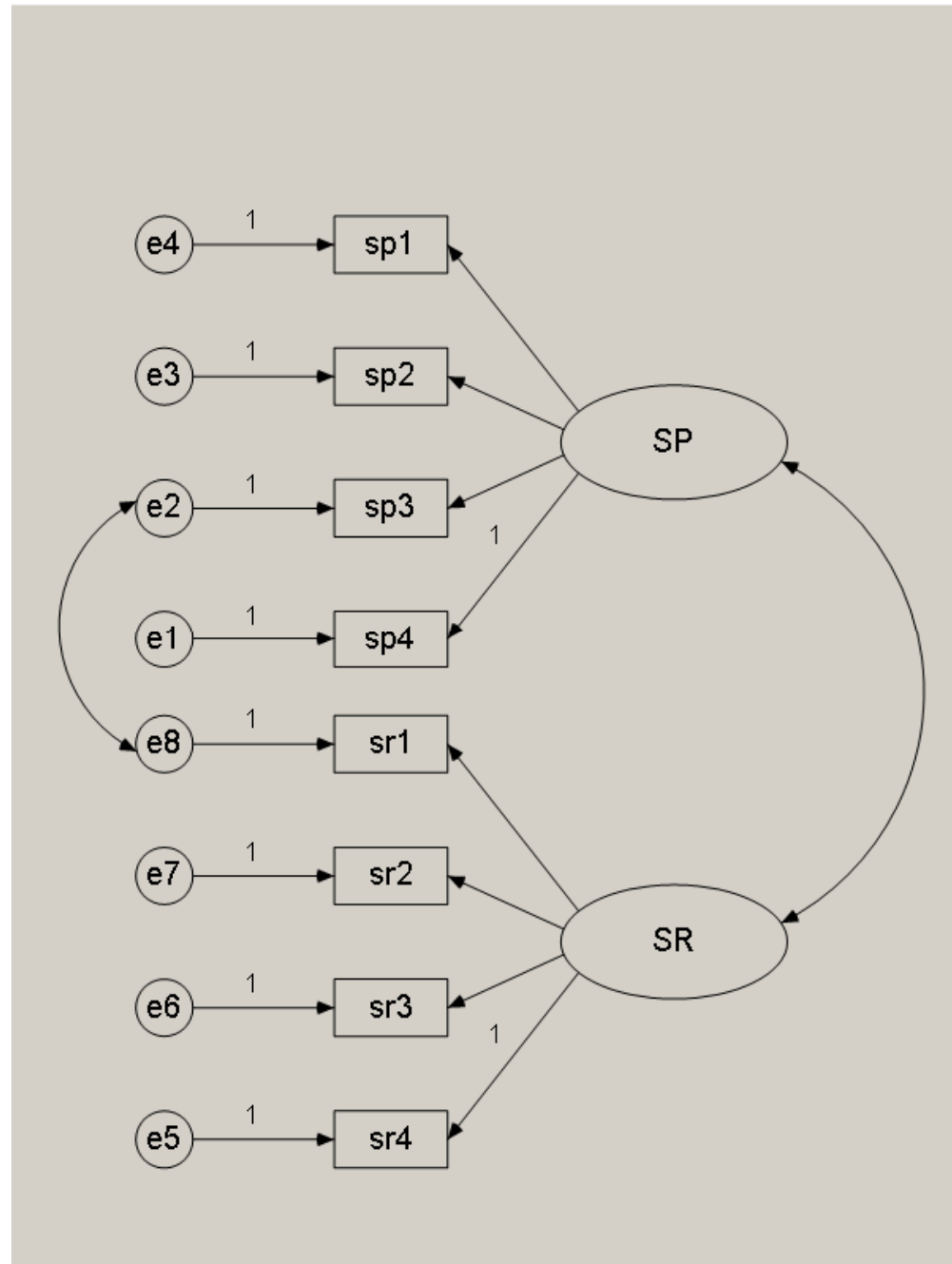
	M.I.	Par Change
e2 <--> e8	14.491	.278

Variances: (Group number 1 - Default model)

	M.I.	Par Change
--	------	------------

Regression Weights: (Group number 1 - Default model)

