

Social Science Methods Series: Cognitive Testing in Survey Questionnaire Design

Cognitive testing is essentially qualitative and the most common method used is **cognitive interviewing**² which involves semi-structured, depth interviews, usually with a purposive sample designed to reflect the range and diversity of views and experiences in the target population relevant to the question or survey. The interviews are conducted as (**concurrently**) or after (**retrospectively**) participants complete particular questions or survey questionnaires. There are two main cognitive interviewing techniques which each have their strengths and weaknesses and can be used separately or combined depending on the focus of cognitive testing:

- Verbal probing
- Think aloud

Verbal probing is particularly useful in helping to uncover participants' understanding of questions and to identify poorly worded or ambiguous questions. However it can also be used to examine retrieval, judgement and response. Although it is important to ensure that probing is clear, unbiased and used consistently in interviews, flexibility is an important feature of cognitive interviewing so that unanticipated problems can be identified and explored (emergent probing). Spontaneous probes are often used in response to participants' comments or behaviour. The following probes are used as standard:

Comprehension probe: 'what does the term x mean to you?'
Paraphrasing: 'can you repeat the question in your own words?'
General probes: 'how did you arrive at that answer?'
'was that hard or easy to answer?'

It is possible to probe individual questions or a questionnaire retrospectively however there are problems with both approaches. Retrospective probing once a participant has completed a questionnaire may result in recall problems. On the other hand, probing after each question may make participants more aware of their answers which may influence their responses to following questions.

Think aloud interviewing can provide insight into the kinds of information and experience respondents draw on and the decision making process in responding to questions and is particularly useful in testing self-completion questionnaires. This technique requires respondents to put their thoughts into words as they work through an instrument. Interviewers may have to 'teach' respondents how to think aloud. The interviewer may also use probes to follow up on points raised in thinking aloud.

Cognitive testing can include the use of **card sorts** and **vignettes** to help participants visualise and talk about concepts. These techniques may also form part of the questionnaire which is being cognitively tested. **Focus groups** are also used in cognitive testing however they tend to be more useful in identifying overall themes and issues for a survey rather than specific question problems. Sometimes problems are identified in focus groups that are a product of the group dynamic and may be unlikely to arise when questionnaires are completed on an individual basis. **Observation** and **behaviour coding** are also used in cognitive testing to identify problems in answering questions including delay, uncertainty, reading errors etc, particularly at the field pilot stage.

The way in which cognitive testing is carried out should also reflect the type of survey being tested, for example; telephone, self administered, face to face, computer assisted. That said, it may be most effective to use face to face techniques in the earlier stages of survey design and follow up with cognitive interviewing relevant to the mode of administration of the survey. Willis gives an example of cognitive testing of a telephone survey which includes video monitoring of the participant as the cognitive interview is conducted over the 'phone, followed up by face to face retrospective debriefing.

² The term cognitive interviewing is also used in a police context to describe a method for enhancing the accuracy and reliability of information retrieval by witnesses to and victims of crimes under interrogation. The method and literature on cognitive interviewing in this context is quite distinct from that on cognitive interviewing in survey design.