The Problem With Problems: Modified Perspectives on the Role of Cognitive Interviewing for Improving Questionnaires

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Key purpose of cognitive interviewing

- Most consumers and practitioners of cognitive interviewing think of cognitive interviewing as a tool for “finding problems” with questions
- My premise:
  - Although seemingly reasonable, this conceptualization is somewhat misleading and limited
  - A slight shift in perspective has the potential to improve what we get out of cognitive interviewing

Common criticisms as cognitive interviewing has evolved

- Impressionistic
- Non-representative
- Uninformative about prevalence of issues
- Misses many issues (at least with typical sample sizes)
- False positives

The general argument regarding false positives

- Cognitive interviewing finds many "problems" that are not real threats to data quality
- Changing questions to address such issues does not significantly improve measurement quality
- Furthermore, the method never produces good news: you never get confirmation that this is a valid/good question-- only criticism

Assumptions underlying this criticism

1) Cognitive interviewing tends to treat the nature of problems as binary: either something is “a problem” that needs to be addressed, or not a problem
2) Cognitive interviewing is biased toward finding problems at the expense of finding things that work particularly well

The nature of question problems

1) Cognitive interviewing tends to treat the nature of problems as binary: either something is "a problem" that needs to be addressed, or not a problem

1-Alt) Almost always, questions have some degree of imperfection, some more serious than others. Deciding which issues warrant changes requires weighing tradeoffs.

Does this question have a "problem"?

- Where you live, are you able to walk to shops or markets?
  - Generally understandable
  - Most provide an answer
  - One issue: "able to" is fuzzy for some respondents ("it's possible, but would be long, so I don't…but I could")
  - Is it a problem that needs to be fixed? Depends on our alternatives and the data needs…
  - Cognitive interviewing is excellent at identifying such issues, raising them for consideration

Bias toward negative findings

2) Cognitive interviewing is biased toward finding problems at the expense of finding things that work particularly well

-5.....0.....+5

Terrible question — Really awesome question

2-Alt) Cognitive interviewing identifies potential weaknesses rather than providing an overall quality assessment. The best outcome is "no evidence of issues"

0.....5..... 10

No evidence of error — Large or pervasive error

Evaluating magnitude of imperfections

- How much does a supposed flaw matter in statistical terms, i.e., do distributions, variances, correlations change?
- More sophisticated experimentation needed to understand these consequences-- effortful and expensive to accomplish in practice
- On a more common basis, two criteria to evaluate magnitude of imperfections:
  - How widespread is the probably likely to be– how many will be affected by it?
  - When the issue comes up, how large of an impact is it likely to have on findings?

Example of evaluating magnitude: current smoking

- "Do you currently smoke cigarettes: daily, occasionally, or not at all?"
  - Real occasionally… down to one an hour
- How widespread of an issue?
  - very large: "daily" and "occasionally" overlap in meaning
  - anyone who smokes at all could make a similar error, especially those who think of their usage as receding
- How large of an impact? similarly large– results would be difficult to interpret
- Does it warrant a change? arguably yes, especially given many viable alternative questions

Another example: days of good health

- "…for how many days of the last 30 days would you say your physical health was not good?"
  - Easy to answer for most:
    - if you are healthy with discrete exceptions
    - if always unhealthy (serious illness)
  - Difficult to answer for those with high variability within days, or constant low-level issues (common situation among elderly)
  - Zone of ambiguity: relatively small… question can be readily answered by most people
  - Impact: can be quite large if interested in elderly and chronic conditions… which the sponsors were

Another example: walking to shops

- "Where you live, are you able to walk to shops or markets?"
  - As seen earlier, many respondent situations are unambiguous:
    - Those who clearly can and do walk to shops
    - Those clearly could not, based on any reasonable understanding
  - A "zone of ambiguity" centers on those who could *theoretically* walk to shops, but would be impractical. Some in that situation answer:
    - Yes, because it's possible
    - No, because there's a very small chance they would actually do it
    - Some evidence of inconsistent responding in that situation
  - Does this warrant a change? Depends upon how worrisome this ambiguity is, and whether there are better alternatives

In summary: alternative paradigms

1) Does this question have a problem? (y/n)
   If yes: what's the fix?

2) All questions have imperfections
   - What are the imperfections of this particular question?
   - What are the consequences in terms of:
     a) How many respondents are they likely to affect
     b) How much are they likely to affect results
   - Is there an alternative that is likely to do better?

In conclusion

- The concept of fixing “problems” is still useful when treated with some nuance
- But without meaningfully distinguishing the importance of various problems, two potential traps:
  - Overreacting to minor flaws– perhaps introducing major ones, or wasting effort
  - Underreacting to major ones– which is tempting given the cost and complications of making many changes
- A slight paradigm shift regarding what cognitive interviewing actually delivers has the potential to generate more useful insights for questionnaire evaluation.