Cognitive Interviewing to Pretest Attitude Questions

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Abstract

The purpose of this paper is to assess the potentials and the limits of the cognitive interview to pretest attitude questions. The paper begins with a preface describing what cognitive interview is and what are its theoretical roots. Then we take part in the debate on the cognitive interview and we discuss the strengths and weakness of its strategies. Lastly, we present the design and the findings of a methodological research on the effectiveness of the two strategies typical of the cognitive interview – the think-aloud and the verbal probing – in order to pretest attitude questions.

Keywords: Pretest, Cognitive interview, Attitude questions

1. Background

In order to collect high quality data, that are data corresponding to the actual status that they represent in the data matrix, we should be able to trust the questionnaire before it is finally adopted for the survey (Marradi, 1990). We will achieve this if we monitor its operation during a pretesting stage focused on checking the reliability of its operational definitions (Pitrone, 2009: 146). Only by pretesting the questionnaire, we can «evaluate in advance whether it causes problems for interviewers or respondents» (Presser et al.,

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2004: 109) and understand how to improve it. For these reasons, the pretest is universally agreed as an indispensable stage in the questionnaire developmental process and the scholars have proposed different pretesting methods to evaluate survey questions. Among them, in the last thirty years the cognitive interview has emerged as one of the more widespread method to detect problems with the questions that may compromise the quality of response .

The cognitive interview is based on the theoretical and methodological assumptions of the Cognitive Aspects of Survey Methodology (CASM), a movement born in the first eighties in order to bridge the communication gaps between survey research and the cognitive sciences (Jabine et al. 1984). The exponents of the movement have developed a pretesting method aimed at obtaining the information needed to reconstruct the cognitive processes of respondents, supposing that this reconstruction may help the detection of biases and suggest solutions. The object of the cognitive interview is to provide a view of the response process elicited by survey questions which is assumed to be divided into four steps: comprehension of the question, retrieval of relevant information, use of the information retrieved to make a judgment and formatting of an answer (Tourangeau, 1984). Because problems may occur in each of these steps, the goal of the cognitive interviewer is to learn how respondents perform them in order to gain insight into whether the results of their performance are likely to produce sufficiently accurate answers consistent with the researcher's intent (Blair and Brick, 2009: 5691). The way to learn how responses are formulated and reported is to administer draft questions while collecting additional information about the response, useful for evaluating the quality of the response or helping to determine whether it is coherent with the author's intention (Beatty and Willis 2007: 288). Cognitive interview thus allows the researcher to control those sources of response error not immediately identifiable during the data collection.

To explore the processes by which respondents answer survey questions, it is possible to choose between two technique: the think-aloud and the verbal probing. The first one consists in encouraging respondents to verbalize their thoughts as they answer survey questions. After being given the necessary instructions, subjects are asked to verbalize their thoughts as they were talking to themselves. This strategy is not based on conversation, but it reduces to the minimum the role of the interviewer, limiting his interventions only to encouragements to think aloud for those who keep silent. The second technique consists in asking probes after the respondent's answer or at the end of the interview. The cognitive interviewer assumes an active role in the interaction and probes the emerging problems during the interview. The assumption underlying this procedure is that direct and focused questions help

reconstruct the response process and determine whether the question is generating the information that its author intends.

The think-aloud has deep roots in psychology that are too often neglected by the cognitive interview practitioners. The first attempts to value the verbalization of thoughts as instrument of research and analysis can be traced in the introspection technique proposed by Wundt and enhanced by Küple and Buhler in the School of Wurzburg, in the Freud's clinical analysis of thought and in the clinical speech used by Piaget to check his hypotheses on the functioning of psychological systems . After this earlier period in which psychologists made use of the introspection, it was then abandoned because of criticism by behaviorism (Watson, 1919). According to behaviorists, the psyche needed to be studied through its observable expressions – which are its real nature – in terms of emotional behaviors, regular behaviors, learning behaviors, etc. (Cornoldi, 1980). If behaviors are the «real nature» of psyche, the representation that subjects can give to their thoughts are out of the boundaries of psychology as a science.

