PROSPECTIVE QUESTIONS AND OTHER ISSUES IN COGNITIVE TESTING

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As researchers, we use various forms of pre-field testing to evaluate questions. Focus groups help determine content area and terminology. Usability tests tell us if the format and mode work. Cognitive testing of questions has two very important functions. First, it is the only method of evaluation that allows a researcher to know how the cognitive tasks posed by a question are being handled. These tasks - comprehension of the question, retrieval of information, and formation of the answer - can all be asked about, observed, and evaluated in a cognitive interview. Together these help the researcher with the ultimate goal of all question evaluation - determining if the answer given by the respondent represents what the researcher originally intended.

BACKGROUND

Cognitive testing, once rarely used by survey researchers, has gained a respectable place in pre-field testing. As with any new field, time must be spent defining and creating methods and protocols that are effective, efficient, and replicable across studies and centers. As more researchers use this technique, it is becoming clear that cognitive interviewing protocols vary greatly. There are at least 3 major characteristics of a cognitive interview.

The Interviewer

Who does the cognitive interview not only influences the style of the interaction but may also influence the results. Some researchers do cognitive testing themselves, usually bringing a strong background in the content area of the study to the interview. Cognitive psychologists are sometimes used for their knowledge of cognitive tasks and functioning. Question evaluation specialists, while sometimes lacking specific content-area knowledge, understand the goals and objectives of a "good question." Specially-trained interviewers, often senior field interviewers, have also been used to do cognitive interviewing.

The Structure of the Protocol

The kinds of questions or probes a cognitive interviewer uses to help evaluate a question fall into two major groups - "structured" or pre-scripted questions and "unstructured." Structured questions allow the researcher to pre-identify important issues or tasks and ask specifically about them. These questions can be answered in either closed- or open-ended form. Asking for a definition or for respondents to rephrase a question in their own words, and providing a vignette or an alternative version of the question or answer categories are all examples of structured probes. Unstructured cognitive testing, on the other hand, does not rely on pre-written probes. The interviewer is responsible for understanding the objective of each question and then asking cognitive probes where and when needed to evaluate the respondent's answers.

The Order of the Protocol

When the cognitive evaluation of a test question takes place may also affect results. The use of "think-aloud" interviews - where respondents are asked to verbalize their thought processes as they answer questions - is one of the most common forms of cognitive testing. The goal of a think-aloud interview is to try to understand the cognitive process concurrently with the test interview. The think-aloud method is often paired with another method - retrospective probing - to get a more complete picture of how the cognitive task was carried out. Retrospective probing can be done immediately after a question or series of questions, or at the end of an interview as part of a respondent debriefing. All of these methods are tied to specific questions and are meant to evaluate, after the fact, how the respondent arrived at a given answer.

Cognitive evaluation can also begin before a test question is asked. This method can be compared to the "stories" qualitative researchers gather. In this method, respondents are asked to describe the experiences to be covered by a set of questions before rather than after the test questions are asked. Such an approach can give the cognitive interviewer a general background picture of what the respondent has to say, which may help to inform the follow-up questions and probes later in the interview.

RESEARCH QUESTIONS

We had two original research questions when we began our project. First, do researchers get different information when using a pre-written structured protocol versus a more flexible unstructured model; and 2) How does the order of the protocol - asking questions before or after the test questions - influence the process?

RESEARCH DESIGN

Eight cognitive interviewers completed 19 cognitive interviews in the fall and winter of 1999. Three senior field interviewers, specifically trained as cognitive interviewers, used a structured, pre-written cognitive instrument for their 12 interviews. Five senior staff members, with content area knowledge or question design experience, completed their interviews in a basically unstructured format, focusing on getting a "story" before the questions.

The test instrument was a subsection of the Consumer Assessment of Health Plans (CAHPS®) instrument. The questions asked about experiences with getting health care, including interactions with providers and health plans. The survey included both reports and ratings of respondent experiences.

RESULTS

Although we found no definitive "correct way" to use cognitive interviewing to evaluate questions, we found that the two different protocols - structured retrospective and unstructured prospective - each worked well in specific circumstances.

1. A structured protocol seems to work best for concrete issues. It works well to uncover problems with understanding definitions, wording issues, and recall concerns.

Example 1: Structured Retrospective Protocol

Test Questions:
A. In the past 12 months, did you look for any information in written materials from your health plan?
B. In the past 12 months, how much of a problem, if any, was it to find or understand information in the written material?

Structured Cognitive Questions:
1. What kind of "information" were you thinking about?
2. Where would you/did you look for these materials?
3. Was it ever difficult to find or understand the information?

Using structured retrospective probing worked well in this situation. We learned that several respondents included health awareness pamphlets found in waiting rooms in this question (when it actually was meant to be information from the plan about the plan). We also found out that some people distinguish a "problem" from "being

difficult." For some respondents, if they could eventually solve the problem, even though it was difficult, they answered that it was not a "problem" (because it did not prevent them from attaining the desired result). By seeing potential problems with the questions beforehand, we were able to write structured probes to specifically probe the areas of concern.

2. There are noteworthy benefits of using an unstructured format and asking for a story before asking the actual test questions. Without referencing a specific question or series of questions, the interviewer was able to create a background frame of reference to use throughout the interview. The interviewer could then draw on this information to later probe answers to specific questions.

Example 2: Unstructured Prospective Protocol

Interviewer gets Respondent to talk about her health care utilization in the past year. She talks about her health plan, her health conditions and which doctors she has seen in the past year (including an opthamologist, OB/GYN, internist, dentist, and an upcoming appointment with a brain surgeon).

