

## Cross-National Comparability of the Social Trust scale

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### Overview

- The Social Trust Scale
- Measurement model
- SB MTMM Results
- Invariance Tests
- Results
- Recommendations

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### The Social Trust Scale

- In 1958 Morris Rosenberg developed a 5 item scale.  
The *faith in people* scale.
- In 1969 the Survey Research Center (SRC) adapted that scale.  
The *trust in people* scale.
- The SRC version was implemented in the ESS.  
For the time being, we call it the *social trust* scale.

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### The Social Trust Scale

- The **social trust** scale in the ESS consists of three items:
  1. Using this card, generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?
  2. Do you think that most people would try to take advantage of you if they got a chance or would they try to be fair?
  3. Would you say that most of the time people try to be helpful or are they mostly looking out for themselves?
- The response scale runs from 0 to 10.

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### The Social Trust Scale

- Main research question:  
Is this scale comparable across the countries in the ESS?
- I have seen only one study on this issue on these data by Reeskens & Hooghe (2008, Cross-cultural measurement equivalence of generalized trust. Evidence from the ESS (2002 and 2004)) in Social Indicators Research.
- I however, suggest a different approach, correcting for measurement error and using JRULE instead of using the unreliable GOF's

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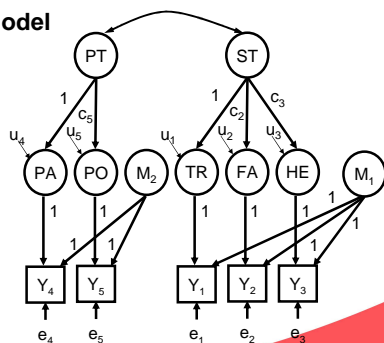
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### Measurement Model

- Survey instruments for y4 and y5?
- Political trust is measured with the following items:
- 'Please look at this card, and tell me for each item, how much confidence you have in them.
  - Politicians
  - Parliament
- The estimates of  $e_1, e_5$  and  $M_1, M_2$ ?



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### SB MTMM Results

- The MTMM design implemented in the ESS is the SB MTMM (Saris, Satorra, & Coenders, 2004).
- This design was not always correctly implemented.

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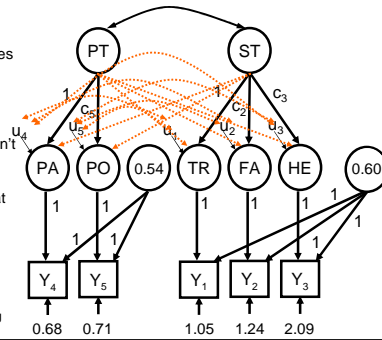
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### Configural Invariance Test

- MTMM estimates are introduced as fixed values in the model.
- Configural invariance
- For the detection of misspecifications we won't look at the following matrices:  $\Lambda_y$ ,  $\Phi$ , and  $\Theta_e$ .
- Neither are we looking at any relationship that involves M1 or M2.
- So we look at:  $\Psi$ ,  $\Gamma$ .



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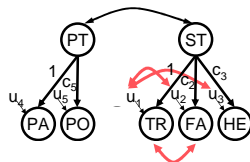
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### Configural Invariance Test

JR 3a C\_Invariance.out: The model as presented

JR 3b C\_Invariance.out: With PS 2 1

JR 3c C\_Invariance.out: With PS 3 1



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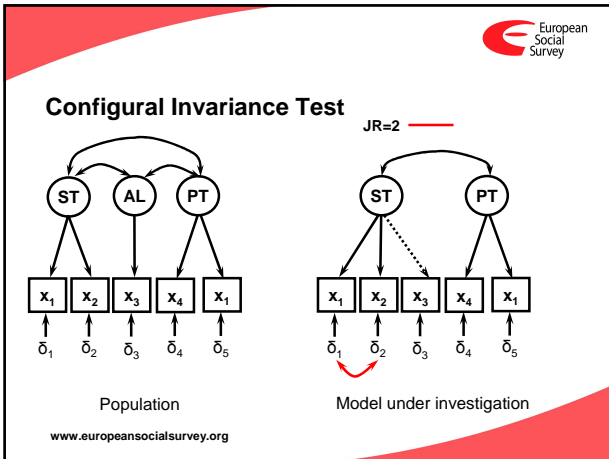
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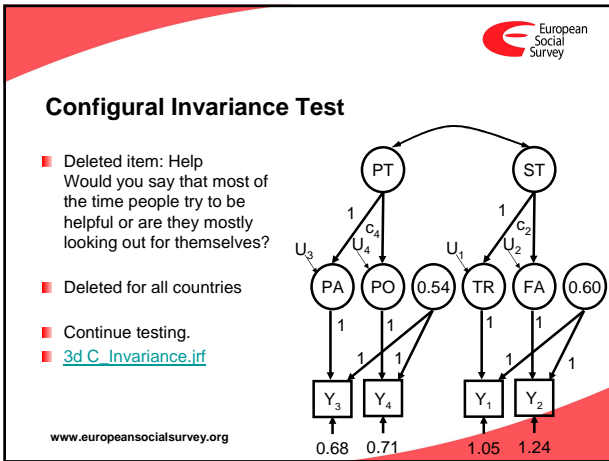
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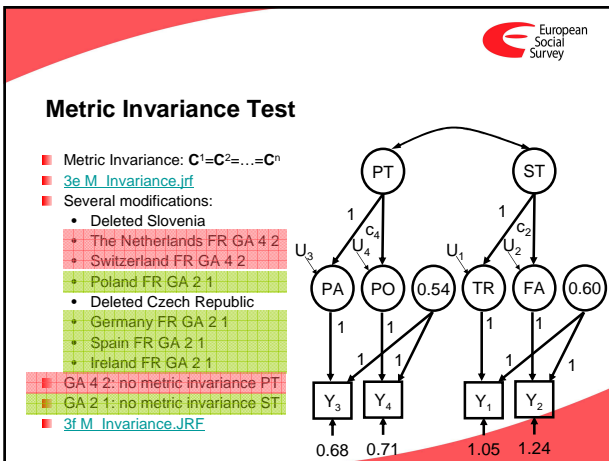
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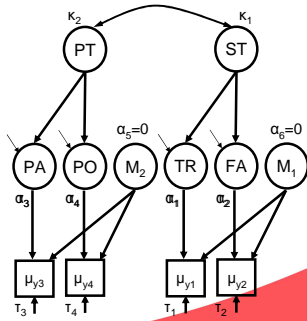
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### Scalar Invariance Test

