Implementation and Results of a Cross-National, Structured-Interview Cognitive Test of a Measure of Disability

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Washington Group: Background

- Washington Group
 - United Nations City Group
 - Objectives to provide cross-nationally comparable questions on disability
 - Short set of questions for Censuses
 - Testing protocol

WG Proposed disability questions

Vision: How much difficulty do you have seeing even if wearing glasses?

Hearing: How much difficulty do you have hearing even if using a hearing aid?

Cognition: How much difficulty do you have remembering or concentrating?

Mobility: How much difficulty do you have walking or climbing stairs?

Self-Care: How much difficulty do you have with self-care, such as washing all over or dressing?

Communication: Because of a physical, mental or health condition, how much difficulty do you have communicating, for example understanding or being understood by others?

Goal of Census Questions: Internationally comparable data

- Suitable for censuses
- Captures most disabled people in a consistent fashion

Goal of Cognitive Testing:
Ensure that questions achieve those goals
No reliance on "gold standard"

Evaluation Method: Structured-Cognitive interview

- Structured interview guide
- Based on principles of cognitive testing
- Very simple instructions
- Few skip patterns
- Quantitative data and analysis

Cognitive Interview Protocol

Demographic Section: Country, language, gender, age, SES

Question Testing Sections

- A. Core Question
- B. Interviewer Coding
- c. Open-ended Follow-up Probe
- D. Subjective Cognitive Follow-up Probe
- E. Objective Functioning Follow-up Probe
- Health Questions: subjective health, chronic condition list
- Interviewer Debriefing

Data Collection for Cognitive Test

16 Countries: South & Central American, Asia, Africa

Country roles:

- Trained interviewers (with prepared materials)
- Conducted interviews
- Entered data
 - Prepared Excel spreadsheet
 - Performed quality check
- Performed initial analysis
- Sent data to WG for larger, combined analysis
- Total Sample: N=1290

Initial Analysis of Test Data

- Examined the consistency between Washington Group question responses and follow-up questions responses
- Goal: explain the discrepancies
 - Problem with the WG questions
 - Misunderstood word?
 - Cultural difference?
 - Translation problem?
 - Error in the follow-up questions?
 - WG Question captures more dimensions of the disability

Initial Analysis: Problematic Responses

Inconsistencies between the WG question and follow-up questions

Do you have difficulty seeing, even if wearing glasses? <u>No</u>

Do you have difficulty seeing and recognizing a person you know from 7 meters (20 feet) away? <u>A lot of difficulty</u>

Do you have difficulty seeing the print in a map, newspaper or book? <u>Some difficulty</u>

Vision

	Washington Group		
	No Difficulty	Yes Difficulty	
Not Problematic	617	352	
Responses	53.1%	30.3%	
Problematic	45	149	
Responses	3.9%	12.8%	

Vision Response Patterns

Pattern	WG Disability	Wears Glasses	Follow-up Disability
А	No	No	No
В	No	Yes	No (corrected)
С	Yes, disability	No	Yes
D	Yes, disability	Yes	Yes (not
			corrected)
ш	Yes, disability	Yes	No (corrected)
F	Yes, disability	No	No
G	No	Yes	Yes (not
			corrected)
Н	No	No	Yes

Reasons for inconsistency

 True response error (in WG or followups)—potential for Bias

2. Characteristic of respondent's disability not captured in follow-up questions

3. Data entry/Interviewer error

Hearing Response Patterns

Patter n	WG Disability	Aid	Missed Words	Functioning Problem
А	No	No	No	No
В	Yes	No	Yes	Yes
3	No	No	Yes	No
D	No	No	No	Yes
8	Yes	No	No	Yes
F	Yes	No	Yes	No
G	No	No	Yes	Yes
Н	Yes	No	No	No
t	No	Yes	Yes	Yes
J	Yes	Yes	Yes	Yes
К	No	Yes	No	No
L	Yes	Yes	No	Yes
Μ	Yes	Yes	Yes	No
N	No	Yes	No	Yes
0	No	Yes	Yes	No
Р	Yes	Yes	No	No

How to work with problematic cases:

Goal 1: Assess whether the problematic cases matter when combining 6 questions to create 1 prevalence rate

Goal 2: Conduct more analysis to identify the cases of "true response error" Goal 2: Assess how well each question captures the specific domain

- Determine extent to which each question falsely identifies people as having a disability
- Determine reason for misidentifications
 e.g. question design flaw, translation problem
- Determine which (if any) population may be more likely to be misidentified
 - e.g. less educated, particular country, elderly

Why it's important to identify cases of "true error"

- Bias if there is pattern in the error
 - Gender
 - Country
 - Age
 - Disability or Health Status
- Conduct demographic analysis of error cases to identify bias

Potential False Negatives/Positives

	False Negative		False Positive	
	Less	More	Less	More
	Problematic	Problematic	Problematic	Problematic
Vision	0%	3.9%	0%	12.8%
Hearing	6.7%	2.3%	3.7%	1.8%
Mobility	14.9%	4.8%	6.6%	2.0%
Cognition	8.7%	1.6%	14.2%	11.2%
Self-Care	12.9%	4.1%	5.2%	4.3%

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Identifying True False Positives

12.8% (149 cases) of Potential False Positives

Next analysis to identify true error: Additional follow-ups:

- 1. With your glasses, <u>how often</u> do you have difficulty seeing well?
- 2. With your glasses, <u>how much effort</u> do you have to put into seeing?

Vision False-positive Errors

53.7% No Effort <u>and</u> No Frequency
 80 out of the 149 potential false positives
 71 were Pattern E, 9 were Pattern F (vision patterns)

15.4% No Effort <u>or</u> No Frequency
 23 out of the 149 potential false positives
 22 were Pattern E, 1 were Pattern F

Conclusions: True Error for Vision

- Pattern E:
 - Cases in Pattern E are likely true error
 - Related to the glasses clause
- Pattern F:
 - More problems with effort and frequency
 - Cannot assume is error; Likely disability
 - Not to be included in demographic/bias analysis

Vision: Demographic/Bias Analysis

Does Pattern E occur more often among specific subgroups?

Country
Age
Gender
Disability Status

Glasses Clause Problems by Age

	10-44	45-64	65+	p-value
Pattern E	6.1%	17.3%	14.7%	p<.001
Wear Glasses	24.6%	62.0%	67.9%	p<.0001
Percent of glass wearers who are in Pattern E	25.0%	28.7%	21.5%	p=.42

Glasses Clause Problems by Gender

	Female	Male	p-value
Pattern E	8.1%	11.9%	p<.05
Wear glasses	38.3%	39.7%	p=.6175
Percent of glass wearers in pattern E	21.4%	29.6%	p<.05

Glasses Clause Problems by Country



Conclusions

- New method: structured cognitive test
- Pattern analysis particularly advantageous
- Useful approach for testing cross-national indicators
- Lends support to the Washington Group measures