Cognitive Interview Methods to Address Conceptual Issues in Diverse Groups

Anna Nápoles-Springer, Ph.D.
University of California San Francisco
Center for Aging in Diverse Communities

Overview

◆ Integrating quantitative and qualitative methods to develop surveys
◆ Cognitive interview methods
◆ Using results of cognitive interviews to make decisions about item revisions/deletions

Integrating Qualitative and Quantitative Methods to Develop Surveys

◆ Goal: develop survey items that mean the same thing across groups
◆ Quantitative methods (descriptive statistics, reliability, validity) identify ethnic differences in response patterns
◆ Qualitative methods uncover cognitive processes respondents use to answer questions; disclose reasons for ethnic difference in response patterns
◆ Iterative quantitative and qualitative methods

Qualitative Methods to Develop Surveys

◆ Focus Groups
  – Open-ended guided group discussion with probing of responses
◆ Expert panels provide input on relevant concepts
◆ Interviewer debriefing
◆ Cognitive interviews
  – Open-ended probes to assess how items are interpreted and adequacy of response choices
  – Used to detect items not understood as intended

Focus Groups to Develop Surveys

◆ To assess the universality of concepts and measures – funnel approach, concept to term
◆ Facilitate culturally sensitive models (e.g., how being AA shapes experiences of discrimination)
◆ Use phrases from transcripts to develop new items
◆ Pretest clarity and relevance of existing items

Cognitive Interviews

◆ Derived from social and cognitive psychology to explore processes respondents use to answer survey questions
◆ Diagnostic tool for pretesting survey questions
Cognitive Interviews Examine 4 Steps in Answering Questions

- Comprehension of the question
  - as intended by the researchers
- Retrieve the information
  - various strategies used to access memory
- Judgment formation - formulate an answer
  - calculate or judge the correct information
- Edit response - decide what to report
  - is answer embarrassing, socially undesirable?

Purpose of Cognitive Interviews

To learn...
- .. if respondents understand words and phrases as intended (meaning)
- .. about the process of answering the questions
- .. whether items are unacceptable
- .. about the usefulness of response choices
  - whether response choices are adequate
  - how they use the response choices

Two Types of Cognitive Interviews

- Think aloud interviews
  - Respondent asked to think aloud as they answer question
- Probe interviews
  - Interviewer asks specific questions to elicit how respondent answered question
  - Scripted and spontaneous probing
- Think alouds - greater respondent burden

Two Types of Probe Interviews

- Concurrent probing
  - Ask probes immediately after respondent has given answer to survey item
  - Advantage-information is fresh in respondent’s mind
- Retrospective probing
  - Ask probes after entire interview
  - Advantage-able to assess standard administration of items

Steps Involved in Cognitive Interview Pretesting

- Decide on a final item pool
- Develop scripted “probes” for a subset of items
- Translate interview and probe questions
- Recruit sample for cognitive interviews
- Conduct cognitive interviews
- Analyze results
- Revise items based on results
- Cognitive testing of revised items

Reducing Item Pool

- Reduce items from item pool (subjective process among research team)
- Criteria:
  - maintain breadth of concept, multiple items/concept
  - reduce redundancy (but OK to test alternate versions of items)
  - eliminate items that are unclear, complex, require high verbal skills, lack face validity, or will not translate well
### Writing Probe Questions

- From reduced set of items, select potentially problematic items for pretesting
- Write open-ended scripted probe questions
  - worded to reveal if suspected problem with a specific item is present

### Types of Cognitive Probes

- **General**
  - Tell me what you were thinking when you answered that question
  - How easy or difficult was it to answer that question? Why?
- **Explore meaning of word or phrase**
  - I asked you how often doctors take a genuine interest in you. What does the phrase “genuine interest” mean to you?

### Types of Cognitive Probes (cont.)

- **Retrieval**
  - How did you remember that?
- **Judgment**
  - Why did you pick that number for your answer?
- **Response**
  - Do you think that most people answer this question honestly?

### Types of Cognitive Probes (cont.)

- **Redundancy**
  - How is the phrase “give you advice about your diet and exercise” different from the phrase “talk to you about your diet and exercise”?
- **Acceptability**
  - When I asked you how often you felt discriminated against by doctors because of your race or ethnicity, you answered (read answer given). Were you offended by this question?

### Types of Cognitive Probes (cont.)

- **Cultural appropriateness**
  - I asked you how often doctors asked you about your health beliefs? What does the term ‘health beliefs’ mean to you?

