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THE TELEPHONE SURVEY: A VALID AND RELIABLE RESEARCH METHOD FOR THE SOCIAL SCIENCES

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1. Interviews revisited

The interview continues to be the preferred technique for empirical research in the social sciences. To be sure, it is no longer universally regarded as the sole research procedure: other methods, including qualitative approaches, have also become acceptable tools of the trade. Yet even today, most research relies on the standardized interview. That is true not only for applied research (market and opinion); applied studies, such as those in the Swiss National Research Programmes¹ and those in the framework of official statistics,² also use standardized interviews. And we are all familiar with projects in the field of basic research in universities, which also obtain their data in this fashion.

This cannot obscure the fact that the general conditions for the popular face-to-face interviews³ have changed considerably in recent years. It might be recalled in that connection that above all the populations in cities and urban centres have become less willing to be interviewed at home by strangers; furthermore, the costs of surveys have grown enormously, and budgets for representative face-to-face interviews can quickly exceed 100,000 Swiss francs.

For those researchers who for reasons of content or method do not feel at home in the often confusing mix of a survey combining several subjects (the so-called "omnibus"), an interesting alternative has developed in recent years: standardized telephone interviews. Both the technical prerequisites (very high telephone density and sophisticated hardware and software for carrying out studies) and the social acceptability of the telephone as a virtually indispensable part of everyday life and a natural means of communication for all segments of

1 In every Swiss National Research Programme in the social sciences, several projects have been carried out based on standardized surveys.

2 For example, microcensuses, workforce and rent surveys and the national census.

3 Mailed questionnaires have become relatively uncommon, above all because of the difficulty in monitoring sample quality.

the population make it an ideal way to deal with the dilemma of falling response rates and the growing difficulties associated with face-to-face interviews.

In commercial marketing, that fact was noticed very quickly. In Switzerland, there are now professionally equipped telephone laboratories with several dozen places that have a capacity for correctly conducting hundreds of interviews daily. Opinion research has followed suit, particularly in the political field, where up-to-date results are of the essence. But researchers in and from the academic field are still hesitating: they have learned, not without reason, that new methods and techniques should first be examined critically to see whether they fulfil the strict requirements of validity and reliability.

In our view, telephone interviews can certainly pass the test. That is not only the conclusion of our own experiences over many years in this field. So much methodological information is now available on telephone interviews that in the USA and Germany they are regarded as an accepted procedure in academic research. For example, Frey, Kunz and Lüschen (1990) concluded in their handbook for telephone interviews in the social sciences (original German title: "Telefonumfragen in der Sozialforschung"), which draws on extensive material, that "when conducted under controlled circumstances from a central location, telephone interviews are superior to other forms of opinion polls. They are at least as good as the face-to-face interview with regard to the representativity of the sampling and the validity and reliability of the data. They are always preferable to mailed questionnaires" (Frey et al. 1990: 199).⁴

The aim of this article is to assess the pros and cons of telephone surveys on the basis of the latest developments and thus provide readers with criteria for forming their own opinion. Our conclusions are based primarily on our own empirical data and experiences. In the third part, we discuss the most important methodological points of view,⁵ and in the fourth part we provide some indications about how the method was accepted by the target persons. As we have repeatedly discovered in talks with colleagues that unclear or, indeed, incorrect ideas persist about the organization and sequence of telephone interviews, we first discuss current techniques for conducting such interviews.

4 The book by Frey et al. is for an academic public and can be recommended as an introduction and handbook for telephone interviews. It contains an extensive bibliography on the subject.

5 We have restricted ourselves to standardized interviews for which the telephone procedure is particularly suited, without explicitly addressing the basic issues and problems associated with the interview method.

2. CATI – State of the Art in Telephone Interviewing

Several months ago, a university colleague of ours recounted how she intended to conduct 150 telephone interviews in a project that was starting: she said that she would draw up a questionnaire, not unlike the type used for a face-to-face interview, which then would be printed in 150 copies. Then she would recruit students, give them the list of persons to be contacted and sit them in front of a telephone. Once filled out, the responses would be collected and processed further.

