How Cognitive Interviewing Works

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How Cognitive Interviewing Works

- **Objectives of pretesting**
    - **Types of question problems**

- **Development of cognitive interview pretesting**
    - **Verbal reports as data**
    - **The survey question as a task instruction**

- **Advantages of the method**

- **Cognitive interviewing techniques**
    - **Thinking Aloud**
    - **Probing**
    - **Debriefing**

- **The cognitive interview session**
    - **What the interviewer does**
    - **What the respondent does**
    - **How problems become apparent**

- **Interviewing skills; interviewing errors**

The objectives of pretesting

- Identify problems with survey questions
  - Both respondent and interviewer problems

- Explore the reasons each problem occurs

- Obtain information to help fix the problem

- Revise the identified problems

- Test the revisions

The survey question as a task instruction

- When the components of a survey question are considered separately, the question may be viewed as asking the respondent to do a task, or multiple tasks.

In the last six months, excluding gifts you may have bought, how many purchases did make from online retailers?

Response task problems are partly due to the type of question

- Behavioral
  - Event frequency
  - Sensitive behavior

- Attitudinal
  - Previously formed opinion
  - Constructed opinion

- Proxy report

- Autobiographical
  - Recall autobiographical facts
  - Recall experiences in reference period

Behavior

- **Over the past 12 months, approximately how many days were you unable to work or perform your usual activities because of illness or injury? (exclude lost time for pregnancy and childbirth)**
  - *None*
  - *1 day*
  - *2-5 days*
  - *6-10 days*
  - *11-15 days*
  - *16-20 days*
  - *21 days or more*

Some Questions About
the Meaning of Questions

- During the last year, how many times have you gone to a doctor?

- How many people work at this company?

- On most days in the past week, how many hours did you watch TV?

Some Questions About
the Meaning of Questions

- During the last year, how many times have you gone to a doctor?
  - Actually saw the doctor; to lab?
  - Only physician; dentist; mental health provider?

- How many people work at this company?
  - Full time; part time?
  - This location; all locations?
  - Regular employees; contract employees?

- On most days in the past week, how many hours did you watch TV?
  - Have TV on; watch TV while doing something else
  - Majority of days; typical day
  - Past 7 days; last full week S-S

Response Task

a.   In the past two years, that is since March__ 2007, how many times have you seen or talked with a doctor or other health professional because you were sick or concerned about your health?

b.   What was your household's total income, before taxes, in 2007 from all sources, including employment, interest, return on investments, alimony and all other sources?

Response Task

a.   In the past two years, that is since March__ 2007, how many times have you seen or talked with a doctor or other health professional because you were sick or concerned about your health?

–   Reference period delineation
–   Counting events

b.   What was your household's total income, before taxes, in 2007 from all sources, including employment, interest, return on investments, alimony and all other sources?

–   Open-ended response
–   Income for other household members
–   Not most recent tax year
–   Multiple sources

- **How long have you and your spouse been in a committed relationship?**
  - *Not in a committed relationship*
  - *Less than 2 years*
  - *2-5 years*
  - *6-10 years*
  - *11-15 years*
  - *15 or more years*

Sensitive questions

- **In the last year, have you been hit, slapped, kicked, or otherwise physically hurt by someone, or has someone forced you to have an unwanted sexual act?**

- *No*

- *Yes*

>Some questions are only sensitive depending on the answer

>Many sensitive behaviors or events are under-reported, but not always

>Sensitive questions are subject to many of the same sorts of response error as non-sensitive items

>Survey design features can affect reporting: location in the interview, rationale, amount of detail requested, confidentiality concerns

What is cognitive interview pretesting?

- Cognitive interviewing is a generic designation for a variety of loosely related procedures to elicit information from respondents about how they interpret and perform the tasks necessary to answer survey questions.

- Different researchers select and combine these procedures based on multiple factors:
  - Nature of the questionnaire
  - Target population
  - Administration mode

- The objective is to identify problems that -- at least some-- respondents are likely to have with any part of the response process

Cognitive interviews in survey instrument development

Prior to cognitive interviewing, questionnaire pretesting methods produced mainly indirect indicators of factors affecting the validity, accuracy and reliability of answers.

- Do all respondents interpret the survey questions the same way?
  - How do their interpretations differ?

- Is their interpretation the one intended by the researcher?
  - If not, how does interpretation differ from intent?

- Do the respondents know the requested information?
  - Or can they recall relevant information to construct an answer?

- Are they willing to report it?
  - Are there social or other constraints on full and accurate reporting?

- Can they answer in the form the researcher requests?
  - Are there problems with the response categories?
  - Can respondents provide the requested level of detail?

