

Cognitive Testing of Mail Surveys at Statistics Sweden

by
Gunilla Davidsson
Statistics Sweden

1 Introduction

The Measurement Laboratory (ML) at Statistics Sweden was established in 1989 after exploring different ways of conducting questionnaire pretests in a set of small studies. This paper presents our methods of pretest under field conditions. We use these methods for pretesting mail surveys to individuals or establishments (business, public authorities or associations). These methods were adapted for our use already back in 1989 and we still use the same methods and procedures with minor changes. Up to now almost 150 questionnaire drafts have been pretested under field conditions.

2 The Organisation of the Swedish Measurement Laboratory

When the ML was established in 1989 two survey statisticians were in charge of the ML at Head Office of Statistics Sweden in Stockholm. For pretesting the ML used nine professional interviewers, specially trained interviewers of the Statistics Sweden regular field interviewer staff. All of them were living in the surroundings of Stockholm. The ML belonged organisationally to the Unit for Research and Development. It still does, but five years ago the ML was reorganised as a network within all departments and units of Statistics Sweden. The main objectives were to broaden the knowledge about and the willingness to use the services of the ML. Another objective was to broaden the services of the ML offered to colleagues at Statistics Sweden, but also to other clients. (Statistics Sweden is a Civil Service Department, half financed by the Ministry of Finance, half by conducting commissions often in competition with private institutes). Nowadays the ML has 5 members ('the hard core') working part time or almost full time with tasks within the ML. But all members are still 'rooted' in other tasks – from research and development to producing current statistics. The ML still uses specially trained field interviewers for pretesting, today 8 interviewers living both in Stockholm and in other parts of Sweden. Half of them have been working with cognitive testing since the start of the ML. They are all very experienced field interviewers and have been employed by Statistics Sweden between 7 and 18 years. All of them are very well educated with academic degrees. In addition the ML has a more loose network with colleagues in all departments of Statistics Sweden. They serve as 'promoters' in their departments and among their clients. Our network organisation has turned out to be very successful. The services of the ML are nowadays much more well known and well used both within Statistics Sweden and outside.

(Annex 1 shows the services offered by the ML).

3 Our Methods of Cognitive Testing under Field Condition

When pretesting a questionnaire draft of a mail survey we conduct the test under field condition. The majority of all surveys at Statistics Sweden are mail surveys. The Unit of Mail Surveys for Individuals handles about 100 different mail surveys to individuals on commission each year. Other units and departments conduct between 100 and 150 mail surveys per year, mostly to establishments (the majority are annual or intermittent surveys, often mandatory). If a survey will be tested or not depends partly on how familiar survey statisticians at Statistics Sweden are with the work of the ML, partly on the client's knowledge about the ML beforehand. Irrespective of what kind of testing the ML is asked to do, we always try to get the clients understanding of the necessity for an 'expert examine' done by the ML before conducting any test. We want the best draft version of the questionnaire to be tested.

3.1 Clients

The majority of all ad hoc mail surveys being pretested by the ML are on commission. The contact person at Statistics Sweden is usually a survey statistician in one of the departments depending on the subject matter.

Conducting a survey on commission implies that we can only *offer* a pretest to be done by the ML, then it is up to the client to decide. Unfortunately a lot of clients do not include pretest in their budgets and/or schedules. In these cases the only service left is "expert examine". But, to our delight, most of these clients agree on the advantages of cognitive testing and take pretest into consideration next time. As the ML becomes more and more well known among researchers in universities, officials in ministries and other authorities, private companies and associations, more and more clients also contact the ML directly for pretesting, even if Statistics Sweden is not going to conduct the survey.

3.2 Cognitive Testing of Mail Surveys to Individuals

Our pretesting methods are applicable to both mail surveys and interviewing. The aim has been, from the very beginning, to be able to pretest all types of surveys. In this paper only the procedures of cognitive testing of mail surveys will be described more in detail, but there are no major differences in pretesting questionnaires for other data collection methods.

Mail surveys to individuals are both about individuals as private persons and about individuals in their professional roles in for instance a civil service department, a local authority or a company (managing director, staff manager, representative of the union, safety representative, etc.).