Such a procedure is reminiscent of the “stone age” of telephone interviews, when telephones were used primarily to save on travel costs; the specific strength of telephone interviews (maximum flexibility and efficiency in contacting target persons and conducting the interviews) are not harnessed. It is understandable that researchers react sceptically to the idea of conducting telephone interviews in this stopgap fashion for projects with meagre financing.

Today, professional telephone surveys are conducted quite differently. With the help of the Computer-Assisted Telephone Interview (CATI) every interviewer has a telephone with a direct office line and an on-line terminal with screen; all terminals are hooked up to a central computer. The prepared interview text passes on the screen. The codes for the responses appear on the screen and are collected directly, instead of being marked with a cross on paper. The permissible codes and all sequences are programmed; as this excludes incorrect sequences and impossible codes, a subsequent entering of data is unnecessary.

The software not only ensures optimal interviewing, but also takes over the entire address and appointment management. It also guarantees that quotas, where appropriate, are maintained and records reasons for refusals and cancellations. Thus, computer-assisted telephone interviews can be controlled at all times. That is also meant literally: no serious institute would prevent the contracting party from appearing in the telephone laboratory to observe the work or even to listen in, without intervening, on interviews in progress – something that is absolutely unthinkable with person-to-person interviews; in our experience, such a visit can, in fact, be instructive for those responsible for the project.

3. The Telephone Interview – Step by Step

3.1 *Sample quality*

In recent years, producing a genuine random sample of persons in Switzerland has become not only time-consuming and costly but also increasingly difficult, if not impossible, because of legislation on data protection and the reticence of the authorities in that regard. Samples for face-to-face interviews, when they are not made on the basis of a pure quota scheme, are thus usually taken, as in the case of telephone interviews, from the telephone book of the Swiss Post Office (TERCO-File). Unlike the case of face-to-face interviews, where in order to reduce costs a minimum number of interviews must be conducted per community, i. e. a stratifying of the sample is undertaken at the community level, and where experience shows that remote residences are systematically under-represented, with the telephone it is possible to select and interview an initial sampling of households that is geographically contained and consistent with population and residence distribution.

In a second step target persons are chosen either at random (interviewing every “nth” person in accordance with a random figure adapted to household size and on a formal basis, for example, a list of household members drawn up according to age) or on the basis of quotas. The idea of a pure random choice and thus scientific criteria speak for the first procedure, whereas feasibility and cost speak for the second.

What is common knowledge in marketing research but often overlooked in university research is the possible distortion of data in this technique in connection with household size. Both techniques call for interviewing only one person per household. That can have dire consequences, because certain subjects cannot be studied isolated from the household structure (for example consumption data). But with this technique, persons from large households have less of a chance to be picked than persons from small ones. It is therefore wise, depending on the questions, to use a technique that takes that circumstance into account by including household size when producing the sampling, rather than later by weighting the evaluation. This is a simple procedure if the household inventory is listed, the number of persons to be interviewed is determined and these persons are then chosen. That is hardly possible in face-to-face interviews, or at any rate only at excessive expense.

Quality depends not only on the sample chosen but also on execution. Telephone surveys offer a much wider range of opportunities for achieving better results than the face-to-face interview, with regard both to sample structure and response rates:

- An optimal geographic distribution is ensured from the start.
- The response rate can be raised by making appointments for target persons who are absent, managing addresses, contacts and appointments centrally and setting up and scheduling a minimum and maximum number of contact attempts.
- Persons who are difficult to contact can be more easily reached than in the case of face-to-face interviews.
- Just a few interviewers with the necessary linguistic skills, who can intervene as required at the various CATI stations, are sufficient to take care of most common language difficulties.
- The central treatment of addresses allows for a comprehensive overview at any time during the course of the study (difficult areas, creation of the quotas, etc.); corrections in the design of the study can be readily made during the interview.
- The quotas can be organized according to region to guarantee a quota fulfilment both in form and in content (for example to ensure that in urban areas not only men and in rural areas not only women will be interviewed).

