

Doi: <https://doi.org/10.1027/1015-5759/a000541>

	chi	df	AIC	BIC	CFI	TLI
Configural invariance	99.31	19	11732.4	11802.3	0.95	.94
Loadings invariance	138.64	25	11759.8	11804.2	0.93	.93

```
> configural.model <-'  
+ stand =~ apsr8 + apsr12 + apsr14 + apsr22  
+ discrep =~ apsr11 + apsr16 + apsr20 + apsr23  
+  
+ stand ~~ discrep  
+ '  
>  
> fit <- cfa(configural.model, data=aps_r)  
> summary(fit, fit.measures=TRUE, standardized = TRUE)
```

lavaan (0.5-23.1097) converged normally after 29 iterations

Number of observations	449
Estimator	ML
Minimum Function Test Statistic	99.313
Degrees of freedom	19
P-value (Chi-square)	0.000

Model test baseline model:

Minimum Function Test Statistic	1760.533
Degrees of freedom	28
P-value	0.000

User model versus baseline model:

Comparative Fit Index (CFI)	0.954
Tucker-Lewis Index (TLI)	0.932

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-5849.219
Loglikelihood unrestricted model (H1)	-5799.563
Number of free parameters	17
Akaike (AIC)	11732.439
Bayesian (BIC)	11802.258
Sample-size adjusted Bayesian (BIC)	11748.307

Root Mean Square Error of Approximation:

RMSEA	0.097
90 Percent Confidence Interval	0.079 0.116
P-value RMSEA <= 0.05	0.000

Standardized Root Mean Square Residual:

SRMR	0.066
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Parameter Estimates:

Information	Expected
Standard Errors	Standard

Latent Variables:

	Estimate	Std.Err	z-value	P(> z)	std.lv	std.all
stand =~						
apsr8	1.000				0.948	0.818
apsr12	1.185	0.076	15.663	0.000	1.124	0.766
apsr14	0.838	0.058	14.575	0.000	0.795	0.708
apsr22	1.138	0.085	13.425	0.000	1.078	0.655
discrep =~						
apsr11	1.000				1.446	0.807
apsr16	0.955	0.053	18.029	0.000	1.380	0.788
apsr20	1.133	0.056	20.208	0.000	1.637	0.872
apsr23	1.001	0.055	18.037	0.000	1.446	0.788

Covariances:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
stand ~~						
discrep	0.463	0.081	5.728	0.000	0.338	0.338

Variances:

	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
.apsr8	0.443	0.050	8.927	0.000	0.443	0.330
.apsr12	0.888	0.083	10.671	0.000	0.888	0.413
.apsr14	0.627	0.052	12.002	0.000	0.627	0.498
.apsr22	1.552	0.121	12.793	0.000	1.552	0.572
.apsr11	1.122	0.098	11.468	0.000	1.122	0.349
.apsr16	1.164	0.098	11.918	0.000	1.164	0.379
.apsr20	0.848	0.094	9.045	0.000	0.848	0.240
.apsr23	1.276	0.107	11.912	0.000	1.276	0.379
stand	0.899	0.093	9.614	0.000	1.000	1.000
discrep	2.090	0.210	9.929	0.000	1.000	1.000

```
> loadings.model <-'
+
+ stand =~ 1*apsr8 + 1.26*apsr12 + 0.96*apsr14 + 1*apsr22
+ discrep =~ 1*apsr11 + 0.97*apsr16 + 0.95*apsr20 + 0.80*apsr23
+
+ stand ~~ discrep
+
>
> fit <- cfa(loadings.model, data=aps_r)
> summary(fit, fit.measures=TRUE, standardized = TRUE)
```

lavaan (0.5-23.1097) converged normally after 25 iterations

Number of observations	449
Estimator	ML
Minimum Function Test Statistic	138.644
Degrees of freedom	25
P-value (Chi-square)	0.000

Model test baseline model:

Minimum Function Test Statistic	1760.533
Degrees of freedom	28
P-value	0.000

User model versus baseline model:

Comparative Fit Index (CFI)	0.934
Tucker-Lewis Index (TLI)	0.927

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) -5868.885
 Loglikelihood unrestricted model (H1) -5799.563
 Number of free parameters 11
 Akaike (AIC) 11759.770
 Bayesian (BIC) 11804.947
 Sample-size adjusted Bayesian (BIC) 11770.038

Root Mean Square Error of Approximation:

RMSEA 0.101
 90 Percent Confidence Interval 0.085 0.117
 P-value RMSEA <= 0.05 0.000

Standardized Root Mean Square Residual:

SRMR 0.094

Parameter Estimates:

Information Standard Errors Expected Standard

Latent Variables:

	Estimate	Std.Err	z-value	P(> z)	std.lv	std.all
stand =~						
apsr8	1.000				0.915	0.805
apsr12	1.260				1.153	0.775
apsr14	0.960				0.878	0.750
apsr22	1.000				0.915	0.581
discrep =~						
apsr11	1.000				1.569	0.839
apsr16	0.970				1.522	0.825
apsr20	0.950				1.490	0.831
apsr23	0.800				1.255	0.726

Covariances:

	Estimate	Std.Err	z-value	P(> z)	std.lv	std.all
stand ~~ discrep	0.480	0.082	5.865	0.000	0.334	0.334

Variances:

	Estimate	Std.Err	z-value	P(> z)	std.lv	std.all
.apsr8	0.455	0.044	10.392	0.000	0.455	0.352
.apsr12	0.881	0.079	11.224	0.000	0.881	0.399
.apsr14	0.601	0.051	11.798	0.000	0.601	0.438
.apsr22	1.640	0.119	13.744	0.000	1.640	0.662
.apsr11	1.037	0.095	10.858	0.000	1.037	0.296
.apsr16	1.088	0.096	11.288	0.000	1.088	0.320
.apsr20	0.994	0.090	11.100	0.000	0.994	0.309
.apsr23	1.413	0.108	13.080	0.000	1.413	0.473
stand	0.837	0.067	12.473	0.000	1.000	1.000
discrep	2.461	0.186	13.259	0.000	1.000	1.000
0.805						
0.775						
0.750						
0.581						
0.762						
0.851						
0.831						
0.735						

Covariances:

	Estimate	Std.Err	z-value	P(> z)	std.lv
stand ~~ discrep	0.507	0.084	6.012	0.000	0.344
std.all					

0.344

Variances:

	Estimate	Std.Err	z-value	P(> z)	Std.lv
.apsr8	0.455	0.044	10.398	0.000	0.455
.apsr12	0.881	0.078	11.228	0.000	0.881
.apsr14	0.601	0.051	11.802	0.000	0.601
.apsr22	1.639	0.119	13.745	0.000	1.639
.apsr20	1.198	0.096	12.485	0.000	1.198
.apsr11	0.986	0.097	10.179	0.000	0.986
.apsr16	1.087	0.100	10.872	0.000	1.087
.apsr23	1.411	0.110	12.871	0.000	1.411
stand	0.837	0.067	12.473	0.000	1.000
discrep	2.585	0.196	13.164	0.000	1.000
std.all					
0.352					
0.399					
0.438					
0.662					
0.420					
0.276					
0.309					
0.460					
1.000					
1.000					