### Sampling for Cognitive Interviews

- **Usually do not use representative samples**
- **Include respondents from major segments of population to be sampled for main survey**
- **Approximately 5-15 interviews/group, but may involve several rounds**
Recruiting for Cognitive Interviews

- Explain how their help fits into larger study, process of creating questions
- Explain their role clearly:
  - “help us learn how to ask better questions”
  - “help us make questions clearer for others”
  - “help us to identify problems with questions”
- Pay subjects $25 - $50, interview is demanding
- If survey is long, pretest different sections on different subjects

Conducting Cognitive Interviews

- Individual face-to-face, in-depth interviews
- Standard administration of closed-ended items
- Administer probe questions at the end (or concurrently)
- Typically 1 hr interview
- Each interview audiotaped and transcribed

Data from Cognitive Interviews

Two general methods for compiling data
- Use electronic version of survey to enter comments on each item directly under each question
  OR
- Transcripts are data

Analysis of Cognitive Interviews

- For method where entered comments under each question
  - Annotated questionnaire - aggregate item-by-item comments over multiple interviews
  - Summary of most significant problems
- Two approaches for transcripts
  - Behavioral coding
  - Use qualitative data analysis software to perform content analysis

Behavioral Coding

- Review transcripts to identify problems with standard administration of items
  - respondent and interviewer “problem” behaviors
- Assign “problem behavior” codes to each item using pre-determined categories
- Summarize results for each item:
  - proportion of interviews with each problematic behavior for each item
    » e.g., 7/48 respondents requested clarification of item 10

Examples of Behavioral Codes

Interviewer behavior
- Hard to read - interviewer experiences difficulty reading question
Respondent behavior
- Repeat question - respondent asks to have the question repeated
Content Analysis of Items and Probes

- Using qualitative analysis software, review all dialogue that ensued during standard administration of closed-ended items and open-ended probes
  - can reveal source of problems
  - can help in deciding whether to keep, modify or drop items
- Allows you to examine dialogue for each item
  - within groups
  - across groups/languages

Example of Results: Interpreting the Question

Original item: *How satisfied are you with the amount of stress or worries in your life?*
Probe: *Did you answer this question in terms of stress, worries, or both?*
- AA - tended to answer in terms of worries
- No term in Spanish for “stress”
- Item revised
  - *How satisfied are you with the amount of worries in your life?*
  

Example of Results: Unclear Phrase

Original item: *Have you had any medical tests or procedures in past year?*
- 26% of respondents asked for clarification
Probe: *What did you include as medical tests or procedures?*
- *Medical test or procedures* unclear (e.g., asked if it included dental or cosmetic procedures)
- Item revised to include examples:
  - *Have you had any medical tests or procedures, such as blood tests, x-rays, or cancer screening tests?*


Example of Results: Information Retrieval

Original item: *How satisfied are you with your ability to travel on vacations?*
Probe: *What do you think we meant by vacation?*
- Neither concept of “vacation” nor “travel for pleasure” had relevance to lifestyle of AA and MA; travel for family reasons
- Dropped item


Example of Results: Response Sets

Original scale: “Very unimportant to Very Important” on 0-100 scale (bipolar)
- Problem: No direct Spanish translation for “unimportant”
  - bilinguals understood translation “sin importancia” as equivalent to unimportant
  - Spanish monolinguals did not understand it as the negative pole of the scale
- Solution: Changed English to unipolar scale “not at all important” to “very important” to correspond to best Spanish


Example of Results: Redundancy of Items

Original items:
- *How often did doctors explain what was causing your health problem?*
- *How often did doctors explain your diagnosis?*
Probe: *What do the words health problem and diagnosis mean to you?*
- Respondents viewed them as the same
- Some respondents did not know meaning of diagnosis
- Dropped item with word diagnosis

Center for Aging in Diverse Communities, University of California San Francisco, 2005.
http://medicine.ucsf.edu/cadc/cores/measurement/index.html
**Example of Results:**

**Cultural Differences**

Original item:

– How often did doctors ask you if you wanted to include your family when making decisions?

Probe: When would you include your family in making decisions about your health care?

◆ AAs and WHs viewed question as irrelevant; only in cases of genetic or terminal illness
◆ Latinos more likely to include family in less serious cases
◆ Dropped item

**Summary**

◆ Greatest problems are with question interpretation
  – usually due to need to write at lower level of verbal comprehension
◆ Sometimes English concepts not meaningful in other languages, are irrelevant for certain groups, or differ in meaning across groups
◆ Need to pretest response sets
  – Ethnic groups may use them differently

**Advantages of Cognitive Interviews**

◆ Complement other field test methods (e.g. where problems are identified by missing or truncated answers)
◆ Identifies where responses might be affected by cultural or group experiences
◆ Suggests ways to revise items, response sets
◆ Improves validity of questions

**Disadvantages of Cognitive Interviews**

◆ Flags problems, but significance of the problem remains matter of subjective judgment
  – at which point need to revise or drop items
◆ Based on small number of respondents
◆ Time and labor intensive

**Conclusions: Integrating Quantitative and Qualitative Methods**

◆ In diverse populations, qualitative work is necessary in addition to more traditional quantitative studies
◆ Prior to quantitative: to develop concepts, items appropriate to culture
◆ After quantitative: to help identify reasons for items not performing well quantitatively
◆ Even limited cognitive interviewing can reveal significant issues overlooked by survey developers