These are the most important arguments that show telephone surveys to be superior for addressing sampling problems. The individual methodological steps will be discussed in greater detail below.

3.2 *The interview situation*

Comparative studies that we have undertaken in the framework of larger and longer projects on behalf of universities and the administration in order to demonstrate the feasibility of telephone surveys have shown that that method achieves better results than face-to-face interviews because the personal conversation situation no longer applies:

- In the interaction between the interviewer and the target person, all that matters is the voice. Visual and other impressions have no impact on sympathy or antipathy. According to the theory, face-to-face interviews should be conducted, where possible, at the domicile of the target person. That means that the interviewer must enter the private sphere of the interviewee (location, size and furnishing of the living quarters, cultural preferences through furniture, pictures, and the like); that can greatly influence the interview situation, assuming that the interviewee allows it to (response rate!). Other persons that might be present can also have an impact, something which can be eliminated for the most part by telephone through an appropriate question and answer procedure.

- Both partners in the interaction remain anonymous; they will never recognize each other on the street or in their daily lives. The situation is more intimate, and the risk assessment in surrendering personal information is more likely to result in a willingness to reply than in the case of face-to-face contacts. It is often overlooked that for reasons of cost, in face-to-face interviews polling institutes usually use interviewers who live near the target persons. The possibility that the interviewer and the interviewee might some day meet or might have already met is thus relatively great. This is accepted and even encouraged in interviews based on quota samplings, again for reasons of cost.
- In large urban centres in particular, more and more people are afraid to allow strangers into their homes, especially evenings, the only time that interviews with employed people is possible. That is one reason why interviewers in face-to-face interviews first contact the target persons by telephone on the basis of a sampling of addresses.
- Financially speaking, too, the time has long passed in which the interviewers sought contact directly at the house door (the theory calls for several attempts).⁶ That requires too great an effort (for example, visits when no one is home) for insufficient results. In other words, even face-to-face interviews often incorporate a telephone interview of sorts (or at any rate a telephone address screening), although it is unsystematic and uncontrolled and does not have the wide range of possibilities of a modern CATI system.
- The autonomy of the interviewee is encroached upon to a lesser degree, and his freedom of choice is greater. It is easier to hang up than to turn someone out. That being the case, when drafting questionnaires, researchers usually make a greater effort to gear the telephone interview to the target person than in the case of face-to-face interviews.
- Telephone conversations with strangers on unfamiliar subjects, ranging from information to the seeking of advice to telephone counselling, are nowadays more common than personal conversations on those subjects. The telephone is more noncommittal. Telephone interviews accommodate the waning significance of personal conversations and the increase in technically conveyed conversations in everyday life.
- The possibility and, indeed, the offer that the target persons can call back to ensure that the call really concerns a serious survey is of considerable value for ethical reasons and for the protection of data, as well as with regard to the credibility of the questionnaires and, hence, the sample quality.

6 That does not apply in the case of quota samplings, but there, friends or acquaintances are often interviewed, which the opinion poll institutes can only control, if at all, at great expense.

- Various influences on the interview situation, as described in the literature, can be easily controlled and eliminated to a large degree through item rotation, question splitting and other appropriate measures.
- Dynamic questionnaire structures are possible, i. e. the questionnaire is automatically adapted to the situation of the target person as a function of the responses. For example, question blocks can be generated automatically, as many and as long as needed, to correspond to the number of persons in the household, the consumer goods owned, such as automobiles, etc. and questions can be formulated in a way to make them fit the individual situation of the target persons (see also the following paragraph).

