Multiple measurement of occupational status

Harry Ganzeboom
Free University Amsterdam
Prague, June 27 2007
The virtues of multiple measurement

- Assess reliability
- Improve reliability
- Correct for unreliability

In MTMM
- Assess correlated (systematic) error
- Correct for correlated error
Is it possible to have multiple measures of occupational status?

- Yes, by asking several times in a panel design
- Yes, by asking several informants in a multi-actor or multi-source design
- Yes, by asking the relevant questions at least twice in one survey
  - This can easily be accomplished by asking a detailed and a crude question on occupation at the same time.
  - An adequate question format has been proposed by Tom Smith and Jonathan Kelley and applied in ISSP 1987.
Main results

- Respondents have no problem answering the parallel measures twice, in fact asking a crude question helps them to answer an open ended, detailed question.
- Crude questions have about the same reliability as detailed questions; in some example crude questions have better reliability than detailed questions.
- Crude questions do not suffer more from systematic (correlated) error than detailed questions.
- Multiple measurement models show more plausible status attainment structures than single measurement models, in particular with respect to income attainment.
Design

• Ask a crude question with appropriate question format.
• Ask subsequently to report on the specific occupation with title, duties and responsibilities.
• Do this with multiple occupations, such as respondents current and first occupation, and/or father's, mother's or spouses occupation.
• Recode both sets of information to an adequate status scale [such as ISEI]
• Estimate MTMM model.
Data

• This design has been applied in:
  – ISSP87, five countries: USA, AUS, GER, AUT, SWI (Ganzeboom, 2005)
  – ESS2006 in the Netherlands
  – (In fact ESS has asked a crude and detailed question on father's and mother's occupation in all three rounds).
Crude measure in ISSP87

1. Professional and technical (for example: doctor, teacher, engineer, artist, accountant)
2. Higher administrator (for example: banker, executive in big business, high government official, union official)
3. Clerical (for example: secretary, clerk, office manager, civil servant, bookkeeper)
4. Sales (for example: sales manager, shop owner, shop assistant, insurance agent, buyer)
5. Service (for example: restaurant owner, police officer, waiter, barber, caretaker)
6. Skilled worker (for example: foreman, motor mechanic, printer, tool and die maker, electrician)
7. Semi-skilled worker (for example: bricklayer, bus driver, tannery worker, carpenter, sheet metal worker, baker)
8. Unskilled worker (for example: labourer, porter, unskilled factory worker)
9. Farm (for example: farmer, farm labourer, tractor driver)
ESS showcard

1. Traditional professionals
2. Modern professionals
3. Clerical and intermediate
4. Senior manager and administrator
5. Technical and craft
6. Semi-routine manual and service
7. Routine manual and service
8. Middle and junior managers
What is wrong / right with this?

Wrong
• Incomprehensible: modern professional?
• Blurs manual / non-manual divide
• Does not distinguish farmers

Right:
• Parallel measurement
• Conveys the idea of an occupation to respondent and interviewer
MTMM -- structure

educ

focc

Crude
detailed

rocc

crude
detailed

10
MTMM – education bias

Diagram showing relationships between:
- feduc
- focc
- educ
- rocc
- Crude
- detailed
- crude
- detailed
Analysis of ISSP87


- N=4219, 5 countries.
- Only for father's and respondent's occupation.
- No correction for correlated error.
- Crude and detailed are not very different in quality (measurement loadings around 0.85) or representation of status attainment.
- Combining crude and detailed in one model change the picture of status attainment:
  - Stronger structural effects
  - No direct effect of education on earnings.
Analysis of Dutch data 1996-2004

• N=4314, four surveys.
• Occupations: father, mother, first, current/last.
• Models include correlated error and education bias.
Results Dutch data 1996-2004

- Crude measures are slightly superior to detailed measure (1.0/1.1). Standardized: 0.80 / 0.85.
- Significant correlated error between methods in MTMM model, but it is equal between detailed and crude measures!
- (Almost) significant education bias in crude measures, but substantively neglectable (.03).
- Combining crude and detailed in one model change the picture of status attainment:
  - Stronger structural effects
  - No direct effect of education on earnings
ESS_NL 2006 – design

• Two crude questions formats:
  – ISSP87
  – ESS showcard

• Two detailed questions:
  – Coded by research agency (Jo)
  – Coded by PI (Harry)

• Occupation: father, first, current

• N = 1416 (preliminary file)
## ESS_NL 2006 – MTMM results

<table>
<thead>
<tr>
<th></th>
<th>FATHER</th>
<th>RESPONDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jo: 0.90</td>
<td>Jo: 0.90</td>
</tr>
<tr>
<td></td>
<td>Harry: 0.89</td>
<td>Harry: 0.89</td>
</tr>
<tr>
<td></td>
<td>ISSP-crude 0.85</td>
<td>ISSP: 0.86</td>
</tr>
<tr>
<td></td>
<td>ESS-crude 0.64</td>
<td>ESS: ---</td>
</tr>
</tbody>
</table>

TE ISSP-ISSP: 0.031
Main results – one more time

- Respondents have no problem answering the parallel measures twice, in fact asking a crude question helps them to answer an open ended, detailed question.
- Crude questions have about the same reliability as detailed question; in some example crude questions have better reliability than detailed questions.
- Crude questions do not suffer more from systematic (correlated) error than detailed questions.
- Multiple measurement models show more plausible status attainment structures than single measurement models, in particular with respect to income attainment.
- *The ESS crude question is a particularly bad measure; the ISSP crude question is satisfactory.*