

How Much Can you Trust the Answers You Get Using Cognitive Interviews?

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Abstract

Cognitive interviews has been widely used and studied as a research tool to reduce sources of response error and improve survey questions. Cognitive interviews are based on the assumption that respondents are reasonably reliable informants about how they comprehend and answer questions. We recently conducted a study using a greater than average number of cognitive interviews to test question comprehension (n=40) in a housing survey. The study was conducted in two parts: 1) survey completion and 2) retrospective probing. In the first part, respondents answered questions from the housing survey with the option of indicating when they did not know the answer or understand the questions. In the second part, respondents were interviewed and probed about the clarity of questions, their subjective experience of answering the survey questions and how they arrived at the answers. This study yielded both quantitative and qualitative data, which allowed a comparison of actual survey responses and information respondents reported about clarity and comprehensibility of questions. This comparison showed that while respondents would say a question was clear and that they understood it, their actual responses to survey indicated a lack of comprehension. This study will show data from the housing study that indicate this discrepancy and will discuss the limits of relying on respondents as informants of their thought processes.

Introduction

Cognitive interviews have been a very useful method to develop and test questionnaires and to identify and reduce measurement errors. They rely on the respondent to verbally report what they are thinking and their cognitive processes used when answering a question. Through this interviewing and probing, questionnaire designers can gain insight about potential problems with the questions, such as miscomprehension, conceptual confusion, etc.

In this study we find that the cognitive interviews were effective in identifying problematic questions where respondents either did not understand question or did not know the information sought by the questions. However, we also observed certain limits

of cognitive interviews. Respondents were not always reliable informants about their cognitive processes and their ability to comprehend and answer the survey questions. We found that sometimes the respondents reported that they thought a question was clear and that they understood it, but they gave illogical or inconsistent responses to the survey.

Methods

We conducted 40 cognitive interviews with participants who rent apartments or units. Participants were recruited from the general population in the DC metropolitan area. Their ages ranged from 21-73 years (mean age=41.95 yrs.). Twenty-eight participants were female and twelve were male. The participants have been renting their current residence for an average of 4.3 years. In addition, they have rented an average of six different apartments or units.

Interviews were conducted with one participant at a time, face to face. Each session lasted approximately 30 minutes. A researcher administered the survey and recorded all responses on paper. The interviews were also audio-taped to verify and supplement the notes kept by the researchers. The sessions consisted of two parts. In the first part, participants were administered the paper-pen version of the Housing Survey. They were instructed to answer each question as accurately as possible. If, however, they were unsure about the question content, meaning or the information sought, they were asked to indicate this at the time they completed the survey. The second part of the session was a cognitive interview, in which the participants were asked in detail to think-aloud and comment about some of the survey questions and major concepts.

We compared the responses obtained through the survey questions from the first part of the session to those from the cognitive interviews in the second part of the session. In this comparison, we noticed some inconsistencies between their actual answers to survey questions and their comments on the same questions.

¹ The opinions expressed here are those of the authors and not necessarily those of the Bureau of Labor Statistics.

Discrepancies in Responses

Participants said a question was clear and that they understood it, but their actual responses to survey items showed a lack of comprehension for the following questions.

1. “Who pays for the electricity for this unit?”
 - 97.5% of participants reported that this question was easy and clear to understand.
 - But, 37.5% of participants had given illogical or inconsistent responses to this question, as verified by other sources.
2. “Does this month’s rent include any extra charges?”
 - 82.5% of participants said the question was easy and clear to understand.
 - But, 45% of participants had given inconsistent responses to this question.
 - For example, participants gave two different responses to this question when asked at different times.
 - Participants who share the same housing unit gave different responses from each other.
3. “What types of A/C equipment does this unit have?”
 - 75% of participants reported that this question was easy and clear to understand.
 - But, 37% of participants gave invalid responses to this question.
 - E.g., Majority of participants gave the response, “central”, which was not a valid answer choice.
 - Participants sharing the same unit gave inconsistent responses from each other.
 - Participants gave responses that were incorrect, as verified by known equipment in apartment buildings.
4. “Is this unit all electric?”
 - None of the participants thought this question was difficult or confusing. 100% claimed to understand this question and be able to answer it.
 - But, many gave erroneous answers. For example, 50% of those who said that their unit was all electric later reported other fuels, such as gas and fuel oil for their heat, hot water, or air-conditioning.

Constraints of Cognitive Interviews

- Limited to what participants can articulate
 - Even when they understand a concept, they may not be able to paraphrase or tell it in their own words. This under estimates their comprehension.
 - In cognitive development and cognitive processing, comprehension is greater than production (MacKay, 1988). People are able to comprehend more than they can produce.
 - It is difficult for participants to inform about processes that are automatic, and not “conscious.” For example, when a participant was probed about how they arrived at an answer, she replied, “I don’t know how I got the answer. I just know it.” Similarly, another participant, when probed about what information she used to answer the question, she replied, “I used the truth.” These responses indicate that they are not aware of any internal processing they used to retrieve an answer, since it was automatic and not conscious.
- Participants are not always reliable informants about their cognition.
 - Their responses are prone to social desirability. They may be reluctant to say when they do not understand something. This overestimates their comprehension. Their responses tended to be biased toward falsely reporting comprehension, when they might not have understood the question.
 - Their responses are prone to judgment heuristics. They may over estimate their comprehension of a question, because they attribute the familiarity of common concepts such as rent and electricity to the easiness of question. They used this fluency with common concepts in their judgment about their ability to answer the question.

Summary

- Participants sometimes report that they understood a question, but their inconsistent responses to survey questions indicate a lack of comprehension.
- Cognitive interviews are limited by participants’ ability to articulate and inform about their thought processes.
- Whenever possible, researchers should consider additional sources of data to validate cognitive research findings.