3.3 *Interview quality*

The centralized and permanent monitoring of the field work in a central CATI telephone laboratory makes for optimal interview quality:

- The CATI interview opens the way to complex question structures, as well as offering possibilities for branching out and posing additional questions based on the most various conditions (responses to different questions), but does not interfere with the interview (flow and consistency). On the contrary, the formulations, which have been geared to the individual situation, improve the conversation and data quality for difficult questions. This is especially important for surveys involving difficult target groups, such as opinion makers, doctors or experts or particularly difficult subjects, such as sexuality, addiction behaviour, family conflicts, etc.
- Each interview can be tailored exactly to the behaviour and the replies of the target person. Superfluous questions are not asked, the interviewer makes no errors with skipping questions, and the language (for example colloquial speech, usage, etc.) can be adjusted to that of the interviewee, for instance by posing age-related questions.
- A thorough, centralized training of the interviewers without additional costs is possible and customary.
- The continuous monitoring of interview quality by supervisors, who can listen in on the work of the interviewers with the help of a separate device, makes for ongoing quality control and improvement, which is impossible in the face-to-face interview. It is also possible to process information that automatically accumulates, such as the number of refusals, the number of interview mistakes, the length of interviews and the like. That enables the work of the interviewers to be evaluated with a view to possible further training and reorientation.

- The constant presence of supervisors ensures that competent persons are on hand in the event of difficult interview situations, for example if the target person seeks information or assistance after the interview. Such problems can also develop with surveys involving special target groups, where specialized knowledge is important, or complex contact procedures are necessary (repeated postponement of interviews, interruptions and return calls) and in the case of difficult subjects, for example certain illnesses.
- On-line help on the screen (necessary information, for example at the beginning of an interview, in the case of IPSO this is even possible for each individual question) help optimize the interview work and adapt the questions to the target persons.

3.4 *Validity and reliability*

The quality of the data collected in an interview cannot be assessed solely on the basis of sample-related considerations. Validity and reliability must also be examined. Whereas the validity must be justified but need not be measurable, reliability can be evaluated empirically.

Various methods that we have tested periodically and systematically over the years in the framework of large-scale surveys enable us to make a number of assertions with regard to validity and reliability. The following is a summary of our experience on the basis of selected examples taken from a study that we have been conducting for six years in connection with an evaluation of the STOP AIDS Campaign on behalf of the Swiss Federal Office for Health. The method used relies on:

- the measuring of identical facts with different questions at different points in the interview;
- the systematic evaluation of the experience of the interviewers;
- for key indicators, a systematic comparison with data from the literature; and
- a repeated gathering of identical characteristics.

That yielded the following results: for various benchmark values, which cannot be changed in the short time between the questioning sequences, because they are not part of the study, stable values were in fact collected within the range of each margin of error (Table 1). Of particular importance for the quality of the data is the fact that this applied not only to relatively harmless socio-demographic characteristics, but also to difficult key indicators:

- Experience with hard drugs: since the initial measurement (taken before the beginning of the Campaign) the same value was always measured for the 17 to 30-year-olds, namely 3 to 4 per cent of those interviewed (for the 31 to 45-year-olds, exactly the same value, 2 per cent, was measured in all three surveys conducted with that group since 1989).
- Men with homosexual experience: here again, the percentage among 17 to 30-year-old men remains virtually constant, 2–6 per cent. The fact that that value is somewhat higher in the last three interviews than in the first three has to do with the growing discussion of homosexuality and the fading to an extent of the taboo as a result of the efforts of the gay community in connection with Aids and the STOP AIDS Campaign; there is more debate and reporting on the subject than before.
- Men 17 to 30 years of age with experiences with prostitutes: here again, the figure oscillates between only 8 and 12 per cent, or 1 to 3 per cent for contacts with prostitutes in the past six months.

