Evaluating Survey Questions

Chase H. Harrison Ph.D.
Program on Survey Research
Harvard University

What Respondents Do to Answer a Question

• Comprehend Question
• Retrieve Information from Memory
• Summarize Information
• Report an Answer

Problems in Answering Survey Questions

– Failure to comprehend
  • If respondents don’t understand question, they cannot answer it
  • If different respondents understand question differently, they end up answering different questions

Problems in Answering Survey Questions

– Failure to recall
  • Questions assume respondents have information
  • If respondents never learned something, they cannot provide information about it
  • Problems with researcher putting more emphasis on subject than respondent

Problems in Answering Survey Questions

– Problems Summarizing
  • If respondents are thinking about a lot of things, they can inconsistently summarize
  • If the way the respondent remembers something doesn’t readily correspond to the question, they may be inconsistent

Problems in Answering Survey Questions

– Problems Reporting Answers
  • Confusing or vague answer formats lead to variability
  • Interactions with interviewers or technology can lead to problems (sensitive or embarrassing responses)
Evaluating Survey Questions

- Early stage
  - Focus groups to understand topics or dimensions of measures
- Pre-Test Stage
  - Cognitive interviews to understand question meaning
  - Pre-test under typical field conditions
- Field and Post Stage
  - Interviewer evaluations
  - Behavior coding
  - Validation to external data
  - Randomized experiments

Focus Groups

- Qualitative research tool
- Used to develop ideas for questionnaires
- Used to understand scope of issues
- Used to understand contours of findings
- Used to have group evaluate and critique questions and ideas

Focus Groups for Questionnaire Development

- Develop parameters of measures
- Understand typical language and cultural conventions
- Learn about unanticipated responses

Focus Groups

- Small group in structured discussion
- Lead by trained moderator
- Uses 8 – 10 “typical” but talkative respondents
- Homogenous or heterogeneous groups

Moderating Focus Groups

- Develop structured guide for group
- Encourage respondents to think aloud and discuss
- Written exercises can often be used to start group

Disadvantages of Focus Groups

- Group dynamics can play key role
- Moderator needs to be skilled
- Results not necessarily replicatable
- Requires numerous groups for success and understanding
Cognitive Interviews

- Administering draft questionnaires
- Collecting additional information about responses
- Used to evaluate quality of question
- Used to understand whether question gathers intended information

Cognitive Interviews

- Look at question-answering from respondent’s perspective
  - Understand cognitive strategies used to answer
  - Understand how questions are interpreted
  - Understand how respondents understand concepts

Two Generally Different Approaches

- Think-aloud
  - Facilitate respondent revealing full thought process

- Active probing
  - Identify specific problems and answer specific questions

Typical Framework for Evaluating Responses

- Comprehension
- Memory Retrieval
- Information Summarization
- Answer Reporting and Formatting

Different Approaches for Interviewers

- Standardized:
  - Standardized probes
  - Neutral probing and approach
  - Relies on standardized training: no specific knowledge

- Active:
  - Interviewer modifies script based on evaluation of answering strategies
  - Plays more active role
  - Specialized interviewer functions as investigator
Thinking Aloud

- Protocol analysis based in cognitive labs
- Requires respondents to “Think Aloud”
- Assumes that respondent thoughts are
  - Available
  - Reported accurately
  - Does not change further responses

Thinking Aloud

- Ask respondent to think aloud
- Have respondent give free-form answer
- “What is going through your mind?”

Thinking Aloud

- Often begins with generic question and listens to respondent process of answering
- Models questions and questionnaire structure based on respondent thought processes
  - Examples:
    - Event dating
    - Recollection forward rather than backward

Example: Continuing Survey of Food Intakes by Individuals (CSFII)

- Original Structure:
  - “Starting with the (first/next) time you ate or drank something yesterday…..
    - Time
    - Name of meal
    - Food item
    - Quantity
    - Place eaten
    - Place purchased
  - DeMaio, Ciochetto, and Davis (1994)

Example: Continuing Survey of Food Intakes by Individuals (CSFII)

- 1991 Revision:
  - Quick list of everything eaten
  - Naming of time eaten
  - Probing of other foods consumed with quick list
    - Did you have anything else on…..
    - Did you have anything else in…..
    - Did you have anything else with
    - Did you nibble on anything else….
    - Did you have anything else…….

Example: Continuing Survey of Food Intakes by Individuals (CSFII)

- Cognitive interviews revealed respondents recalled food items more than occasions
- Respondents used multiple strategies to recall how foods were consumed

- DeMaio, Ciochetto, and Davis (1994)
Potential Problems with Respondents Think Out Loud

- Respondents veer off course or onto tangents
- Respondents focus more on response process than on stimulus of questions
- Process of thinking aloud may change answering process
- Respondents don’t necessarily provide all types of useful information
- Potentially overlooks problems following instructions in self-administered questionnaires

Interviewing with Probes:

- Read question and probe responses
  - “What made you say that?”
  - “Why did you respond that way?”
  - “What does that mean to you?”
  - “Please tell me what I was asking in your own words?”

