

COGNITIVE TESTING: EXAMPLES, TELESCOPING, AND PROXY RESPONSE ISSUES

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RESULTS FOR A POPULATION-BASED SURVEY ABOUT EATING HABITS AND INTESTINAL ILLNESS

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Study Background

Topic: Foodborne agents are a serious public health concern, causing an estimated 48 million illnesses, 128,000 hospitalizations, and some 3,000 deaths in the U.S. each year.¹ Billions of dollars in healthcare-related and industry costs have been attributed to foodborne illnesses annually.^{2,4}

Survey Implementation: To estimate the burden of unreported and reported acute diarrheal illnesses in the U.S., and to assess the frequency of important exposures commonly associated with foodborne illnesses, a large, population-based survey about eating habits and intestinal illness was developed. The survey – designed to be implemented in three modes, using a multi-frame sampling strategy – draws on previous surveys with similar content as well as new questions designed to solicit information about exposures.

Pre-testing: Over several weeks in August, 2016, we conducted six cognitive interviews testing the entirety of the instrument, including previously used questions and newly constructed questions. During this work, we used three discrete research questions to guide our questions:

- Are the examples provided in the survey questions lowering the cognitive burden of response?
- Are respondents able to accurately report their eating habits over the past 7/30 days? To what extent do respondents engage in telescoping?
- Acting as proxy respondents, can caregivers accurately report the eating habits of their children?



Methodology

Cognitive Interviewing

Cognitive interviewing is a method of pre-testing surveys that involves in-depth interviewing, paying particular attention to the mental processes respondents use to answer survey questions.⁵ Cognitive interviewing uses a framework dependent on evaluating survey questions against their measurement objectives, including what the question is attempting to measure, and to what level of accuracy respondents can provide data in response. It is dependent on a “think aloud” technique that encourages respondents to “verbalize thoughts while engaged in a cognitive activity with little interjection by the interviewer other than” to keep the respondent thinking out loud.⁶ In engaging respondents in this exercise, their cognition is slowed while not impacting their task performance; that is, the act of asking respondents to think aloud while answering survey questions does not necessarily change their answers, even though it causes them to move through the survey more slowly.⁷

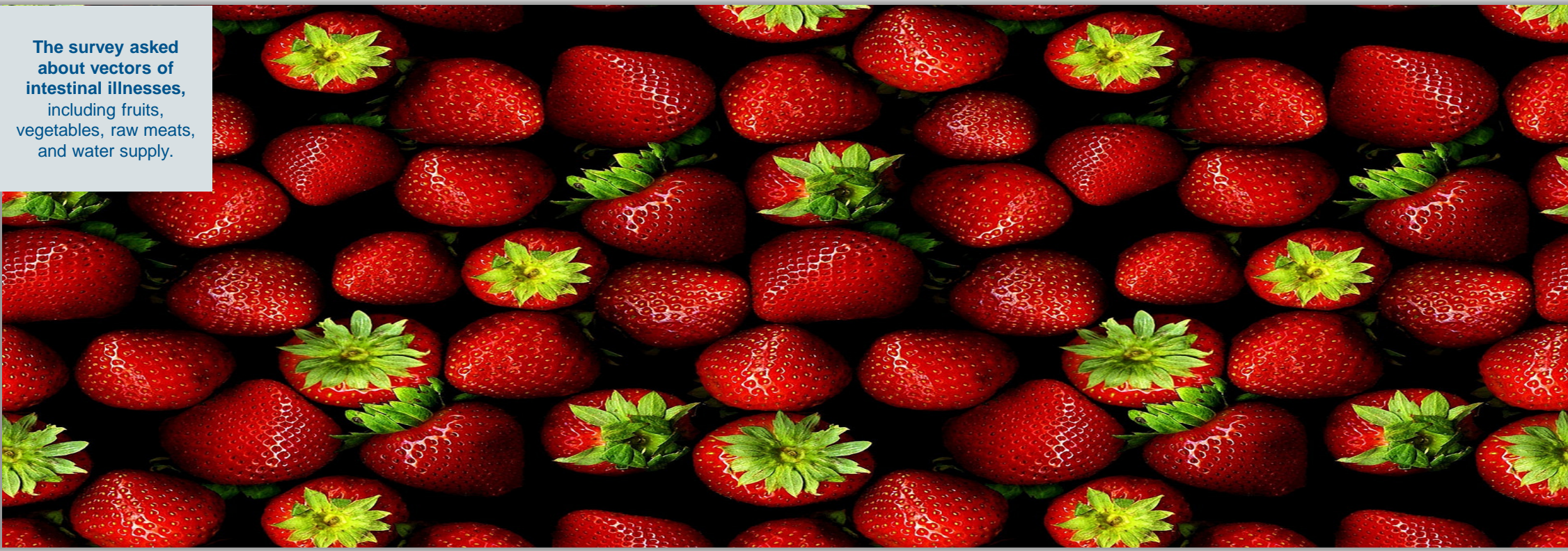
The question probes and prompts in this cognitive interview take a few forms. First, throughout the interview, respondents are reminded to think out loud so that interviewers can understand their cognitive process. Respondents are also asked to paraphrase survey questions (“in your own words, what is this question asking you?”), to rate survey questions (“how easy or difficult was this question to answer?”), and to define specific word or phrases within a question (what do we mean by the word X in this question?).