Table 1

Sexual behaviour and drug use among 17 to 30-year-olds since 1987

Characteristic	Questioning Period (Month/Year)					
	1.87	10.87	10.88	10.89	10.90	10.91
Experience with hard drugs (N=)	4% (1,182)	3% (1,211)	4% (1,213)	3% (1,231)	3% (1,227)	4% (1,372)
Men with homosexual experiences (N=)	3% (591)	3% (605)	2% (605)	4% (624)	6% (623)	5% (699)
Men with experiences with prostitutes (N=)	10% (591)	10% (605)	8% (605)	12% (624)	11% (623)	12% (699)

Reliability is a precondition for the validity of the data. The above figures show that reliable data can be collected through telephone surveys, thus meeting the precondition for validity. Furthermore, the validity for certain indicators can best be estimated through additional external data. For example, the figures discussed above, concerning men who have had homosexual experiences and youths who have had experiences with hard drugs, are consistent with practical experience and with data from other surveys, studies and research fields, as described in the medical literature.

Another indirect indication of validity is the level of refusals to reply. That has to do with the intimacy of the question, as in the present case, and also with

the degree to which the questions and answers are formulated in a way that fits the situation. However, even questions for which there is a high rate of response may prove to be not valid. For that reason, in the case of the 1992 survey, additional qualitative interviews are being prepared to allow an external validation on the basis of a language test. On the other hand, it is unthinkable to regard as valid questions for which there has been a high level of refusals to respond.

Even with regard to refusals to respond, the quality of the above-mentioned telephone surveys can be considered to be very good. This can be clearly seen in Table 2.

Table 2
Quotient of response refusals for certain questions, 1991

Question/Indicator	Age Group		
	17–30 years of age	31–45 years of age	Total
Have had spontaneous sexual contacts	0.5%	0.6%	0.5%
– in the last six months	1.0%	0.0%	0.5%
– used a condom	0.0%	0.5%	0.3%
– already knew partner	0.4%	0.5%	0.4%
Changed regular partner in 1991	0.3%	0.4%	0.4%
– raised question of Aids at that time	0.0%	0.0%	0.0%
How many persons have you slept with in your life?	4.9%	6.4%	5.6%
Number of sexual contacts in the past 6 days	4.9%	5.5%	5.2%
Experience with drugs	0.2%	0.2%	0.2%
– if yes, which drugs	0.5%	0.0%	0.3%
– if hard drugs, have you injected them?	0.0%	0.0%	0.0%
Does brother or sister use hard drugs?	0.1%	0.1%	0.1%
Men only			
– experience with prostitutes	1.0%	0.4%	0.7%
– experience in the past 6 months	0.0%	0.0%	0.0%
– have had homosexual contacts	0.2%	0.2%	0.2%

3.5 *Non-respondents and refusals*

The question of systematic non-response raises a serious problem for all surveys. Non-respondents come from a wide range of categories, including persons who do not speak the language, persons who have moved, persons who are ill, on vacation, serving in the armed forces or absent for professional reasons, persons who cannot be interviewed or questioned and persons who cannot be reached for other reasons. True refusals make up only part of that group.

We have noticed that the non-response rate is often very similar. For example, in the special 1989 non-respondent survey, part of the microcensus on traffic, the non-response rate was exactly the same several months later as it had been for the first interviews, although the only persons interviewed were those who, for a variety of reasons, had not taken part in the first survey. It is fair to conclude that non-participation or a refusal at a given time usually is related to a particular situation and that only a small part of the population refuses to take part because of a negative attitude towards interviews. A person who in a given situation cannot or does not want to participate in an interview is often willing at another time to give responses to the same subject, to describe his situation and to voice his opinion.

The CATI telephone laboratory offers several interesting possibilities for estimating the degree and type of non-response. These possibilities are not basically different from those open to face-to-face interviews, where it is theoretically possible to obtain even better information by being present and by interviewing neighbours; but for reasons of economy, that is hardly ever done.

Thus, when we speak of the advantages of the telephone method in this connection, we have in mind simple inexpensive procedures that can be used on a routine basis, for example socio-cultural analyses on the basis of data concerning place of residence, which are included in each individual interview in the sampling programme, or the systematic analysis of the reasons recorded by the interviewers for non-response.

