# Cognitive Interviewing and what it can be used for

## Section 2 - How to conduct cognitive interviews - Transcript

By the end of this presentation, you will be able to understand the different techniques you can use during a cognitive interview to help stress test your survey questions.

You will know how to produce effective cognitive interview protocols. These are also known as topic guides. We will give our top tips on how to write these to get the most out of your testing.

In this session we will describe one approach for the analysis of your cognitive interview data.

Before we start, let’s have a quick recap of what we mean by the term ‘cognitive interviewing.’

Cognitive interviews are qualitative interviews where we attempt to gain insight into the mental processes people go through when they are completing a task. Cognitive interviews are often used as part of questionnaire development. The aim of cognitive interviews, in this context, is to establish whether survey questions are fit for purpose, for example, are questions understood as intended by respondents? Are respondents able to give accurate answers? If not questionnaires may collect poor quality or biased data.

There are four main techniques used during cognitive interviews. These are:

* Administering the survey questions.
* Making observations.
* Collecting ‘think aloud’ data; and
* Collecting further from qualitative probing.

The first part of the cognitive interview is to administer the survey questions that you wish to test. It is important that, as far as possible, these questions are administered in a context that replicates ‘real-life survey’ conditions as far as possible.

For example, if you are testing a question that would be asked in a face-to-face interview, or a telephone interview then the question should be read out aloud by an interviewer.

In contrast, if you are testing a self-completion questionnaire participants should read the questions themselves. Self-completion questions should ideally mimic the intended mode of administration. For instance, web questionnaires should be presented online, and paper questionnaires should be given to respondents in a formatted paper prototype.

Interviewers should not attempt to help participants answer the questions during this stage of the interview.

Whilst participants are completing the test questions, cognitive interviewers should observe participants closely.

Do participants ever hesitate when they are answering any of the questions? Are there ever any overt signs of frustration or boredom such as sighing, eye-rolling and so on? Do participants ever directly ask you for help? Do participants ever revisit questions and change their answers? Do participants ever miss out questions or skip any part of the task set?

The purpose of making observations is for interviewers to get non-verbal cues about the mental processes participants are going through, especially cues that may indicate a problem.

An experienced interviewer can then follow up on non-verbal cues with so-called ‘observation probes’. These observation probes encourage participants to verbalise their thought processes.

For example, if an interviewer observes someone hesitating or eye-rolling, they can enquire: ‘Can you tell me more about what you are thinking about now?’

If an interviewer observes a participant changing an answer to a question, they can ask ‘I noticed you changed your answer, why is that?’

If a participant goes back to an earlier section of a questionnaire, or accesses a help screen an interviewer can ask ‘What are you looking for now? Can you find the information you are looking for?’

If participants skip a question, interviewers can ask ‘Why did you miss-out on that particular question?’

Another technique used in cognitive interviews is the ‘think aloud technique’. To use this technique, participants are told at the start of the interview that we want them to verbalise all their thought processes when completing the survey questions.

This does not come naturally to everyone, so prior to administering the test questions, some training in think-aloud is required!

During this training the interviewer demonstrates the think aloud technique themselves i.e. by completing a task while verbalising their thought process. After the interviewer has thought aloud for the practice task, participants are asked to do the same practice task.

One practice task we use in think aloud training is called the ‘Windows example’. Imagine I was asked to say how many windows there are in my home. If I was answering this question while thinking aloud I would say:

“I am picturing my front door - there is a pane of glass but I don’t know whether to include this. There is a window in the living room, and a glass door in the kitchen which I will include. There is a window in the bedroom and in the bathroom so approximately 4 windows. What about in your home? Please tell me what you are thinking about as you answer?”

Once a participant has for the hang of thinking aloud you must remind and encourage this behaviour throughout the interview. ‘Don’t forget to tell me what you thinking!’

The final technique in our cognitive interviewing toolbox is probing. The majority of cognitive interviewing data is likely to come from probing.

Probes are basically questions about the product we are trying to test. As with the other techniques, the purpose of probing is to elicit verbal information about what respondents are thinking about when they were exposed to our survey questions.

We would typically start by asking ‘general probes’. An example of a general probe would be ‘How easy or difficult did you find that? Why do you say that?”

We would then ask probes based on each stage of Tourangeau’s 4 stage questions and answer model. We would probe on comprehension, retrieval, judgement and response.