Test leader and client agreements

The test leader and the client agree on method of cognitive testing. They also agree on if both information letter and questionnaire are to be tested, on number of test respondents and if there are any restrictions in age, gender, region, education, profession, life experience, etc. when choosing respondents. *One example:* Statistics Sweden was to conduct a mail survey for The National Rescue Services Board by using a random probability sample of the population. The questionnaire was about experiences of fires or near-fires and preparedness for fires in private homes. The client wanted, if possible, the questionnaire to be pretested on persons having experienced fire at home. Since our specially trained interviewers have very large social networks, they managed in a short time to find several test respondents with different

fire experiences. If no restrictions the interviewer frequently use the telephone directory as a frame. The test leader and the client also agree on schedule. Unfortunately the ML more often has too short time at its disposal than plenty of time.

The clients are more or less interested in taking an active part themselves. We are used to every 'type' of client from the one who gives accept to pretest and lets the ML have a free hand to the one who is very interested in being an observer during field testing. Whoever the client, a minimum of explanation must be given to the client to make him/her aware of:

- Test is designed to detect the respondents' cognitive problems and find explanations but will not offer explicit solutions. Revising the questionnaire is another matter.
- The small number of test persons means that infrequent problems and problems in smaller groups may not be detected.
- Test persons are not a random sample but recruited in order to be diversified with regard to characteristics considered to influence their life experience and understanding of the questions.
- The recruitment method may have left out persons with larger cognitive problems than those who co-operated
- If a revision of the questionnaire is done as a result of the cognitive testing, further tests or evaluations might be needed before conducting the main survey.

Field procedures

The setting is usually the test respondent's home (or another place chosen by the respondent). While making an appointment the interviewer also emphasize that it is the questionnaire that is being tested, not the respondent, and that it is of great importance to learn about any problem or view the respondent might have in answering the questions.

In the case of a mail survey the interviewer hands the envelope with the information letter and the questionnaire to the test respondent who take care of the task as if he/she just had received the envelope by mail. The letter is read - or not – and the questionnaire is filled in by the respondent without any interaction with the interviewer. The respondent is encouraged to comment as much as he/she wants while filling in the questionnaire, but the interviewer will only listen or make a note not to forget when probing afterwards. When the respondent has filled in the questionnaire the interviewer turns on the tape-recorder and continues with a follow up interview. Three major types of probes are used:

- The interviewer asks for the respondent's general impression of both the questionnaire and the information letter and/or brochure. The interviewer also asks the respondent about his/her about the length of time used to fill in the questionnaire. The respondent is also asked if he/she would have filled in the questionnaire and returned it if it had been a 'real' situation.
- During the time the respondent fills in the questionnaire, the interviewer observes and notices if the respondent seems to have problems with any question (e.g. the time it took to answer a question, turned back looking at a question again, changed an answer, sighed or used other body language indicating problem). Everything noticed that might have caused the respondent problem or hesitation are followed up afterwards with questions like 'I noticed you hesitated when filling in question 5 about Can you tell me why?'
- Specific probes are formulated beforehand and included in the instructions to the interviewers in cases when the test leader (by herself or in consent with the client) anticipates a specific problem. These specific probes might also be about understanding concepts or definitions used in the questionnaire (incl. information letter and brochure), about how sure the respondent is of his/her answers or about feelings when answering

certain questions.

The interviewer reports back to the testleader by writing down every answer and comment from the follow up interview in a form prepared by the testleader. The interviewer also includes her own views and opinions on the questionnaire and special circumstances coming up during the testing situation. In addition the interviewer writes down the follow up interview word by word. Everything is sent by e-mail to the test leader. (The audio tape and the questionnaire filled in by the respondent are only sent back to the test leader by post if requested).

The test leader usually makes one or two test interviews herself, which is very useful when writing the final report to the client.

The test report

When the ML started in 1989 everything had to be sent back and forth between the test leader and the interviewers by mail. Nowadays the test leader can attach information letter, form for reporting, etc. to an e-mail. Almost all of the interviewers are now much better equipped with computers and printers which enables this fast procedure and we gain a lot of time. The test leader gets all forms and transcriptions from the interviewers electronically and can start to compile the result much earlier than before.

The test report to the client includes:

- A short description of the test (Annex 2).
- A short introduction that expands on contact, choice of method, recruitment of test respondents and specifics of the test situation
- A complete list of observations, usually sorted by question, but sometimes by respondent, by workplace, etc.
- Summary conclusions and advices from the test leader

In an annex all transcriptions from the audiotapes are included.