Cognitive interviews address these questions more directly

- We ask respondents to:

    - Describe how they arrive at their answers
    - Answer questions *about* the survey questions
    - Talk about their "reading" of a question's intent
    - Collaborate with the interviewer to explore how the questions work or fail: volunteering comments and sometimes suggesting alternative wording.

- We employ several techniques to help respondents to these things.

- Researchers differ in what techniques they favor and how they apply them.

Some reasons cognitive interviews are effective

- Response problems can occur for reasons that are difficult to anticipate

  -- Questions or language that works well for most respondents may not work for some demographics or cultural subgroups

- Response problems that are not always readily apparent

  – Response errors can occur and still produce an "acceptable" answer

  – Often, respondents are not aware of their misunderstanding.

  – Respondents will try to make sense of a question, i.e. go beyond the literal meaning which is sometimes not intended

Advantages of cognitive interview pretesting

- Lets us see questions from the respondent's perspective

- Immerses researcher in the measurement process

- Obtains a lot of information from each respondent

- Seeing how respondents come up with answers may reveal how they interpret questions

- Can help identify ways to solve identified problems
  - But this is not a given

Development of cognitive interview methods

– **Thinking aloud**: theoretically based procedure to generate verbal reports on respondents' thinking

– **Follow-up probing**: to supplement think aloud reports

– **Question-specific probing**: to identify comprehension and other problems
  • Which may be based on earlier interviews

History of verbal reports in the development of cognitive interviewing for pretesting

- Ericsson and Simon: Verbal Protocol Analysis

  - Generation of think aloud verbal reports
    - concurrent reports
    - retrospective reports

  - Treat the verbal reports as data

- Cognitive Aspects of Survey Methodology (CASM) conference

- Federal cognitive labs established

- Interview techniques developed in different directions

- Methodological research on cognitive interviewing

Verbal reports of high-level cognitive task performance generated by "thinking aloud"

Think Aloud Instruction

"…we are interested in what you say to yourself as you perform some tasks….In order to do this we will ask you to THINK ALOUD as you work on the problems….I want you to say out loud everything that you say to yourself silently…Just act as if you are alone in the room speaking to yourself…."

The survey response task: a four-stage model

- **Comprehension**
- **Recall**
- **Judgment & Estimation**
- **Response choice and mapping**
  - (Assumes closed-response item)

Tourangeau, Rips, Rasinski: The Psychology of Survey Response, 200

This generic structural description of the response process provides a useful way to talk about question problems and response difficulties--- as flaws or failures in some aspect of this process.

The response task can be affected by factors other than question wording

- Aspects of the questionnaire
  - Instructions
  - Explanations (survey introduction, cover letter)
  - Definitions
  - Previous questions

- Respondent behaviors and intentions
  - Understanding of survey's purpose
  - Effort
  - Belief in confidentiality
  - Presentation of self
  - Willingness to provide information

Procedures that have been used to identify comprehension problems

Foddy, W. (1998) "An Empirical Evaluation of In-Depth Probes Used to Pretest Survey Questions," Sociological Methods and Research

– Getting respondents to define a key concept in their own words

– Having respondents repeat questions in their own words

– Checking whether respondents have included particular dimensions

– Inviting respondents to identify any inherent problems with questions

– Having respondents rate the comprehensibility of questions

– Asking respondents what went through their minds when they were first asked particular questions

– Asking them to elaborate their answers

– Having them say what first went on in their heads when they first answered the questions

How we use probes in cognitive interviews

A probe is a question about the survey question

- Probes can be generic, applicable to any survey question

- Probes can be item-specific, tailored to ask about a particular survey question

- Probes can ask about different aspects of responding

Two Approaches to Probing

- ***Concurrent probing***: Right after question answered

  - Pro: Relevant information still accessible to respondent
  - Con: May interfere with response performance

- ***Retrospective probing*** (including post- interview debriefing

  - Pro: Closer to normal survey interview process
  - Con: Some information may be lost

Types of Probes

- **Generic Probes**

  -- How did you arrive at that answer?

  -- Was that easy or hard to understand?

  -- Why did you choose that option?

- **Comprehension Probes:**

  – What does "exercise" mean?

  – What did you think was meant by "Difficulties with your husband/wife?"

- **Paraphrasing:**

  – Can you tell me in your own words what this statement means?

- **Recall:**

  – How did you figure out how many days you were "unable to work in the past year?"

- **Specific:**

  – What did you think of when I used the words "serious illness?"