The verbalization of thoughts has been revived in the 1970s thanks to the advent of cognitivism, even if there still have been criticisms. Some scholars have challenged the idea that individuals can provide reports about their cognitive processes (Nisbett and Wilson 1977; Nisbett and Ross, 1980); others have been concerned about potential biases in subject's information processing tendencies, arguing that the act of thinking aloud potentially triggers changes in their cognitive processes while performing the task (Conrad, Blair and Tracy, 2000). The ones who support the think-aloud respond to those criticisms by referring to the theory advanced by Ericsson and Simon (1993). They suggest that only symbols in short-term memory are immediately accessible to subjects and can be accurately reported. This implies that the most reliable reports will those taken concurrently, that is, during the performance of the task (Austin and Delaney, 1998: 43-44). In addition, in order to prevent the reactivity of the think-aloud, subjects must be instructed to verbalize their thoughts as they emerge, without trying to explain, analyze or interpret their thoughts. If these conditions were met, «verbal reports, especially concurrent thinking-aloud protocols, provide a valuable source of data about the sequence of events that occur while a human subject is solving a problem or performing some other cognitive task» (Ericsson and Simon, 1981: 10).

Thus, the researchers have increasingly used the think-aloud without ever having considered whether the necessary underlying assumptions hold and without ever having established that it applies to the pretesting of survey questions (Willis, 2005: 46). Yet there is a great deal of evidence that many individuals, in particular those with low level of education and low language

skills, are not good at thinking aloud while answering survey questions (Bickart and Felcher, 1996; Wellens, 1994). Moreover, for certain questions even capable subjects may be not able to provide valuable verbal reports on their cognitive processes. For instance, according to Conrad, Blair and Tracy (2000: 320), the attitude and opinion questions may require thought that is unencumbered by verbal demands because it is mainly based on information, such as emotions or preferences, that is hard to verbalize; so, asking respondents to verbalize their thoughts while answering an attitude question may interfere with their ability to develop an opinion and indicate, incorrectly, that the question poses an unreasonable task.

These evidences and remarks prompted many cognitive interview practitioners to apply a pretesting method which was developed outside the CASM movement and stressed the importance of asking respondents to explain their answers or probing about their interpretations of survey questions (Belson, 1981; Street, 1983; Converse and Presser, 1986). After all, the importance of verbal probing was already recognized by well-known scholars many years before. In 1944 Lazarsfeld suggested to induce respondents to elaborate for eliciting detailed, free responses. According to him, this approach to interviewing – called «open-ended interview» – is indispensable at the beginning of any study and serves as a source of observations and ideas from which sets of precise survey questions can be derived which will be more manageable in the field and more susceptible to statistical analyses (1944: 52). In the same year, Cantril and Fried emphasized the value of probing how respondents interpreted and answered survey questions in order to detect possible misunderstandings. Also from the other side of the Atlantic, some scholars proposed to resort to verbal probing for assessing the reliability of the answers, defined as their correspondence with the actual status of the respondents. For instance, researchers from the Centre of Lodz in Poland used an interviewing technique – called «interview on the interview» – consisting of probes aimed at gathering information on the level of comprehension of the survey questions and the process of generating of an answer (Lutynski 1988: 183) .

A higher number of cognitive researchers has then started using the verbal probing method and some scholars started supporting the idea of abandoning the strategy of think-aloud to favor the verbal probing technique (Willis, 1994; DeMaio and Rothgeb, 1996). Now scholars give more and more attention to the probe development process looking for a systematic approach that prevent it from being mainly based on intuition and common sense (Willis, 2005: 79). Many classifications of the different forms of probing have been proposed and many researches have been conducted to check their

effectiveness (Foddy, 1998; Daugherty et al., 2001; Garas, Blair and Conrad, 2003).

In the most recent debate, the think-aloud and the verbal probing are not considerate alternative but collateral. In his first and well-known book on cognitive interview, Willis revises his previous position and recognizes that the two methods may combine. The author states: «In an earlier work, I attempted to further move the pendulum in this direction by advocating probing at the expense of the think-aloud interview. This may have been a somewhat extreme reaction, as more recent studies suggest that cognitive interviewing is best characterized as a combination of think-aloud and probing procedures» (2005: 57).

This latest approach to cognitive interviewing seems to be convincing. However a question arouse: what factors should guide the researcher in the choice of the technique? To answer this question, we must gather information about their suitability for different subjects and for different survey questions. Most of the studies already carried out has been focused on respondents' characteristics, such as age, level of education and so on. Few scholars have examined whether the effectiveness of the think-aloud and the verbal probing varies according to the type of question. We must observe that until now the cognitive interview has been mainly adopted for pretesting factual questions. In presence of attitude questions, the methodological rules on the choice of the method may change. The research whose results are showed in this article has been guided by the aim of evaluating the usefulness of think-aloud and verbal probing for pretesting attitude questions.