The complete list of observations distinguish between the respondent's remarks (answers to probes, spontaneous remarks on a question or questions put by the respondent about a question in the questionnaire). Comments from respondents are expressed literally. Comments given by the interviewers are also included in the list per question.

3.3 Cognitive Testing of Mail Surveys to Establishment

If the questionnaire is about the work or the activity, it's is not always possible to conduct the cognitive testing using the same procedure as for individuals. If use of accountancy systems or client systems or if consulting with colleagues is required, we use a "think-aloud"-method instead. Otherwise the setting is the same. The interviewer visits the company (local authority, etc.) explains the testing method to the respondent. The respondent trains to 'think-aloud' before moving on to the draft questionnaire to be tested. Everything is noted and tape-recorded. Report is written accordingly with mail surveys to individuals and e-mailed to the test leader.

How to find the best suited respondent?

Usually you need to prepare the cognitive testing more carefully when the questionnaire is not addressed to a named person who in his/her daily work is dealing with what is inquired of in the questionnaire. When choosing test respondents you need to find out what is happening to

the envelope containing the questionnaire when it is delivered to the company (or local authority, etc.). How well will the mail receiver (the secretary, etc.) identify who the best person will be to answer the questionnaire and forward the envelope to this person? Will the requested information be accessible in the company or maybe an accountancy firm used by the company should answer the questionnaire?

Probes

As in testing mail surveys to individuals all three types of probes are used. But more attention is drawn to if and when instructions are read, how they are understood and how they are used. Especially important if instructions are in a separate leaflet. Often technical terminology is used, but do the client and the respondents have the same definitions of these terms?

According to our experience surprisingly often it is not the case. Is it possible to come up with the exact information required or do the respondent chose an approximate information? If so, how unreliable? The interviewer also probes to find out how heavy the response burden will be.

3.4 Positive Side Effects Besides a Better Designed Questionnaire

I would like to present three different examples of positive side effects that derived from the cognitive testing at the ML.

Example 1:

We tested a very difficult survey to establishments about training within enterprises. One assumption was that it would be very difficult to make any larger changes in the questionnaire because many countries in the European Union were going to conduct the same survey. It was a mail survey supplemented with an interview. As was expected beforehand, the test persons had a lot of problems with several of the questions. Some of the questions were impossible for all respondents to answer, they simply did not have the information. Some other questions would take hours to find the information requested.

After the test the clients made as many alterations as they could. They also used the test when writing instructions for the main survey to the interviewers. The test results were also used when writing instructions and for data entry and editing. All involved were then aware of where to expect problems. Consequently information on how to handle these problems could be included in the instructions.

The test results even gave the Swedish delegate some new arguments to the discussion in the next task force meeting at Eurostat.

Example 2:

Another survey was about old-age care carried out by local health authorities. The survey was conducted annually, but had not been tested before. The administrative staff filled in detailed questions about costs and about which services were free of charge for different groups of health care takers. After the cognitive testing by the ML, a new version of the questionnaire was designed and used. The quality of the result increased substancially. When comparing with previous surveys it become possible to correct earlier mistakes and errors, which were not detectable before. In this way the clients got better basic data for time series and analysis.

Example 3:

A very short interview, just a few questions about luncheon spendings, to resaurant-keepers (client: The National Tax Board) got a better question order after testing and the interviews were easier to perform. It no longer raised any questions from the

