

Relations between Cognitive Problems and Statistical Bias

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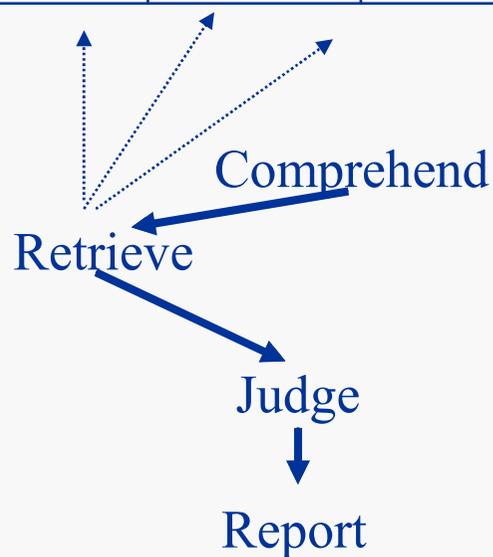
Statistics Norway

We haven't decided what we mean when we say that it "works" (a vague concept) But, we are beginning to try (Willis)

CASM blindness 1: Concept specification

“Problems of question wording, questionnaire flow, question context and choice of response categories have been the focus of much attention. Much less attention has been directed at clarifying the problems that occur before the first survey question is committed to paper” (Hox 2008)

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	Wording	Task	Response alternatives
Validity			
			Reliability

CASM blindness 2: Generalization

In their quality documentation survey methodologist focus on the outcome of contact efforts while cognitive interviewing focus on the outcome of the response process

	Response rate	Response quality
CASM	-	+
Surveys	+	-

Quality from a CASM and Survey Perspective

CASM perspective

- **Validity**
- Reliability
- Motivation

Survey perspective

- Consistency with other sources of information
- Consistency over time
- **Response rate**

Example 1: Questions about Working Conditions

	Questions	Q → R Bridge	Response formats	Scales
Norwegian LCS Survey	Specific	Yes	Tailored	Specific and relative
QPS Nordic	General	No	Standard	Relative

Results of Cognitive Interviewing

- Similar questions had different meanings
- The Norwegian LCS questions were easier to understand
- The QPS Nordic questions were quicker to answer
- TP preferred specific before relative response scales

General questions give higher estimates

LCS: Does it happen that you have so much to do that you have to skip lunch, work overtime or bring work home? Does it happen...

QPS: How often do you have too much to do?

	LCS	QPS
Daily	10	32
A couple of days during a week	23	30
One time during per week	12	10
A couple of days during a month	15	12
More seldom or never	40	16

The first alternatives are the easiest to choose

LCS: How well fits this description of your work? ... that you have tasks that you would have done different if you had more influence on your job?

QPS: How often do you have too things that you think should have been done differently?

LCS		QPS	
Fits very well	9	3	Often/always
Fits well	27	10	Rather often
		34	Sometimes
Fits poorly	28	27	Rather seldom
Fits very poorly	36	25	Seldom/never

Answers to LCS questions should form a more consistent picture of the working conditions

	LCS:	QPS:
Freedom to change things	36	25
Tools and resources needed	41	44
Clear expectations	50	46
Manageable workload	40	16

QPS questions seemed to be more vulnerable to order effects

When repeated LCS questions should be more robust

	Nearest neighbour correlations	
	LCS:	QPS:
Freedom to change things	97,2	
Complaints from customers		71,6

Correlations between specific and relative response scales on other QPS questions varied between 79,2 and 79,8

Example 2: Cognitive interviewing for improving the understanding of informed consent

The revised and gentler version of the introduction letter was preferred by 6 of 8 test participants (Willis 2006)

Variations in response seem to depend more on perceptions of benefits than on perceptions of risk of harm. Except under conditions that make disclosure risk salient, a description of the objective risk of disclosure does not appear to reduce expressed willingness to participate (Couper et al 2008)

The cognitive processes adding up to statistics

1. A cognitive process that decides participation
2. Questions derived from concept mapping
3. A 4-step cognitive response process affected by...
 - The survey context
 - + The social context
4. Adding up to an aggregate which are affected by...
 - The law of large numbers

Identifying cognitive problems is not the same as identifying statistical consequences