Study design and analysis

In February and March 2012 we conducted a cognitive pretest of a questionnaire on the attitudes of Roman citizens towards immigrants. The questionnaire was made of 24 questions split into two sections: the first included attitude and opinion questions about immigration and the second comprised questions about personal information. These questions required the completion of cognitive tasks commonly given to respondents, such as selecting a response from a list of categorical options, expressing agreement or disagreement with a statement by providing a response from a labeled list and selecting a number from a rating scale at whose extremes are placed opposed sentences.

The questionnaire has been pretested through a single cognitive interviewing round with 24 subjects recruited by a quota sampling[1]. The general population has been divided into 12 groups as a result of the combination of three variables: gender, age (18-30, 31-60 and 60+) and level of education (undergraduates and graduates). We contacted subjects through ads which required the commitment of an one-hour interview paid with 30 euro gas tickets. The interviews have all been conducted in an office with characteristics similar to that of a cognitive laboratory, especially from the point of view of privacy and impersonality[2].

To conduct the cognitive interviews we used a partially standardized testing protocol designed after an expert review of the questionnaire. Three survey research experts were asked to check the survey questionnaire for problems and to list possible pitfalls of the questions. This has allowed us to identify the survey questions that should have been pretested and choice the most suitable technique for pretesting them. The cognitive testing protocol provided for the use of both think-aloud and verbal probing. In particular, the think-aloud has been used for identifying the cognitive difficulties met by subjects in the response process to the following question:

Some people say that immigration is mainly a problem for Italy. Some others consider it an opportunity. Which statement is closer to your point of view?

    1.   It's mainly a problem for Italy

    2.   It's mainly an opportunity for Italy

    3.   It's both

    4.   It's not a problem nor an opportunity

    5.   Don't know

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[1] Our sample seems to be sufficiently large since it is almost twice as large as that suggested by Willis (2005: 145) and used by many cognitive interview practitioners.

[2] In deciding where to conduct the interviews we have followed the literature guidelines which suggest to choose a quiet room, such as a conference room or empty office, in order to ease the respondent's attention and concentration (Willis 1999: 26). Since this physical environment is different from the respondents' own lives, it may have disturbed some of them, even though our impressions lead us to rule out this possibility.

Following the literature guidelines, to induce respondents to think-aloud they were given instruction and provided practice questions. The first question, borrowed by Willis (2005), asked the respondent to say how many windows were there in his house. If the respondent showed he understood and correctly carried out the task of thinking aloud, we asked the survey question; on the contrary, there was another practice question about the second grade cousins of the respondent. If there wasn't verbalization of thoughts also during this second practice question, the survey question was submitted anyway. This decision has been considered right for two reasons: avoid hurting the sensibility of the subject underlining his inability to carry out the task and avoid to shift his attention from the questionnaire.

The other survey questions were pretested through standardized probes fashioned ahead of the cognitive interview based on the anticipation of a problem with the survey question. These probes have been administered proactively in order to actively search for problems regardless of the reporting of a problem by the respondent. The cognitive interviewer discussed one survey question at a time, using concurrent verbal probing: after a question was answered, he immediately probed about the response before moving to the next survey question. These probes were aimed at identifying the problems that respondents had in understanding survey questions, retrieving relevant information from memory, estimating and providing responses. Thus, probing has been used to assess those sources of error that could threatened the quality of responses, such as vague, undefined or unclear terms («culture», «immigrant» or «way of life»), potentially irrelevant topics (such as the impact of immigration on social housing), double-barreled items (for example, «Have you or your family members ever lost or not gotten a job because of immigrants?»), inappropriate implicit assumptions (as in the statement «Immigrants aggravate public order problems») and so on.

While the interviewer had a testing protocol with suggested probes, he was given considerable freedom to modify these suggestions, add other probes and guide the discussion based on the content of each particular interview. In order to detect unexpected problems, he was invited to probe for more information any time there was suggestion that the respondent was experiencing problems with survey questions. That is, the interviewer could administer evidence-based probes, or emergent probes, constructed during the cognitive interview and triggered by subject behavior (Garas, Blair and Conrad 2003; Willis 2005). Thanks to this freedom, the interviews have become open-ended conversations from which we have drawn narrative information useful to evaluate the survey questions, even those overlooked when we developed the cognitive testing protocol.