Respondents

We used multiple avenues of recruitment for respondents, including general and targeted advertising and professional and personal networks to ensure that respondents were of various ages, races, sexes, and other backgrounds. Interviews took between 45 and 60 minutes, and were conducted in Atlanta, Georgia and Silver Spring, Maryland. Respondents were given \$50 in appreciation of their time.

Respondent background

Respondents were equally split on sex: three men and three women participated. Two respondents were white, and four were black/African-American. Half (3) were age 40 or younger, two were between 41 and 64, and one was 65 years old or older. Two respondents acted as proxies, responding on behalf of their children, while the other four were self-reports.



The survey asked about vectors of intestinal illnesses, including fruits, vegetables, raw meats, and water supply.

1 Examples

- Asked about having eaten a particular group of foods in a specified time period, respondents keyed in too closely on the examples and, at times, left off important data points.

Q: These next questions are about **poultry**. This does not include canned items, but the poultry could have been fresh or frozen unless I say otherwise. These foods could have been eaten alone, as a deli meat, or as a part of a dish. Please tell me if you ate these in the past 7 days?

R: I don't know of any other foods that contain chicken other than just chicken. I was trying to come up with meals prepared over the past week where I had some form of chicken. Baked chicken, but not fried...I don't eat that anymore.
- For raw vegetables, the issue was more about inclusion and exclusion of responses based on the provided examples.

Q: Now I'll ask you about raw **vegetables** in the past 7 days...did you eat any of the following raw or uncooked vegetables?

 - ☐ Leafy greens such as lettuce, spinach or kale such as in a salad, on a sandwich, or burger?
 - ☐ Sprouts such as alfalfa, bean, clover, or broccoli?

R: Spinach is very high in iron and is good in smoothies and texturally it is thicker than generally leafy greens. I would picture something like romaine or ice burg, which are lower in nutrients when I think of lettuce. Lettuce would be like ice burg, leafy greens are like collard greens, mustard greens, and arugula. I think it could be confusing, and I think you need to clarify because you could say technically leafy greens could include lettuce and spinach, whereas spinach does not include the other two categories. And, lettuce is also a leafy green so it could include leafy greens depending on the type of lettuce. Lettuce and spinach are distinct. Leafy green may be an umbrella category.
- Not all questions dealt with food consumption. Asked about their drinking water, respondents struggled with identifying the source.

Q: Where does most of the water for your home come from?

 - Public or private water system
 - Individual or private well
 - Some other source, such as a spring, cistern, lake, stream, or river
 - Bottled

R: Just a faucet, so I guess that would be private? What is a septic system?