When we say that the response rate is often very similar, that does not mean that it cannot be influenced at all. On the contrary, the response rate in telephone interviews is greatly dependent upon the quality of the interviewer's work, and thus upon training and supervisors, as well as the subject and its description, the contracting party or the purpose of the study (in general and with specific reference to the subject) and the actual form of the procedure.

The importance of the start of the conversation can be seen in the 1989 Aids Evaluation Survey (households chosen at random, target persons by quotas). In the initial phase it was explained that the survey concerned friendship,

relations between couples, Aids and sexual behaviour. In a second phase, the expression "sexual behaviour" was not used. Although the "simple" quotas had already been filled, the rate of refusals to respond remained equally high, whereas theoretically it should have increased. In the third phase no specific references were made to the subject, unless specific questions were asked. It was only said, as earlier, that we were conducting a survey on behalf of the Federal Office of Health, and that we needed the opinion of as many of the persons contacted as possible. Although now only "difficult" quotas needed to be filled, the rate of refusals to respond sank by more than 40 per cent compared to the first two phases!

The following parameters are particularly important when making contact:

- The introduction must be short and to the point, so that the interview can begin as soon as possible and the questions can acquaint the target person with the subject, because interest usually increases considerably as the interview proceeds.⁷
- The introduction should not be too detailed, because with each expression used the target person undertakes his own interpretation of the subject of the survey, which may depart substantially from the actual content of the questionnaire, because such an interpretation often relies on superficial definitions, hasty judgements and guess-work. The target person then gains the impression that he has nothing to say about the subject or that the subject does not concern him.

Another important reason why the response rate is higher for telephone surveys than for comparable face-to-face interviews is presumably because of the identity of interests between the contracting party and the polling institute. For reasons of content or of method, the contracting party is greatly interested in a high response rate and usually stresses that point when the contract is concluded. The polling institute also has a commercial interest: the gross interview duration (including attempts to establish contacts and the making of appointments) is usually much longer than the net interview duration (interview time alone). The higher the response rate, the shorter the gross interview duration and thus the lower the interview costs.

Finally, the target persons themselves prefer the telephone interview to the face-to-face interview (see paragraph 4).

7 On the other hand, interviews are not usually interrupted because of particularly difficult questions, but because of a change in the situation (visitors etc.), interview length ("time to watch the evening news") or general signs of fatigue ("I believe I have told you everything now").

3.6 *Duration*

The telephone interview is faster than a face-to-face interview; thus, more interviews can be conducted in a given time. As a consequence, the influence of current events can usually be excluded to a large degree.

Furthermore, CATI's unique automated contact and interview files make it possible to obtain an exact temporal location of external events if that is regarded as relevant for the study. That applies both to the response rate, which may be influenced by such events, and to substantive changes in replies to specific questions. Thus, even when the influence of external events cannot be excluded, their impact can be controlled. In extreme cases, the questions can be modified during the course of the interview to adapt them to the new circumstances.

3.7 *Costs*

Telephone surveys are usually less expensive than comparable face-to-face interviews. Savings can be considerable even when creating a sample:

- Modern sampling procedures are tailor-made for telephone interviews.
- Additional costs through stratified samples at community level and the associated requisite clustering, data transfers, printing of addresses, drafting and equipping of contact reports and the correct distribution of quotas to the various regions and interviewers are all no longer necessary.
- The monitoring to ensure optimal quality of the sampling is computerized.

Moreover, much less time is needed for conducting the actual field work:

- The search for target persons is managed and controlled in a standardized and centralized fashion.
- Once contact has been established, in most cases the interview can begin immediately, and there is no need to make an appointment for a face-to-face meeting.
- The response rate is usually higher; time-consuming efforts to establish contact are no longer a consideration.
- The telephone interview takes approximately 20 to 30 per cent less time than a comparable face-to-face interview (a more rational structure, less confusion between target person and interviewer, faster, more focused communicating on the telephone) and is thus another source of savings.
- Decentralized training (pay and expenses of the interviewers and the instructors, renting of classrooms, etc.) is not needed; but study-oriented training is still possible and customary.
- Travel-time compensation and travel expenses for the interviewers no longer apply. The costs of using the telephone instead are much lower.