All cognitive interviews have been tape recorded and transcribed at the end of the cognitive testing round. The transcriptions have undergone an informal analysis by case and by question. In other words, we reviewed and documented each interview and then compiled results across interviews by following informal means of analysis, rather than formal coding schemes. The cross-question analysis allowed us to assess whether there were problems with the survey questions and to get a notion of the severity of the problems from their frequency across interviews. Instead, the ideographic analysis has been useful in finding inconsistencies among the answers of the same respondent and in understanding why. Overall, the informal analysis has preserved the wealth of information gathered by providing full access to the cognitive interviews.

Results and discussion

We believe the analysis of the interviews has enabled us to reconstruct the processes by which respondents answered survey questions and identify the factors which influenced their answers. It has also been instrumental in evaluating and comparing the effectiveness of the two cognitive interview techniques: the think-aloud and the verbal probing.

The first interesting result of the analysis is the low number of respondents who were able to think-aloud while answering the above survey question: despite seventies subjects have been able to accurately report their thought processes when answering one of the two practice questions, only four of them correctly carried out the task as answered the survey question. In particular, they tended to automatically answer and justify afterwards their response, as in the following example.

Female, 18-30, low level of education
It's both a problem and an opportunity. It's a problem because many of them are not legal and so destabilize our lifestyles. It's an opportunity because, if regularized, they may contribute economics in Italy. I think that those who say it's a problem are also many politicians who, in the end, are…so in order not to pay taxes, being tax evaders, are willing to do this.

This verbal protocol, as an example out of the twenty produced by those respondents who have not thought aloud, shows that the subject did not commit at all in the verbalization of her thoughts but it is as if she had retrospectively reacted to a generic in-depth probe. This conclusion is supported by the reflections developed by Conrad and reported by Blair and Presser (1993: 371) according to whom the problems that respondents are

asked to solve during an interview differ from the problems usually studied with the think-aloud technique in two basic aspects: they are relatively simple and often solved fairly automatically. This would explain why respondents are able to produce only retrospective verbal protocols.

The failure of our subjects to verbalize their thoughts as they emerged is not surprising because other researchers have already found that for many tested questions even capable subjects fail to think-aloud effectively (Bickart and Felcher, 1996). However, the results so far achieved refer only to factual questions while we have been primarily interested in attitude questions. If our findings were to be confirmed for other attitude questions, they would lead researchers to the conclusion that in these cases the think-aloud is not revealing and should be replaced by the verbal probing technique.

Indeed, the task of answering the probes has been easy to carry out for most of our subjects. Moreover, we often assisted a phenomenon of introjection of the task by respondents: after having understood from the first hints of the interview that what we expected was a deepening of their answers, almost all of them tended to justify the later answers also when we did not explicitly require it. We had difficulties in eliciting accurate and well-structured answers only with respondents who had low level of education. In particular, the youngest ones tended to provide quick and hurried answers and remain silent afterwards. Consider the following example.

<u>Male, 18-30, low level of education</u>
I: What does the word «culture» mean to you?
R: Maybe the rules of the country. Maybe they have their culture and we have another culture.
I: What did you think when I read this sentence?
R: The rules that we have to respect. Stopping at the red light…
I: I ask you what have you thought.
R: The culture… That is, do not respect the laws. And then the religion.
I: Why did you say that you slightly agree with the sentence «immigrants threaten the Italian culture and traditions»?
R: Because of the religion… Everyone has his religion: someone believes in God and someone else not. Someone has his ideal and someone else has another ideal. The fact of the laws… Most of the road accidents are caused by them. They have not driver license, they have not car insurance. I can talk about a friend of mine who was involved in an accident caused by a Romanian who was drunken and killed him. So I can talk about it.

As can be seen in this extract, such respondents behaved like cognitive misers who did just enough retrieval to provide a satisfactory answer instead of making the required cognitive effort (Krosnick, 1991). Hence, an increasing

and close probing activity had to be made in order to elicit accurate and valuable answers also from such respondents. As regards older respondents with low level of education, they experienced problems in understanding the intent of some probes and therefore tended to wander completely off track. Such problems have been easily overcame: it has been enough remind them the information we were looking for and redirect their attention on the intent of the probe. As an example, we quote the following interview extract.

