Using Close-Ended Web Probes to Inform the Redesign of the National Health Interview Survey (NHIS)

Paul Scanlon, PhD

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Presentation Overview

1. Web Probing and Cognitive Interviews
2. The NCHS Research and Development Survey (RANDS)
3. NHIS Chronic Lung Condition Questions
Web Probing and Cognitive Interviewing

- The goal of question evaluation studies is to reduce the potential measurement error of survey items.
- **Traditional method is Cognitive Interviewing**
  - Purposive sampling
  - Semi-structured interviews
  - Qualitative data and analysis
- **Newer method is Web Probing**
  - Wide range of samples—from convenience to representative
  - Structured interviews*
  - Quantitative and qualitative analysis*
Web Probing and Cognitive Interviewing

<table>
<thead>
<tr>
<th></th>
<th>Traditional CI</th>
<th>Web Probing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample</strong></td>
<td>Narrow Geographic &amp; Demographic Dispersion</td>
<td>Wide Geographic &amp; Demographic Dispersion</td>
</tr>
<tr>
<td><strong>Goals</strong></td>
<td>Explore and Evaluate</td>
<td>Explore and Evaluate or Confirm</td>
</tr>
<tr>
<td><strong>Probes</strong></td>
<td>Scripted or Reactive / Spontaneous</td>
<td>Scripted</td>
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<tr>
<td><strong>Add’l Info</strong></td>
<td>Personal Narratives Context</td>
<td>Response Distributions Paradata</td>
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</tbody>
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From Edgar and Scanlon, 2017 “Apples and Oranges: What is the right question when comparing Web Probing and Cognitive Interviewing?” AAPOR
Close-Ended Web Probing

- Close-ended web probes provide a way to mix qualitative and quantitative findings
  - Use findings from Cognitive Interviews to design probes
  - Answer categories are patterns of response
  - Embedded into questionnaire following question or questions under evaluation
  - Findings can be analyzed alongside other quantitative variables

- Probes are designed around the patterns of interpretation found during cognitive interviews
Example of a Close-Ended Web Probe...

NHIS Question: Would you say your health in general is excellent, very good, good, fair, or poor?

Probe Question: When you answered the previous question about your health, what did you think of?

1. My diet and nutrition
2. My exercise habits
3. My smoking or drinking habits
4. My health problems or conditions
5. The amount of times I seek health care
6. The amount of pain or fatigue I have
7. My conversations with my doctor
NCHS’ Research and Development Survey (RANDS)

- Non-production survey designed to examine the potential uses of web panels
- Used Gallup Panel
  - “Representative”, Recruited, Statistically-sampled
- Conducted over two rounds in 2015 and 2016
  - Second round included close-ended web probes
- n=4784 (Round 1=2304; Round 2=2480)
- Only web respondents
  - Panel itself includes non-web panelists, but they were not included in this survey
An Example of this Mixed-Method Question Evaluation Process: The NHIS Lung Questions

- Currently NHIS asks three separate questions about chronic pulmonary disease
  - Emphysema ever
  - COPD ever
  - Chronic Bronchitis in last 12 months
Current NHIS Scheme

Have you ever been told by a doctor or other health professional that you had emphysema?

1. Yes
2. No

Have you ever been told by a doctor or other health professional that you had chronic obstructive pulmonary disease, also called COPD?

1. Yes
2. No

During the past 12 months, have you been told by a doctor or other health professional that you had chronic bronchitis?

1. Yes
2. No
An Example of this Mixed-Method Question Evaluation Process: The NHIS Lung Questions

- Currently NHIS asks three separate questions about chronic pulmonary disease
  - Emphysema ever
  - COPD ever
  - Chronic Bronchitis in last 12 months

- Cognitive interviewing revealed large potential for measurement error
  - COPD *INCLUDES* emphysema and chronic bronchitis!
  - Counting acute bronchitis in chronic question

- A “combined” question was suggested and tested on RANDS
An Example of this Mixed-Method Question Evaluation Process: The NHIS Lung Questions

Have you ever been told by a doctor or other medical professional that you have Chronic Obstructive Pulmonary Disease or COPD, emphysema, or chronic bronchitis?