	M.I.	Par Change
sr1 <--- sp3	14.016	.159
sp3 <--- sr1	16.089	.148



Model 1

Chisq = 50.3

Df = 19

Model 2

Chisq = 35.2

Df = 18

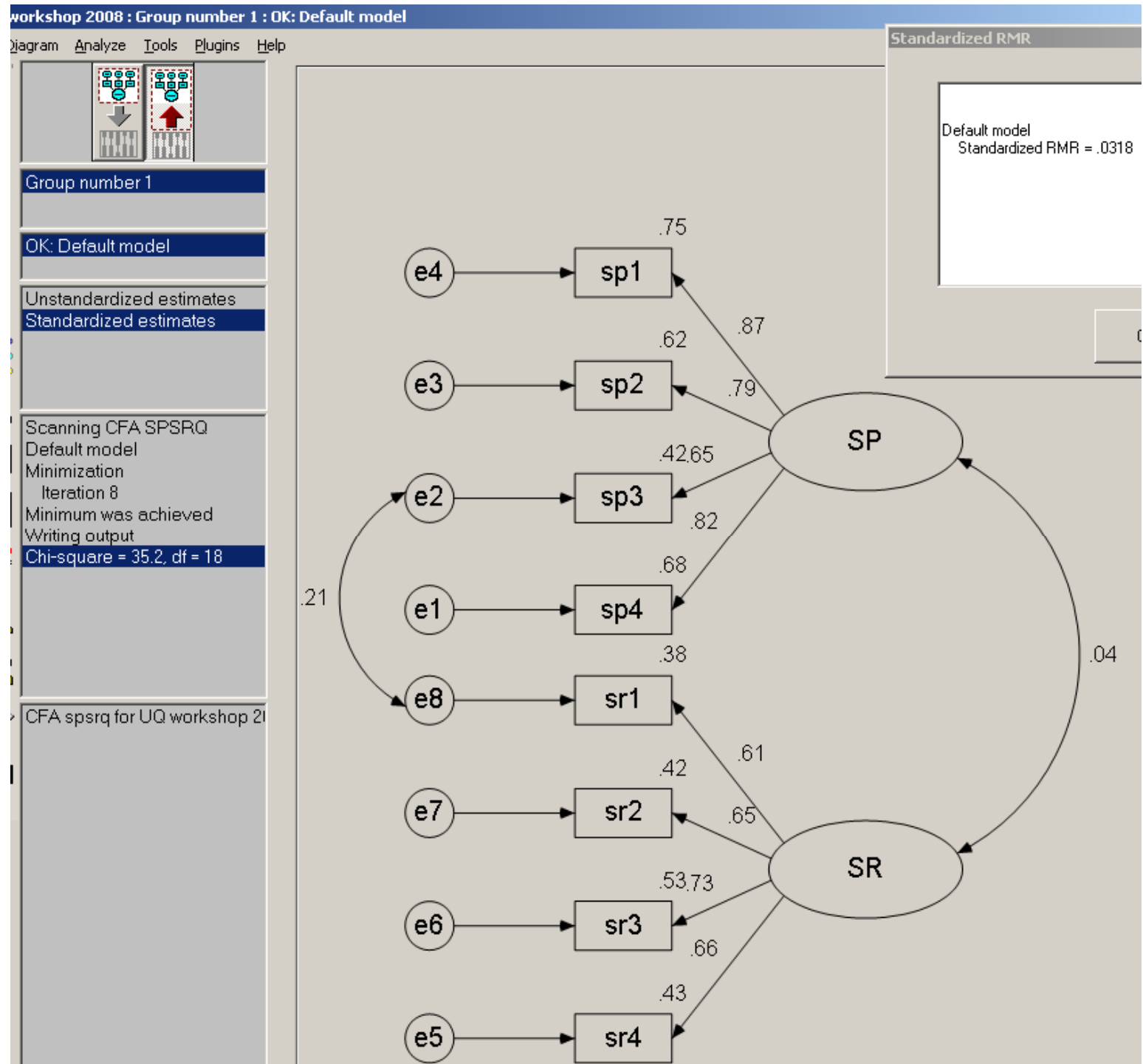
Chg chisq= 15.1

Crit chisq on 1

DF

= 3.84

Thus – signif
improvement in
model fit



CMIN

Model	NP	CMIN	DF	P	CMIN/DF
Default model	18	35.248	18	.009	1.958
Saturated model	36	.000	0		
Independence model	8	1258.135	28	.000	44.933

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.067	.980	.960	.490
Saturated model	.000	1.000		
Independence model	.763	.532	.398	.414

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.972	.956	.986	.978	.986
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.643	.625	.634
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

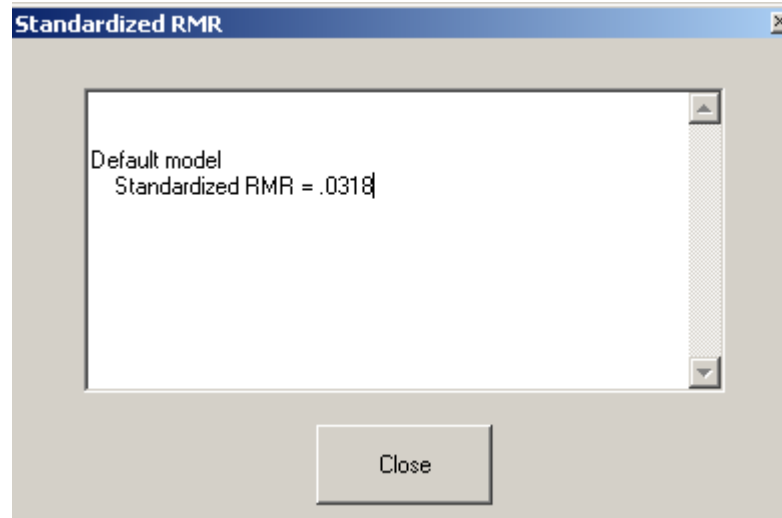
Model	NCP	LO 90	HI 90
Default model	17.248	4.149	38.122
Saturated model	.000	.000	.000
Independence model	1230.135	1117.748	1349.902

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.082	.040	.010	.089
Saturated model	.000	.000	.000	.000
Independence model	2.933	2.867	2.605	3.147

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.047	.023	.070	.544
Independence model	.320	.305	.335	.000



Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
sr1	.378
sr2	.420
sr3	.528
sr4	.434
sp1	.749
sp2	.621
sp3	.417
sp4	.677