Male, 31-60, low level of education

I: Which aspects of the quality of school did you consider when you said that you slightly disagree with the sentence «The immigrant children negatively affect the quality of Italian school»?

R: No, I disagree because immigrants are not treated as Italians are. People say «yes, yes, yes» and put on a brave face, but then the Romanians, the Peruvians and so on are always treated as second class people. So I disagree because Italians incite to violence and then put the blame on immigrants. Italians say: «It is the Romanian's fault!», «It is the Chilean's fault!», «It is the Bulgarian's fault!». They cut immigrants' head quickly. So, it's good that immigrant children attend to school, learn our language and so on.

I: So, how did you interpret the term «quality of school»?

R: No, I don't think they negatively affect the quality of Italian school.

I: Which are the aspects of the school that immigrant children do not negatively affect?

R: They do not affect the moral and civic education, and not even the students' advancement […].

Overall it seems that the verbal probing has met our cognitive goals, albeit with some difficulties in a few cases. Indeed, the information gathered were instrumental to check all the stages of the questionnaire developmental process: concept specification, selection of indicators and survey question design.

With regard to the first stage, the cognitive interviews allowed us to reinforce our conviction about the relevance of the selected dimensions for the respondents. Take for instance the impact of immigration on the employment market. Even before asking the fifth question, that is devoted to this dimension, the topic has been mentioned by several subjects. This has been interpreted as evidence of its relevance for their lifeworld. Moreover, the interviews have indicated some dimensions which we had neglected during the concept specification stage. For example, our respondents often raised the question of the effect of immigration on the allocation of places at nurseries. We have therefore decided to include it in our conceptual dimensions and designed a related question.

The interviews also provided useful indications for the content validation of the selected indicators. For example, the sentence «The immigrants should preserve their own culture» has been understood as an indicator of a dimension other than we expected. We believed that it was a valid indicator of a positive attitude toward immigrants, but it has been actually understood by many respondents as an opinion against the cultural contamination between Italians and immigrants. The same holds true for the sentence «The immigrants should adapt to our culture and melt into a wider society» which has been selected by those respondents who were in favor of the melting pot instead of being approved, as we thought, by those who were against of the immigrants freedom to preserve their own culture.

Finally, the interviews appear to be helpful for designing standard survey questions. From the answers to the probes we have drawn suggestions on how to reword the survey questions in order to clearly communicate their intent to the respondent. Indeed, we have been able to detect vague terms – such as «culture», «way of life» or «integration» – by uncovering the multiple ways whereby the respondents have interpreted them or decided what was to be included or excluded; therefore, they have been replaced by more specific and unambiguous terms. As an example consider the term «integration». It has been interpreted as following: adopting the Italian habits and usages; integrating into the social fabric, that is, making friends with Italians or taking part in local community events; cultural integration as acceptance of Italian values, language and religion; integration into the economic fabric through financial commitments and payment of fees; law compliance. Because the meaning we wanted to communicate was the second one, we have replaced the term «integration» with the locution «integration into the Italian community».

The answers to the probes have also brought to light some logical and structural problems of the survey questions, such as inappropriate implicit assumptions, double-barreled questions or items that have been disapproved for opposing reasons. Furthermore, they have been useful in choosing the most suitable response format. For example, the comparison between two types of Likert scales, the one with four degrees of agreement («very much», «quite a lot», «not much» and «not at all» in agreement) and the one with five degrees from «completely agree» to «completely disagree», has shown the clear preference of the respondents for the first one, which was also more easily stored. It has been therefore adopted for the final draft of the survey questionnaire.

In conclusion, our results would suggest that the verbal probing technique is more effective than the think-aloud for pretesting attitude questions. The anticipated and emergent probes enabled us to detect the

respondents' problems with the survey questions. They also revealed the so-called logical and structural problems of the questions, that is, those flaws in the questionnaire that are not by nature especially «cognitive» in origin but may nevertheless produce cognitive problems (Willis, 2005: 78). Thus, it seems that the application of the verbal probing technique, and above all the non-standardized verbal probing, introduces a non-cognitive perspective in the cognitive pretest and qualifies the cognitive interview as an open-ended and expansive dialogue on a specific issue: the survey questionnaire.

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