2 Telescoping

- Asking about food consumption in the past 7 or 30 days was a high cognitive burden for some respondents.

Q: How far back were you thinking when you answered these questions? (correct answer: 7 days)

R: A few weeks. I was thinking over the summer, maybe the end of June to present...and up until yesterday.
- Respondents have two cognitive tasks for the food questions – both to remember what foods were eaten, and to identify whether or not these foods fit into the category in question.

Q. These next questions are about **other foods**. Did you eat any in the past 7 days?

<input type="checkbox"/> Peanuts	<input type="checkbox"/> Walnuts (whole or pieces)	<input type="checkbox"/> Pistachios (whole or pieces)
<input type="checkbox"/> Almonds (whole or pieces)	<input type="checkbox"/> Cashews (whole or pieces)	<input type="checkbox"/> Pecans (whole or pieces)

R: I do need to change the pecan pieces answer. I remember I had some cereal and it is a new kind by Special K, and it has some pecan pieces in it. It had them in there and I forgot about that. Now that you bring it up, I'm not sure if granola bars should fit.

R: I did not think about granola bars, but we did have granola bars. I don't think there would be enough [nuts] in there. Oh, but, we did have cashew bars. Now that one I would consider yes, because it had actual cashews in it.
- The survey also changed reference periods, and this increased the cognitive burden of response for the questions. Moving from “the last 30 days” to “the last 7 days” and back lead to responses that were based on inappropriate reference periods.

Q: In the past 30 days, did you have contact with a household member or other close contact with diarrhea?

R: I didn't think I had a time frame for this question.

R: I used the past 7 days for this question.

3 Proxy Reporting

- For many questions, respondents simply did not have access to the information needed to provide an accurate proxy response.

Q: What was the maximum number of bowel movements with loose stools [your child] had in any 24-hour period?

R: My response is approximate. My son alerted me [to his loose stools] three or four times, however, it was possible that he did not alert me [of more] later in the day.”
- This issue was exacerbated for proxies reporting for children living in more than one household.

Q: The first questions are about **eggs**. Tell me if you ate any of these [egg dishes] in the past 7 days.

R: I know that their father takes them to McDonald's a lot and has probably taken them there for breakfast, and I know that I've taken them out to eat some, though I don't remember him specifically ordering eggs with me. I'm assuming his father took him to McDonald's for breakfast, which is an assumption I don't know for a fact.



Recommendations for Improvement



By providing additional examples, respondents would be prompted to include other types of dishes containing the ingredients of interest.

Examples

To ensure that the examples are acting as activating text – not limiting responses – we suggested that the provided examples be more varied, and more clearly labeled as examples.

The first questions are about **eggs**. Tell me if you ate any of these in the past 7 days:

Eggs or egg-containing dishes such as quiche or egg salad. ➡ Eggs or egg-containing dishes such as egg salad, desserts made with eggs like cakes and cookies, or meats coated with egg batter.

These next questions are about **poultry**. This does not include canned items, but the poultry could have been fresh or frozen unless I say otherwise.

These foods could have been eaten alone, as a deli meat, or as part of a dish. ➡ These foods could have been eaten alone, as a deli meat, or as part of a dish, like a casserole or a soup.

Telescoping

Ultimately we decided to include a calendar reference for respondents. For the online and CATI versions of the survey, we pre-programmed the question fill to include the first and last day of the reference period.

First, I'll ask you about foods eaten in the past 7 days. ➡ First, I'll ask you about foods eaten in the past 7 days, which is [insert day, date] to today [date].

Proxy Response

Where appropriate, we could add instructions to proxy respondents to either only think about the time that the child is in their care or to respond “I don't know” if they are unsure.

What was the maximum number of bowel movements with loose stools [your child] had in any 24-hour period?

➡ Web-programmed prompt: If you do not know, please select the “don't know” response option.

➡ CATI optional prompt: IF YOU DO NOT KNOW, YOU CAN TELL ME THAT.

➡ Mail prompt: If you are answering on behalf of your child, and you do not know, please select the “don't know” response option.

References

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