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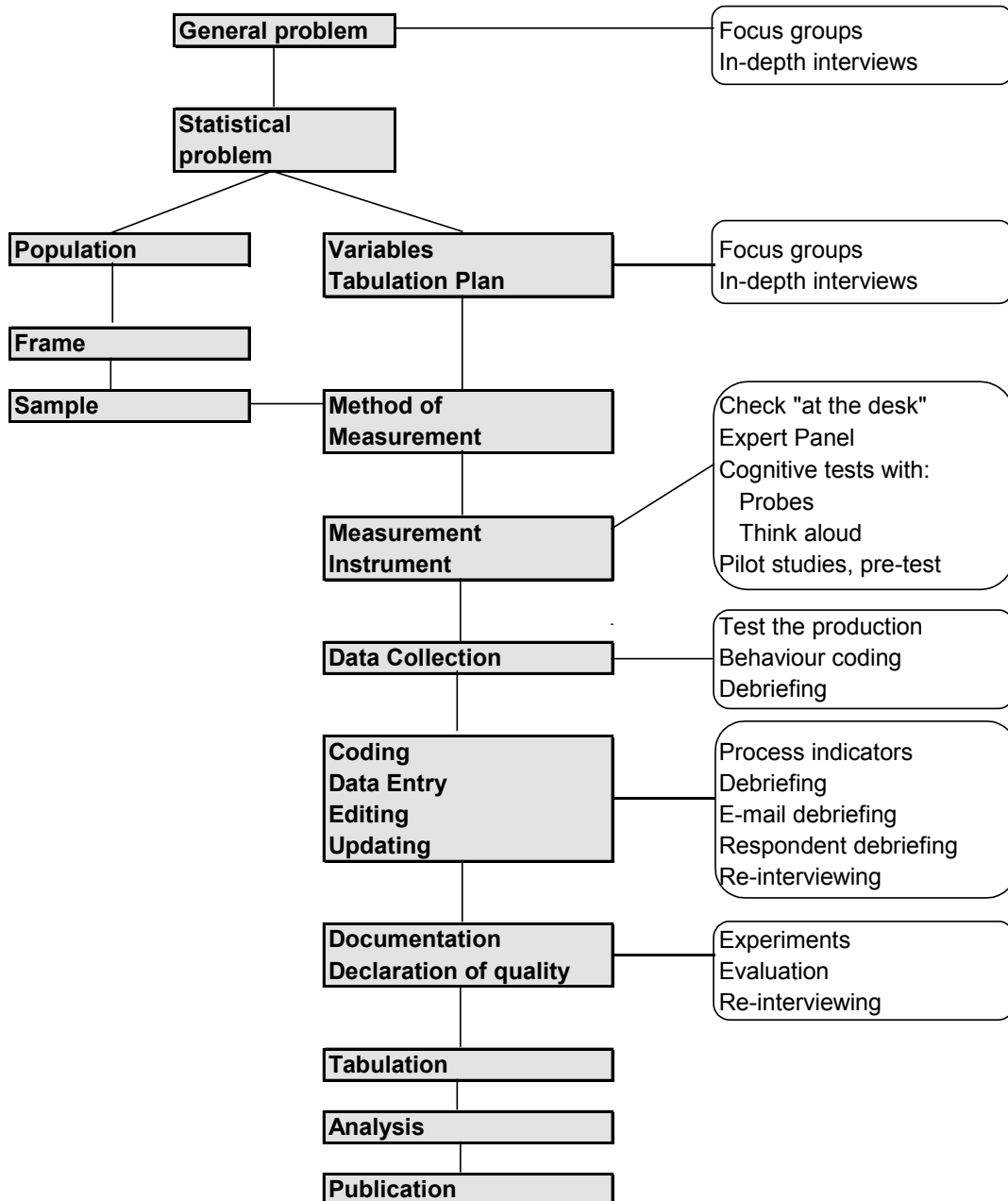
respondents. The client afterwards told us that data entry had become faster and less editing were needed. This minor change resulted in a much better quality.

4 Remarks

The importance of considering nonsampling errors in surveys is nowadays acknowledged within Statistical Offices. It is also becoming more and more acknowledged among users of statistics. These users are often our clients. But the clients must be aware of both the advantages and the limitations of cognitive testing. We want the clients to know that according to our experience small standardised cognitive tests have a considerable power to produce information, but not explicitly produce the solutions to all problems.

Annex 1.

Phases of a Survey - Measurement work



Measurement Laboratory

Summary of the Test

Test for Customer	<i>Name of the survey Organisation, person to contact</i>
Order Delivery	<i>Date Date</i>
Participation from ML	
Method in the Survey	<i>Mail survey/ telephone/personal interview/ etc</i>
Deviation in the Test	
Tested Questionnaire	<i>- Not used. Already in use. First/second test etc - Made by the customer. Work from ML etc.</i>
Number of Questions	
Test Method	<i>In the field. In the laboratory etc. Expert examine.</i>
Frame and Sample	<i>- Demands on certain points about the test persons - Method (RTB, telephone directory, your own contacts etc.) - Result (response rates or problems to find test persons)</i>
Number of Subjects	
Incentives	<i>Lottery ticket</i>
Test Duration	<i>- The questionnaire, median, minimum or maximum - The same for the rest of the time in the test</i>
About the Test Method	<i>Standard formulation</i>
Ideas or Reservations	

2002-09-27