For example, if we wanted to explore ‘comprehension’ we could ask ‘In your own words what is this question asking?’ Or what does this phrase mean to you’.

Retrieval probes explore how easy or difficult people find recalling information.

Judgement probes explore whether people are giving precise answers or just estimates.

Response probes explore whether our lists of response options are clear and complete. Examples of all these types of probe are shown on this slide.

Next, we will talk about how to produce your cognitive interview protocols.

Your protocol is a document that describes, in detail, how cognitive interviews should be conducted. It includes information on how the study should be introduced to participants, what the test questions are and how these will be tested.

Protocols also provide a list of suggested to probes to use. An example protocol has been provided as a resource for you to use in addition to this presentation.

It is important to remember that protocols are designed to be ‘guides not scripts.’ We have already described how observation and observational probes are an important technique in cognitive interviews. Therefore, some probes are spontaneous rather than scripted, these probes are based on what interviewers can see in the interview.

Likewise it may not be necessary for interviewers to ask all the probes listed in the protocol. For example, you may find that a participant who are good at thinking out loud will naturally talk about comprehension, retrieval and so on, without you having to probe specifically on these areas.

Here are our top tips for designing an effective cognitive interview protocol.

1. Always provide a clear introduction. Explain the purpose of the interview, for example, that you wish to check your questions are working as intended prior to their being given to hundreds of people. Encourage criticism - explain that if the participant finds anything difficult others will too. If you are using the think aloud technique provide your demonstration and training of the technique as part of the introduction.

2. Document your aims of testing in the protocol. Obviously, you will need to include your test questions in the protocol.

We recommend that you also write down the aims of these questions, that is exactly what they are attempting to measure. We also recommend that you document what specific features of the question you are hoping to test.

Documenting your aims in the protocol will help if interviewers need to include spontaneous probes. Documenting your aims will help keep your cognitive interviews relevant and focussed.

Be realistic about the number of aims you include in your test. We have found that we can test around 20-30 questions in a one-hour interview. You may need to prioritise which questions you test if your questionnaire is longer than this.

3. Always write probes that are neutral. For example the probe ‘How did you find that?’ is a neutral probe. In contrast ‘Was that difficult?’ is a biased probe.

Ideally probes should be open rather than closed as open probes will elicit more feedback. Asking follow-up probes like “Why did you say that?” or “Can you give me some examples?” are useful ways of following up on a closed probe, to gain more information and further insight.

4. You need to decide at what points in the interview you are going to probe.

Probing can either be done ‘concurrently’ after each test question or ‘retrospectively’ after all questions are complete.

Concurrent probes and retrospective probes have different pros and cons. If you probe concurrently after each question, participants are more likely to remember issues and will be more able to tell you exactly what they were thinking about when they were exposed to each test question.

However, if you probe concurrently participants may lose the flow of the questions due to repeated interruptions from the interviewer. Therefore concurrent probing may inadvertently make questionnaire completion more difficult.

The advantage of retrospective probing is that interviewers minimise how much they interrupt people during questionnaire completion. However, with retrospective probing participants may be less likely to remember what issues they encountered or why they had problems.

In retrospective probing participants may create ‘artificial problems’ that they thought of after the event, but that did not occur to them in practice at the time they were initially answering.

Whether you lean towards concurrent probes or retrospective probes will be partially dependent on the nature of the questionnaire you are testing. For example, if you are testing a short questionnaire retrospective probes may be better. If you are testing a longer questionnaire consider probing as you go along, or maybe probing at the end of each sub-section to avoid issues with interrupting flow.

5. You need to be mindful of the mode of interview when developing protocols. Which mode you should use will be determined by what questions you are trying to test, as well as the resources you have available to you.

Face-to-face interviews may be more appropriate for participant groups with lower levels of digital literacy.

Face-to-face interviews may also be better if we want to make detailed observations of how people interact with specific types of products. For example, if we wish to test an ‘information pack’ containing paper consent forms, leaflets and instructions we may wish to conduct face-to-face interviews so we can watch how people handle the document packs, observe which documents they pull out to read first, and observe which pages they look at first. It is difficult for interviewers to observe these type of behaviour during a virtual interview.

In contrast, during remote interviews we can request that participants share their screen and we can record exactly what they do on each web page. Screen recording is a particularly useful tool when testing web surveys or mobile applications.

