Cognitive Interviews for Evaluating Constructs and Questions

Theories and Surveys

- Concepts/Constructs (Theoretical Ideas)
- Measures (Questions or Scales)
- Responses (i.e. Data)

Evaluating Survey Questions

- Early stage
  - Focus groups or in-depth interviews 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
  - Interpretive interviews (or focus groups) to understand dimensions of measures

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 replicible
- Requires numerous groups for success and understanding

Cognitive Interviews

Cognitive Interviews

- Administering draft items, questionnaires, or 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 Theoretical Approaches

- CASM (Cognitive Aspects of Survey Methodology)
  - Understands questionnaire responses as occurring through structured cognitive processes
- Interpretive/Integrative Approach
  - Understand different ways questions can be interpreted

What Respondents Do to Answer a Question (CASM)

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

Typical Framework for Evaluating Responses

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

Interpretive Framework

- Thought structures are shaped by cultural phenomena
- Response structures are tied to social context
- Processes are not universal, but may be particular
- Particularly strong at understanding the comparability of measures among groups
- Focuses on richness and complexity of thoughts

Interpretative Framework

- Perception
- Attention/Inattention
- Memory / Time Chronology
- Classification
- Meaning making
- Social identity

See: Miller et. al. (2014)

Two Generally Different Approaches

- Think-aloud
  - Facilitate respondent revealing full thought process
- Active probing
  - Identify specific problems and answer specific questions

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)

- 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)

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……

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

	Proactive Administration (Initiated by interviewer or administrator)	Reactive Administration (Triggered by subject behavior)
Standardized Construction (Constructed prior to interview)	(1) Anticipated probes	(3) Conditional probes
Non-Standardized Construction (Constructed during the interview)	(2) Spontaneous Probes	(4) Emergent probes

From: Willis (2005) Cognitive Interviewing: A Tool for Improving Questionnaire Design

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

Respondent Selection

- Key is to identify greatest diversity on key items required
- Demographics can be relevant starting point
- As unanticipated patterns or responses arise, diversity based on new variables may be required
- Thus: Population characteristics can need to be adjusted, not fixed.

When to stop?

- Goals of Interview:
  - All difficulties respondents might encounter are identified
  - All constructs respondents include in answer are identified
  - Groups that interpret question differently are identified

When to stop?

- Theoretical Saturation
  - Can you understand (i.e. develop a theory) why respondents answer the way that they do
  - Can you construct a question that reconciles responses with your intended result
  - When all items have been identified and understood, you can stop.

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

Questions and Discussion