Recommendations for survey question cognitive testing

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The CSTE Cannabis Subcommittee strongly encourages cognitive testing of new or modified survey questions before adding them to a survey. Testing of existing questions is also useful, as cannabis products and language have rapidly evolved during recent years. Also, even when a question works well for a particular survey in general, testing may still be useful if there are suspected regional or population-specific (e.g., age, cultural) variations in the effectiveness of specific questions.

- Development of additional questions is likely to be needed over time. Any new questions should be tested among people representative of the groups who will be asked the questions.
- In addition to questions, introductory language that sets the context for questions may require cognitive testing.

The following provides general guidance for cognitive testing of survey questions.

Cognitive Testing Overview

Content below is adapted from a presentation by Dr. Ashley Brooks-Russell, University of Colorado School of Public Health, presented at a CSTE Cannabis Stakeholder meeting in Denver, Colorado, May 2019.

Goal
Cognitive testing improves confidence that a survey question—whether attitudinal, behavioral, or factual—will fulfill its intended purpose. *Will my respondents interpret my items in the manner that I intended?*

Methods
Qualitative method: Individuals are presented with survey questions in final draft and as they will be given (including interviewer-administered and self-administered). Usually conducted before, but can be during data collection, or after the survey. Focus is on the survey *questions* (not the entire process).

“*Think-aloud*” approach
- Respondent verbalize their thoughts as they attempt to answer the survey questions.
- Interviewer supports by asking the respondent to “keep talking” (and also keep on track/on task)
- Provides freedom from interviewer-imposed bias but burden is on the respondent

*Verbal probing approach*
- The interviewer has series of probing questions designed to elicit information
- Can be done concurrently or retrospectively
- Easier on respondent; more prep needed by interviewer; can impose some bias from the structure
Planning for testing

*Dimensions for exploration*

1. **Comprehension**: question intent, meaning of terms
   - During the past 30 days, on approximately how many days did you drive a car or other vehicle within 2 hours of using cannabis?
   - How much do you think people risk harming themselves (physically or in other ways), if they use marijuana regularly?

2. **Retrieval of information**: recall-ability of information, recall strategy
   - During the past 30 days, on the days that you used cannabis, approximately how many times per day did you use it on average?

3. **Judgment or estimation**: motivation to answer the question accurately and thoughtfully, sensitivity/social desirability
   - During the past 30 days, on the days that you used cannabis, approximately how many times per day did you use it on average?
   - How much do you think people risk harming themselves (physically or in other ways), if they use marijuana regularly?

4. **Selection of a response**: mapping the response:
   - During the past 30 days, how did you usually get the marijuana that you used? (Select only one response.)
     A. I did not use marijuana in the past 30 days
     B. I bought it at a marijuana store or center
     C. I bought it from someone else
     D. A parent or family member over the age of 21 gave it to me
     E. A friend over the age of 21 gave it to me
     F. Someone under the age of 21 gave it to me
     G. I took it without permission from the owner

**EXAMPLE**

*Question to test*: During the past 30 days, how many times did you use marijuana?

<table>
<thead>
<tr>
<th>A. 0 times</th>
<th>What does the word “marijuana” mean to you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. 1 or 2 times</td>
<td>What does “use” mean to you?</td>
</tr>
<tr>
<td>C. 3 to 9 times</td>
<td></td>
</tr>
<tr>
<td>D. 10 to 19 times</td>
<td></td>
</tr>
<tr>
<td>E. 20 to 39 times</td>
<td></td>
</tr>
<tr>
<td>F. 40 or more times</td>
<td></td>
</tr>
<tr>
<td>Recall / Retrieval of information</td>
<td>How do you remember that you used XX times?</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Judgement or estimation/ confidence</td>
<td>How sure are you about the number of times?</td>
</tr>
<tr>
<td>Selection of a response</td>
<td>How did you come up with your answer?</td>
</tr>
<tr>
<td>General</td>
<td>Tell me what you were thinking when you answered? How easy or hard was that to answer?</td>
</tr>
</tbody>
</table>

Implementing cognitive testing

**How many (and who) to include?**
- Small is generally okay – e.g., as few as 5; as many as several dozen
- Include enough people so you can capture a range of responses
- Include members of key demographics subgroups
- Can be individual or small groups (focus groups)
- Think about group composition (mixed or homogenous)

**Length**
- Probably can’t keep people’s attention for more than an hour (maybe less)
- Decide which questions should be tested and why
- Depending on length present the entire survey (for context, and timing) or only a subset of questions
- Focus probes on questions of most interest

**Specific formats**
- Paper/web
  - Test survey in realistic manner (similar to final formatting and instructions)
  - Minimal set-up so that respondents take the survey as they normal would (e.g., quickly)
  - Probe after survey is complete so that probing does not influence answers (retrospective)
- Phone/in-person
  - Probably more efficient to probe after each relevant question (concurrent probing)
  - An advantage to concurrent probing is that the question is fresh in their mind

**Practical guidance**
- Not all participants in cognitive interviewing are “insightful”
- Everything about focus groups applies here
  - Good facilitation skills are needed
  - Keep the group on task
  - Engaging quiet participants
  - Open-ended and non-leading probes
trade-offs of group vs. individual
Consider sensitivity of the topic

Example script
• Thank you for agreeing to participate in this study.
• The purpose of today is to have you fill out a survey about tanning and sun protection. After you finish the survey, we will talk about your answers. For all of the questions in this survey, there are no right or wrong answers, we just want to know what you think about these things. Please answer as honestly as you can.
• We are most interested in finding out if any of the questions are hard to understand or hard for you to answer. Also, if you have an idea for a way to change a question to make it more understandable, please let me know.
• Your thoughts, comments and ideas about the survey are very important. The survey that will be made will be based on your feedback and will help us learn XXX.
• Nobody except the researchers will see the results of your survey. Nobody will know your answers on this survey. Please circle anything on the survey that you don’t understand. And move on to the next question. Don’t worry about hurting my feelings if you don’t like any of the questions— I didn’t write these questions. My job is to work with you to find out how to make them better. Do you have any questions for me before we get started?

General comments
Cognitive interviewing is just one part of pre-testing and assessing question performance.
• Also do:
  – Lit review
  – Expert review of content
  – Pilot testing
  – Check that the layout/design works and the flow
  – Evaluate interviewer behavior (if applicable)
  – Debrief interviewers
  – Test sampling and administration plan
  – Look at distribution of responses

Final thoughts:
• Quality in = quality out
• Don’t let the perfect be the enemy of the good

References