Motivations for probing

- Context-based probing, i.e. *conditional* on respondent behavior
  - Comment
  - Time taken to answer
  - Changed answer
  - Inadequate answer
- Context-free probing, not in response to respondent behavior, but
  - Planned based on suspected question problem
  - Interviewer discretion
  - Generic probe to encourage thinking aloud

Summary of Cognitive Interviewing Techniques

- **Think-alouds:** Respondents are asked to describe all the thoughts that came to mind when they read the question and decided on an answer
    - Concurrent
    - Retrospective

- **Probes:** *After the subject provides feedback,* interviewers ask specific probe questions to find out if the respondent understood the question as intended. Probes serve to uncover specific signs of confusion or problems that the researcher may or may not have suspected.

    - Generic
    - Question-specific

- **Debriefing:** Once a particular section (or the entire survey) is completed, the interviewer and respondent discuss any additional problems that were encountered, general types of difficulties, and perhaps suggested improvements.

    - Structured
    - Open

a cognitive interview protocol

- Instructions to the interviewer
  - Explanation of informed consent
  - Brief description of the planned survey
  - Description of cognitive interview objectives

- Instructions to respondent, e.g.
  - Think Aloud
  - Respond to probes
  - Volunteer comments
- Respondent Think Aloud practice

- Administration of the survey questionnaire & cognitive interview techniques
- Respondent debriefing

Interviewer tasks

- **Work with the respondent to identify questionnaire flaws**

- **Administer the cognitive interview procedures**

- **Make notes and summarize cognitive interview findings**
  - **Summaries at level of the question**

Instructing the respondent

- **While you are answering the questions, at any time you can let me know about:**
  - Any words or phrases that you do not understand
  - Or that you think might mean different things to different people
  - Or that you would say in a different way

THINK ALOUD Practice Questions

- Generic: How many windows are in your house or apartment?

- Pretest of 8th grade student questionnaire
    - How many different cell phones have you owned?
    - Thinking about yesterday, how much time altogether did you spend using your cell phone (for any purpose)?
    - How many books do you have at home?
    - Of the teachers you had last school year, how many were men and how many were women?

How do problems become apparent?

Problems are identified in different ways in cognitive interviews:

- Respondent says there's a problem.
- Respondent can't answer the question.
- Respondent says something that suggests a problem.
  - » Possibly without recognizing the possible problem

Respondent's verbal reports in response to cognitive interview techniques

- Thinking aloud
- Interviewer asks question-specific probes
- Debriefing

Probes

- People aren't used to being asked questions about questions.
  - Especially early in the session, respondents may need help
  - They want to be helpful; to please
  - Feedback is important

Verbal reports can be adversely influenced by the interviewer

- Avoid

  - Assuming a suspected problem exists
  - Probing in a way to suggest a problem
  - Making comments that suggest particular problems

Eliciting useful responses to probes

- Avoid yes/no probes
  - Did you have any problem understanding what the question was asking for?
- Use neutral probes
  - "What were you thinking when you first read that question?"
  - "What else?"
- Silence

Early positive reinforcement

- Respondent reports difficulty in understanding a question
  - "That's the kind of thing we need to know . . ."
  - "Thank you for telling me that . . ."
- Reward commitment to task
  - "Thanks for describing your thoughts in such detail."

Debriefing

- Final questioning that occurs either after the respondent has completed a particular section of the interview or after the interview

- Interviewer may ask open-ended question to probe further into certain comments or observations the respondent made during the section/interview

- Respondents may also be asked to provide an assessment or overall critique of the instrument

Sample Debriefing Questions

- Now that we've finished, I'd like you to think about the questionnaire as a whole.
  - Does anything in particular come to mind that you want to comment on?
  - What are your general feelings about it?
- I have just a few final questions:
  - What questions in the survey were hardest to follow?
  - What sections do you think most needed to be revised?
  - Do you have any suggestions for how they might be improved?

Interviewer Skills Set

- Understand and be comfortable with the protocol

- Explain the session

- Balance helping respondent & adjusting to respondent

- *Be a good listener*

- Recognize when to probe

- Recognize and note informative verbal reports

- Recognize when you may need to digress from the protocol

Biggest Cognitive Interviewing Mistakes

- Suggesting that the participant is at fault for not understanding the question.
- Not following up on an indication of a possible misunderstanding.
- Cutting the participants off.
- Forgetting to pursue how participants are interpreting key words.
- Asking probes that suggest there is a right answer.
- "Leading" the respondent.
- Waiting a long time (e.g. over 24 hrs from time of interview) before writing up notes.

  ‣ Paul Beatty

Summarizing the interview results

- What we want to know
  - What is the (possible) problem?
  - Exactly what happened?
- Write up results immediately (or as soon as possible) after completing the interview.
- If possible, jot down notes as the interview proceeds.
- If the respondent says something especially informative, try to record it word-for-word as direct quotes are especially useful to the researchers.
  - This may require going back to the recording.
  - During the interview, note segments to review on the recording afterward