- Scalar Invariance:  $T^1=T^2=...=T^n$
- Alternative test for mean structure.
- If  $\mu$  within sampling fluctuation of sample mean, accept model.
- If not, free corresponding intercept ( $\tau$ )
- Why not free corresponding loading ( $\lambda$ )?
- That value was established in the metric test. So if the model does not fit, it must be the result of the equality on the intercepts.



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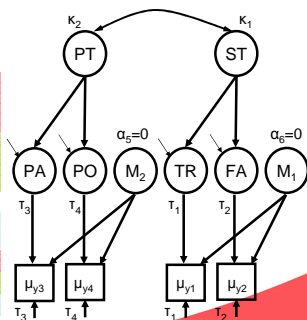
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### Scalar Invariance Test

- JR 3g S\_Invariance.out
- Several modifications:
    - NL, CH: TY 4
    - PL, IE, BE, DK, ES, PT: TY 3
    - GR, DE, UK, FI: TY 3
    - PL, DE, ES, IE: TY 2
    - PT: TY 2
    - GR: TY 2
  - BE: GA 2 1
  - NL: GA 2 1
  - TY1, TY2: no scalar invariance ST
  - TY3, TY4: no scalar invariance PT
  - GA 2 1: no metric invariance ST
  - 3h S\_Invariance.jrf




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### Results

- All countries for which configural invariance holds (16):
  - Austria, Belgium, Switzerland, Czech Republic, Germany, Denmark, Spain, Finland, United Kingdom, Greece, Ireland, The Netherlands, Poland, Portugal, Sweden, and Slovenia.
- Countries for which metric invariance holds for PT (12):
  - AU, BE, DE, DK, ES, FI, GB, GR, IE, PL, PT, and SE.
- Countries for which metric invariance holds for ST (8):
  - AU, CH, DK, FI, GB, GR, PT, and SE.
- Countries for which metric invariance **doesn't hold** for either ST or PT (9):
  - CZ, ES, NL, PL, SI, BE, DE, IE, and PL.
- Countries for which scalar invariance holds for PT (2):
  - AU, SE.
- Countries for which scalar invariance holds for ST (6):
  - AU, CH, DK, FI, GB and SE.

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### Recommendations: Correction for Error

- Comparison across countries requires metric and scalar invariance but the commonly used requirements for equivalence are too strict. We (Van der Veld & Saris) suggest to test on cognitive equivalence i.e. invariance after correction for measurement errors.
- A problem with this approach is that the random and systematic error variances are seldom available. I used the SB MTMM experiments in the ESS. One could also use SQP predictions, but those predictions are standardized, while the invariance tests are carried out on unstandardized data.

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### Recommendations: Composite Scores

- Using *composite scores* for the comparison across countries requires perfect metric invariance for comparison of relationships and perfect scalar invariance for comparison of means (Saris, 2007, Prague).
- These requirements are very strict and will rarely be satisfied (അളവ് അളവ് അളവ്).
- Instead of composite scores factor scores are an alternative.
- Multi-group comparisons do not require perfect invariance.
- Consistent estimates of the means and relationships are also possible with partial equivalence. Therefore, using latent variables is a more flexible approach than employing composite scores.
- Unfortunately, in my illustration, I only had two indicators so that partial invariance of a factor does not exist.

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### Recommendations: Test sequence

- The group of countries for which invariance is established depends (to some level) on the choices one makes with respect to model modifications.
- The final set of countries can differ if we use a different reference indicator, and/or a different reference group (I stuck to the first indicator and Austria all the time).
- So, a different starting point could have changed the results.
- Another point is simply to analyze a smaller set of countries (Jowell), about which one has more knowledge.

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### Recommendations: Model Testing

- The traditional approach is to use the CHI2. This test usually results in rejection, which researchers deal with by blaming the sample size.
- As an alternative they use Fit indices e.g. the NNFI.
- These indices cannot separate the wheat from the chaff.
- This results in too many invariance tests that are accepted, while they are in fact wrong (Corten, et al., forthcoming).
- In addition, the largest MI is still used if a fit index indicates a bad fit.
- JRule simplifies the test procedure with its Easy Multigroup Comparison option.
- If there are too many misspecifications ( $JR \neq 1$ ), one could change the test, with a different delta, power, or alpha.
- This is not playing around or fooling yourself. It is similar to setting a different confidence interval.

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### Recommendations: Find Another Job

- Overall, cross-cultural comparative research is not as simple as one might think, and the validity of many contemporary studies should be questioned in the light of the results from this study.
- Or to what degree do violations (metric and scalar) change the relationships and latent means?
- What is acceptable and what not?

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