Example:

- “In the past twelve months, how many times have you seen or talked on the telephone about your physical, emotional, or mental health with a family doctor or general practitioner?”
- Respondent: “Zero”
- PROBES FROM COGNITIVE INTERVIEWER reveal several doctor visits
- “Oh, I thought you said talked to on the telephone…..”
  - Adapted from Beatty (2004)

Types of Probes

<table>
<thead>
<tr>
<th></th>
<th>Proactive Administration (Initiated by interviewer or administrator)</th>
<th>Reactive Administration (Triggered by subject behavior)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized</td>
<td>(1) Anticipated probes</td>
<td>(3) Conditional probes</td>
</tr>
<tr>
<td>Construction</td>
<td>(Constructed prior to interview)</td>
<td></td>
</tr>
<tr>
<td>Non-Standardized</td>
<td>(2) Spontaneous Probes</td>
<td>(4) Emergent probes</td>
</tr>
<tr>
<td>Construction</td>
<td>(Constructed during the interview)</td>
<td></td>
</tr>
</tbody>
</table>

Benefits of Active Probing

- Makes use of expertise
- Likely more value from fewer interviews
- May be useful to generate understanding of types of problems to be included in more standardized phase
- May be better at elucidating rare problems than standardized interviews

Standardized Approaches

- Potentially can be replicated across facilities, languages, and cultures
- Can incorporate experimental manipulations and quantitative comparisons
- Facilitate coding and classification of problems
Examples of Classification:

- Types of Problems:
  - Lexical
  - Temporal
  - Logical
  - etc.
- Response Stage
  - Understanding
  - Task performance
  - Response formatting
  - etc.

» Conrad and Blair (1996)

Standardized Approaches

- Require large number of interviews
- Potentially replicate early mistakes
- Often merge with pilot test phase

Selection of Respondents

- Generally limited to convenience samples
- Relevant population
- Demographic variety
- Should represent diverse patterns – skip and usage – of survey questionnaire
- Extreme cases can help to understand parameters
- Best if done in a number of locations
- Often conducted iteratively with sets of 5 – 15 respondents

Pilot Tests

- Done using realistic field conditions
- Help test interviewer instructions and protocols
- Data often intensively recorded and analyzed
- Respondent and interviewer debriefing often conducted

Behavior Coding

- Analyzing responses to survey
  - Comprehension of response
  - Adequacy of response
- Request for reformulation
- Interpretation of question
- Comments and voluntary observations
- Use of “Don’t know”
- Refusal or other non-answer

Paralinguistic Measures

- Coding responses of terms such as:
  - I think
  - I’m not sure
  - Probably
  - Umm…..
  - [Silence]
Response Latency

- Length of time to respond is often negatively correlated with
  - Stability
  - Difficulty
  - Accuracy (Current state of Future behavior)

- Measures of response latency used to measure quality of question

Respondent Debriefing

- “When I asked you ….. Did you think you would ….?”
- “Were you still thinking when I asked the next question…?”
- “Did you loose track….?”
- “Were you confused?”
- “Did you feel bored or impatient….?”
- “Is there something that is relevant that you didn’t tell me?”

Interviewer Debriefing

- Use of interviewers to provide information about responses
- Assessment of respondent comprehension
- Assessment of respondent interest
- Interviewer assessment of problems

Randomized Experiments

- Split samples administered different versions of “same” question
- Analysis of:
  - Differences in responses
  - Accuracy (compared to external knowledge)
  - Ease of use
  - Latencies
  - Percentages don’t know / confused

Example of Measure of Chronic Conditions:

<table>
<thead>
<tr>
<th>Question Sequence A:</th>
<th>Question Sequence B:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you now have any physical or medical conditions that have lasted for at least 3 months? (Do not include pregnancy)</td>
<td>In the last 12 months, have you seen a doctor or other health provider three or more times for the same condition or problem?</td>
</tr>
<tr>
<td>In the last 12 months, have you seen a doctor or other health provider more than twice for any of these conditions?</td>
<td>Is this a condition or problem that has lasted for at least 3 months? (Do not include)</td>
</tr>
<tr>
<td>Have you been taking prescription medicine for at least 3 months for any of these conditions?</td>
<td>Do you now need to take medicine prescribed by a doctor? (other than birth control)</td>
</tr>
<tr>
<td>Is this to treat a condition that has lasted for at least three months? (Do not include pregnancy or menopause)</td>
<td></td>
</tr>
</tbody>
</table>

38% have chronic condition  56% have chronic condition

Further Readings on Pre-testing and Cognitive Testing