The unbearable lightness of the public perception of radiation risks

An assessment of response styles in the SCK-CEN Risk Perception Barometer

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Point of departure: Polling on the Meir of Antwerp

- Context: Master course on survey analysis
- The Meir= biggest shopping street of Antwerp/Belgium
- We used scale involving the perception of several radion risks
- Including one fake item: The risk for an average person of … the carbonisation of deoxyribonucleic acid?
- … Many people perceive high ‘carbonisation’ risk

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Response set issues in public perceptions of radiological risks

- Grouchy smurf
  Extremity Response Set

- Dopey smurf
  Acquiescent Response set

Response set issues in public perceptions of radiological risks

- Scaredy smurf / Grouchy smurf
  Extremity Response Set

- Dopey smurf
  Acquiescent Response set
  Moderation Response set

A strange Belgian devide Flemings and Walloons

- Radiation Risk Perception:
  - Subscale for nuclear radiation risks
    - Accident nuclear installation, nuclear waste, terrorist attack
  - Subscale for general radiation risks
    - Natural radiation, mobile phones, medical imaging
- The strange Belgian devide
  - Walloons versus Flemings …
    - Walloons have a higher radiation risk perception in general
    - Walloons have a higher nuclear radiation risk perception in particular
- Problem: items are unbalanced
  - Response styles might contaminate content factors
  - Focus: Acquiescence (ARS) & Moderation (MRS)

Testing for response styles

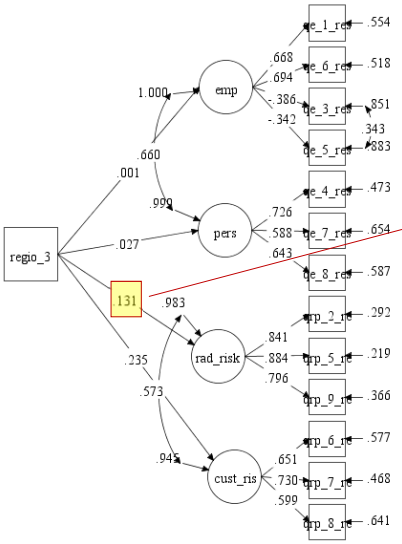
General solution:

- Use balanced scales and try to eliminate individuals that agree both on the positively and negatively worded items
- But sometimes not available (eg Risk perception)

Specific solution:

- Include a second uncorrelated scale and try to find an underlying style factor
- In casu: psychological scale (IRI-scale) for empathy
  - emp(athic concern) & pers(pective taking)

Risk Perception in Belgium
Confirmatory factor analysis (SEM)



Walloons perceive higher radiation risks

Model fits
RMSEA= 0,049

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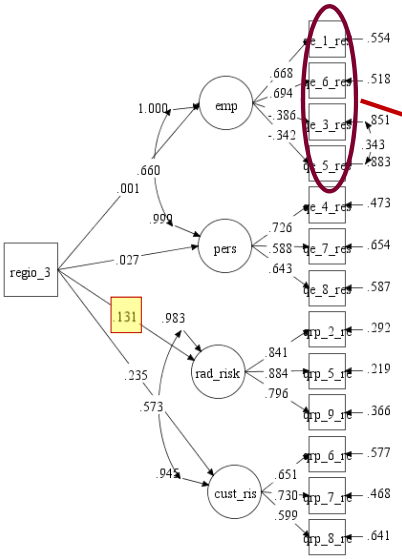
Risk Perception in Belgium
Cofirmatory factor analysis