Test Question:
    In the last 12 months, did you see a specialist?

Respondent Answer: "No"

In this situation, we already knew that the respondent had seen an opthamologist and an OB/GYN. Therefore we were able to probe specifically as to why she answered "no." The unstructured format allowed the interviewer to discuss her thought processes directly. We found that she knew the doctors were "specialists" but since her visits to them were for generic, check-up reasons, she did not include them in her answer. She was categorizing the reason for the visit (general or specific problem) rather than the type of doctor.

A solely retrospective probe, in this situation, would probably have been inadequate. The respondent knew what kinds of doctors were "specialists" and may have even included opthamologists and OB/GYNs if asked to list some specialists. The interviewer might have then concluded that she understood the question, not realizing that she actually saw those doctors in the last twelve months.

Example 3: Unstructured Prospective Protocol

Interviewer gets Respondent to talk about how she found her current doctors. She talks about the difficulty she had getting a referral from her primary care doctor and finding a urologist. She explains that there were very few urologists in her health care network and none were in her town. None of the doctors she called could schedule an appointment with her for weeks. She then talks about how hard it is, in general, to get a specialist. And, as a patient, how she feels it is up to her to "do the legwork" necessary to get the care she needs.

Test Question:
   In the last 12 months, how much of a problem, if any, was it to get a referral to a specialist that you needed to see?

Respondent Answer: "Not a problem"

Again the benefit of getting her story beforehand allowed the interviewer to know that her answer of "not a problem" did not match what actually happened. We knew from her story that this respondent felt responsible for finding and maintaining her own health care. At this question, she reveals that she actually did not need the referral after all and thus in her plan there is no problem getting referrals. Her answer is inconsistent with the reality that she actually did get a referral and that it was a big problem. She believed that it was her fault that she thought she needed a referral and therefore it wasn't as much a problem as her error.

CONCLUSIONS

Using a structured retrospective protocol has both benefits and drawbacks. This mode seems to work well in evaluating the first two cognitive tasks in answering a question. By asking about definitions and word comprehension, researchers can see if the respondent understands the question. By asking structured retrospective probes, such as "did you include x" or "how did you come up with that number," researchers can evaluate if a respondent is able to retrieve the needed information. However, this type of protocol may not be as good at evaluating the last cognitive task - formulating a response - since it relies on knowing what the respondent's situation is and judging whether the answer given accurately describes the reality that he or she has to report. For pre-identified problems, researchers can almost always write a probe or question to answer their concern. Yet, for unanticipated problems or idiosyncratic

concerns, there is little flexibility in a pre-written instrument.

A structured protocol is also easier to administer than an unstructured one. In regular standardized interviewing, interviewers are trained to get complete answers to open-ended questions and continue to probe until the respondent's answer has fulfilled the objective of the question. After some training in basic cognitive techniques, interviewers seem to be able to administer pre-written probes easily. In effect, they are simply asking open-ended questions. A drawback to this format is the difficulty classically-trained standardized interviewers have in asking anything other than the pre-written questions or probes.

Because the unstructured prospective design, by definition, produces unanticipated material, follow-up questions and probes cannot be pre-scripted. Sophisticated interviewers are required who can think on their feet and modify the probes and questions to the specific situation at hand. Therefore, this type of interview works best with senior staff who have either content area or question design backgrounds. Finding out the "lay of the land" beforehand gives the interviewer a knowledge on which to base the rest of the interview. The key advantage to this is that the interviewer can use this knowledge to evaluate whether questions are answered inconsistently with what the respondent has to say. They are able to discern whether respondents were able to formulate answers that were consistent with their lives and whether the answers given were what the researcher was looking for.

On the other hand, prospective probes may change the context of the question. By talking about the content area before actually asking the test questions, it may "prime the pump," giving a respondent time to think about the content area, a luxury respondents do not have in an actual interview situation. Using this method also makes it harder for the researcher to fully understand whether the respondent can handle the cognitive task of information retrieval.

We realize that retrospective protocols are the most common. Of course, they, too, can elicit a description of reality against which to evaluate answers. However, we observed that answers to retrospective questions often were closely linked to the answers respondents gave. After answering the test question, the respondent seemed more likely to provide information that was consistent with the answer given, rather than allowing the interviewer to hear the whole story without prior references. Hearing the whole story before asking the questions increases the chances of hearing inconsistent information and getting material that the respondent - but not the researcher - considers outside the scope of the question.

Continued research in cognitive testing is needed. Just as different modes of data collection have been compared and evaluated - and recognized as having their own benefits and drawbacks - we need to compare cognitive protocols. Cross-genre tests (such as looking at information learned from cognitive interviewing vs. focus groups) and cross-mode tests (such as comparing prospective and retrospective formats) will be of great benefit to this field.

We are not saying that prospective questions should replace retrospective questions. However, we think they may be a useful addition to the current approaches used for cognitive testing. As this field grows, we are beginning to recognize that the differences in cognitive testing methods may be more than just a matter of taste; they may also affect what conclusions researchers draw. What respondents report, and what they do not, may influence whether and how a researcher changes a certain question. We know that focus groups are not the best place to test specific question wording and that a field test can usually provide a good idea of the true time it takes to complete a survey. Each mode has its strengths and weaknesses. For any given project our task is to decide which evaluation methods best meets our needs. We feel that prospective cognitive testing gives us yet one more option from which to choose.