Remote interviews are also a pragmatic option if you need to interview a geographically dispersed sample, or if you have limited resources to spend on travel.

Once you have conducted your cognitive interviews you will need to analyse your data.

Next we are going to discuss one process that you could use to do this.

As the first step we would recommend producing a case summary, or a set of field notes, for each interview you have conducted. It will be highly difficult, if not impossible, to make detailed notes during the interview itself whilst making observations and actively listening to the participant in front of you.

Therefore we recommend that these case summaries are made after the interview, by reviewing an interview recording or an interview transcript.

Each case summary should provide:

The answer the respondent initially gave to the survey question, any relevant observations (for example if a respondent changed their answer, or asked for help). The case summary should then describe findings from the think aloud and the probing.

The next step is to combine case summaries for all participants into a matrix format. We call this process charting. We tend to use Excel to produce these matrices, like the example in this slide, however Nvivo or other qualitative data management software could also be used.

Each column in the matrix represents a field from the case summary. For example, all survey answers to the first test question could be included in column A, all observations in column B, all findings from think aloud or probing in subsequent columns. Each subsequent column represents a theme under investigation. For example, column D could include evidence of comprehension issues, column E could include evidence of retrieval issues and so on.

By organising our data this way we can read data horizontally - this will allow us to review all information collected from one particular interview. Alternatively we can read columns vertically, this will allow us to read all evidence about how well a question is working by a particular theme. For example, we could look at all evidence on Q1 comprehension issues by reading down the appropriate column. This allows for systematic interrogation of the qualitative data collected.

Once we have completed our data management phase, that is, we have a set of completed matrices, we can start to categorise and label what issues have occurred. Spend some time familiarising yourself with your charts, and highlight and summarise what you think the main issues that occur with each question tested.

When looking at the charts we are attempting to cluster similar issues together and label them. You should be asking yourself - is the issue I see in case 1 the same type of problem observed in case 2? Or is it a different or separate issue? By the end of this process the goal is to have a comprehensive list of the different types of problems that arose for each question.

Please note, the aim of the exercise is not quantify each issue uncovered. We are not interested in how often an issues occurs. This is because when we do conduct cognitive interviews we typically only talk to small numbers of purposively selected people - between 8 and 20. Therefore, we cannot infer how common problems will be in the general population by how often they occur in our cognitive interviewing sample. I repeat, the aim of the thematic analysis is to map out all the types of problem encountered, not to quantify how often each problem occurred.

After you have completed your thematic analysis, you need to draw your conclusions. First off, you need to ask ‘Why’ each problem has occurred. Hopefully, your interviews will have already captured ‘Why’ type information.

Let’s imagine your testing has identified 3 types of problem:

Firstly, it has been observed that people ask for the question to be repeated. Secondly, one of the terms in the question is not consistently understood, and thirdly participants have stated the list of response options is not complete.

Looking for evidence of why a problem has occurred is important. Perhaps the requests for repetition are occurring because the question is too long winded, or contains too many clauses. Perhaps participants don’t understand a particular term because it is not common parlance, or is too technical or specialised for the target audience. Perhaps a relevant answer option is not included in the response option list.

Once you have decided the cause of a problem you need to decide what the impact of the issue is. Will this issue create a potential problem or bias in the data you collect with your questionnaire? Will this issue make your questionnaire unnecessarily burdensome for respondents? Or is it a ‘minor order’ issue that you and your respondents can live with?

Finally, once you have assessed the impact of an issue you can consider options for solutions. For example, the first problem - where requests for repetition are being made because a question is long winded - could be fixed by shortening the question, or breaking it up into smaller, simpler sentences.

The second problem - lack of understanding of a specific term due to technical language - could be fixed by using a different term or by including a definition.

See what language your respondents used in the interviews to describe the concept of interest. This will help to make sure the language you use matches their mental models.

For the third problem - missing response options - see what response option was considered missing and add it to your question!

Thank you for listening to this presentation. Now you have learnt about how to conduct cognitive interviews to test your survey questions. We have discussed different interview techniques, how to develop protocols and how to analyse your data.

The next section of the course will tell you about other situations where cognitive interviews can be used, beyond testing survey questions.

Video: <https://www.youtube.com/watch?v=_asiIDGAPzM>

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