4 indicators for emphatic concern

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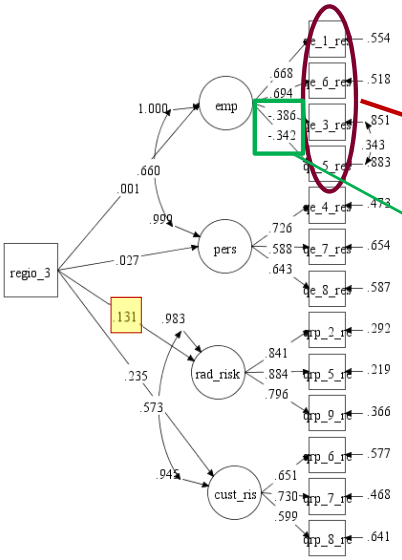
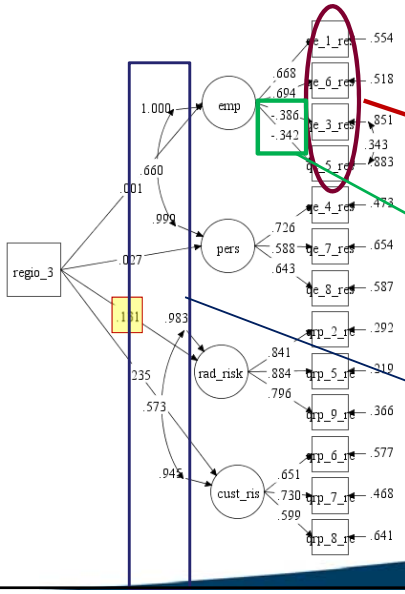
Risk Perception in Belgium
Cofirmatory factor analysis



4 indicators for emphatic concern

2 negatively worded/ 2 positively worded items

Risk Perception in Belgium
Cofirmatory factor analysis

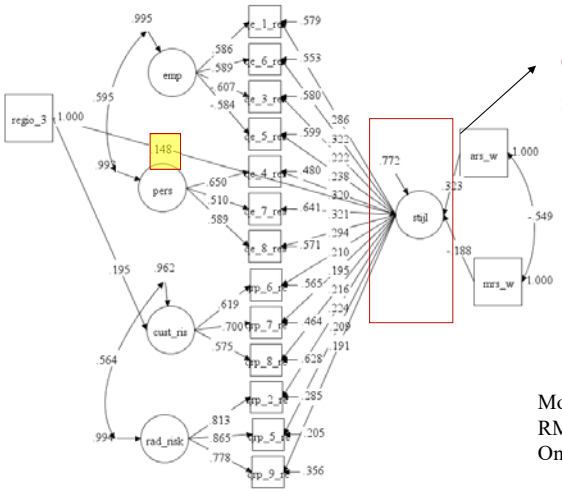


4 indicators for emphatic concern

2 negatively worded/ 2 positively worded items

Empathy and radiation risk perception are uncorrelated

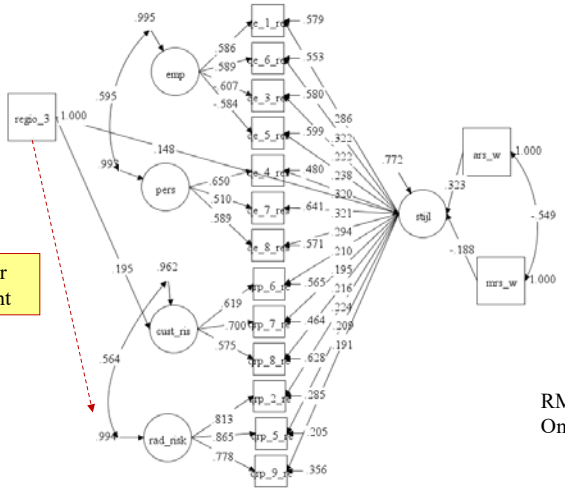
Radiation Risk Perception in Belgium with response styles



General response style factor

Model fits
RMSEA= 0,048
Only significant effects

Radiation Risk Perception in Belgium, with response styles



No longer significant

RMSEA= 0,048
Only significant effects

Conclusions

- Never over-estimate the (technological) knowledge of the general public
- Be aware of cross-national differences in terms of culture and media diet
- When possible use balanced scales
  - People will be more attentive
- It is also possible to test a response style factor