1. Yes
2. No
[9] Refused
An Example of this Mixed-Method Question Evaluation Process: The NHIS Lung Questions

- Currently NHIS asks three separate questions about chronic pulmonary disease
  - Emphysema ever
  - COPD ever
  - Chronic Bronchitis in last 12 months

- Cognitive interviewing revealed large potential for measurement error
  - COPD *INCLUDES* emphysema and chronic bronchitis!
  - Counting acute bronchitis in chronic question

- A “combined” question was suggested and tested on RANDS
  - Wanted to find a question that captured the same construct, but with a lower potential for measurement error
An Example of this Mixed-Method Question Evaluation Process: The NHIS Lung Questions

Does the combined question capture the same constructs as the separate questions do?
Findings from Cognitive Interviewing

EPHEV and COPDEV: Ever been told...
Emphysema/COPD

Constructs Captured

- Emphysema/COPD
- General Chronic Lung Disease
- Heart Disease
Findings from Cognitive Interviewing

**CBRCHYR**: In the past 12 months...chronic broncitis?

**Constructs Captured**

- Specific Diagnosis of *Chronic* Bronchitis
- Any Diagnosis of Bronchitis (Including *Acute* Bronchitis)
Findings from Cognitive Interviewing

**Combined Question:** Ever been told...
COPD, emphysema or chronic bronchitis?

**Constructs Captured**

- COPD/Emphysema/Chronic Bronchitis
- General Chronic Lung Disease
- Acute Bronchitis
- Heart Disease
Findings from Web Probing

- Probes were administered after combined question (NEWLUNG) in Round 2 of RANDS

- Only respondents who answered NEWLUNG “yes” received probes

- Probes designed to tease out specific condition respondents were thinking about (and see if acute issue was present or not)
Which condition were you told you had? [Select All]

1. COPD
2. Emphysema
3. Chronic Bronchitis
4. Bronchitis
5. Something else

Thinking about the most recent time you had symptoms of Chronic Obstructive Pulmonary Disease or COPD, emphysema, or chronic bronchitis, how long did the symptoms last?

1. Less than one week
2. One week to one month
3. One month to three months
4. Three or more months
Findings from Web Probing

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percent</th>
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<tbody>
<tr>
<td>COPD</td>
<td>67.468</td>
</tr>
<tr>
<td>Emphysema</td>
<td>18.966</td>
</tr>
<tr>
<td>Chronic Bronchitis</td>
<td>30.536</td>
</tr>
<tr>
<td>Chronic Bronchitis</td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td></td>
</tr>
<tr>
<td>Bronchitis</td>
<td>11.232</td>
</tr>
<tr>
<td>Other</td>
<td>7.352</td>
</tr>
</tbody>
</table>
Findings from Web Probing

Duration of Symptoms for Respondents Reporting Thinking About Chronic Bronchitis or Bronchitis

<table>
<thead>
<tr>
<th>Duration</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 Week</td>
<td>9.178</td>
</tr>
<tr>
<td>1 Week to 1 Month</td>
<td>22.265</td>
</tr>
<tr>
<td>1-3 Months</td>
<td>14.731</td>
</tr>
<tr>
<td>3+ Months</td>
<td>35.175</td>
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An Example of this Mixed-Method Question Evaluation Process: The NHIS Lung Questions

Does the combined question capture the same constructs as the separate questions do?

- Cognitive Interviews indicate that combined question
  - Does pick up the intended, in-scope constructs
  - Does not appear to capture out-of-scope “heart disease” or “acute bronchitis” constructs

- Web probing used to see if this latter is just a function of the cognitive interviewing sample
  - Only small percent of respondents use a potentially out-of-scope interpretation
Methodological Considerations for the Use of Web Probes

- One of the perceived drawbacks of adding cognitive probes to field tests is the idea that they will effect the performance of other survey items.
- By evaluating the response between Rounds 1 (without probes) and 2 (with probes) of RANDS, we find no evidence of this.
- Explored two areas:
  1. Probes’ effects on overall response
  2. Probes’ effects on response to other survey items
Methodological Considerations for the Use of Web Probes: Overall Item Response by Round
Methodological Considerations for the Use of Web Probes: Completion and Breakoffs by Round

<table>
<thead>
<tr>
<th>Round of RANDS</th>
<th>Disposition</th>
<th>Weighted Percent of Respondents</th>
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<tbody>
<tr>
<td>Round 1</td>
<td>Complete</td>
<td>95.128</td>
</tr>
<tr>
<td>Round 2</td>
<td>Complete</td>
<td>94.368</td>
</tr>
<tr>
<td></td>
<td>Partial</td>
<td>4.872</td>
</tr>
<tr>
<td></td>
<td>Partial</td>
<td>5.632</td>
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</table>

<table>
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<tr>
<th>Round of RANDS</th>
<th>Weighted Percent of Respondents</th>
</tr>
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<tbody>
<tr>
<td>Round 1</td>
<td>99.293</td>
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<tr>
<td>Round 2</td>
<td>98.727</td>
</tr>
<tr>
<td></td>
<td>No Breakoff</td>
</tr>
<tr>
<td></td>
<td>0.707</td>
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<tr>
<td></td>
<td>Breakoff</td>
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<td>1.273</td>
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χ²(1, 5050) = 1.309, p = 0.253
χ²(1, 4764) = 3.313, p = 0.069
Methodological Considerations for the Use of Web Probes: Effects on Response to Other Items
Thank you!

Paul Scanlon
National Center for Health Statistics
pscanlon@cdc.gov