

## An Alternative Invariance Test Correction for measurement error

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### Overview

- The invariance test sequence
- An alternative to the metric invariance test
- Model identification
- Does it make sense to correct for measurement error?

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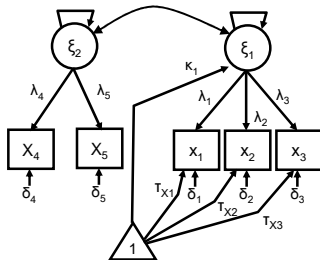
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### The invariance test sequence

- $x = T + \Lambda\xi + \Theta\delta$ 
  - With:  $E(\delta_i\delta_j) = E(\delta_i)\delta_j = 0$ , for  $i \neq j$
- Metric invariance ( $E(x)=0$ ):  $\Lambda^1 = \Lambda^2 = \dots = \Lambda^n$
- Scalar invariance:  $T^1 = T^2 = \dots = T^n$
- Configural invariance ( $E(x)=0$ )
- Convergent and discriminant validity



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## Does it makes sense?

- The model is seriously complicated by this correction for random and systematic error.
- Is it worthwhile? i.e. do the error variances differ across countries?
- An illustration of political trust measures

Country	Random Error			Method Variance
	Parleme	Legal	Polit	
AU	0.88	1.05	1.09	0.70
BE	1.46	1.21	1.20	0.43
CH	0.91	0.91	0.71	0.50
CZ	0.55	1.12	0.81	0.87
DE	1.20	1.26	0.73	0.41
DK	0.92	0.87	0.62	0.35
ES	1.35	1.23	1.16	0.66
FI	1.17	1.26	1.31	0.78
GB	1.14	1.74	1.01	0.51
GR	0.68	0.88	0.68	0.24
IE	1.56	2.20	1.02	0.96
NL	0.97	1.22	0.73	0.45
PL	1.02	0.99	0.72	0.55
PT	0.87	1.00	0.63	0.36
SE	1.21	1.43	0.65	0.95
SI	1.28	1.73	0.88	0.84

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## Summary

- Because it is not expected that measurement errors are the same across countries, we should require this from our test.
- We should test for what Saris has called cognitive equivalence.
- This is accomplished by correction for measurement error.
- The correction can be done in several ways (SQP, fixed values from MTMM estimates).
- Next follows an illustration of such a test for the social trust scale in the ESS R1.

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