- There is no data gathering, apart from the coding of open questions.
- The data collected have already a certain plausibility and can for the most part be directly transferred to the analysis programme, which usually takes on all formats and variable definitions as well. An evaluation file with all information (skipped questions, missing value codes for refusals to reply or answers such as “I don’t know”) is programmed in most CATI systems and does not entail additional costs.

Conducting 1,000 telephone interviews with an average net interview duration of 25 minutes (corresponding to a 40-minute person-to-person interview) in a representative population sampling (including questionnaire programming and evaluation) takes a maximum of 3 weeks in Switzerland, depending on the institute. A person-to-person interview of the same dimensions takes at least 3 to 4 times as long.⁸

All this has a considerable impact on cost, and a telephone interview therefore usually costs between 30 and 50 per cent less than a person-to-person interview in which a comparable amount of information has been collected.

3.8 *Limits of the procedure*

Needless to say, the use of telephone surveys has certain limits.

There must be a sufficient telephone density. That is the case in Switzerland, even though non-assimilated foreigners and older persons in particular are less likely to have a telephone than other population groups. As most surveys only address persons who speak the language, and as age limits are common, such qualifications are not of central importance; after all, the same applies to person-to-person interviews, where in practice the problem is identical.

In the case of older persons, starting at a certain age and state of health, and independent of the questioning method, the question is whether and in what situation the interview at a distance must replace the direct interview so that a representative cross-section of older persons is contained in the sampling and not just those who are capable of being interviewed. Moreover, for a variety of considerations, interviews usually address persons who live in private households, while persons in group households, such as old age and nursing homes, prisons, youth centres and the like are usually not interviewed, above all for practical or cost reasons, but also in connection with their particular consumer and social behaviour.

⁸ In view of the time available, it is, in fact, often no longer possible to conduct a large-scale survey with person-to-person interviews.

As in the case of face-to-face interviews, highly mobile persons are difficult to reach. For such a category, the telephone is an advantage in that a large number of attempts to establish contact can be made at different hours and at different times during the week. Highly mobile persons, i. e. persons who travel frequently, are thus easier to include in telephone interviews than in face-to-face studies, because that circumstance can be taken into account in the contact procedure. That is of considerable importance, because highly mobile persons are often those who are of particular interest: young adults, persons with higher professional qualifications, the independently employed, etc.

One problem group could be persons who move and sub-tenants, who are under-represented in telephone interviews. As this group usually concerns young persons of working age, this problem should not be overlooked. It can be partially counterbalanced by using a quota procedure instead of a random procedure when choosing target persons. In the case of persons who have moved, the new address can be ascertained by contacting former neighbours (who can be located by calling the public telephone service for information), although that is somewhat time-consuming. Regarding sub-tenants, an attempt can be made to trace a certain number of persons in a "snowball procedure", for example, by using quotas.

Concerning the problem of contacting target persons, the telephone method is particularly suited for interviews conducted during working hours at the place of work. The telephone numbers can be ascertained, and the appointments can be made directly or by each office, thereby ensuring a high level of contacts. For complicated questions or for responses requiring visual material, telefaxes can be used during the interview.

Pictures, charts and other such material cannot be employed. The correct identification of poster and advertisement material and the like can, however, be checked in telephone interviews with the help of appropriate measures: the media in question are hung up or displayed in the telephone laboratory and are identified through the descriptions of the target persons or the interviewers. Needless to say, it is impossible to have the target person choose between various pictures, as during a face-to-face interview, to use pouting and laughing facial expressions as extremes in a scale or the like.

Long lists of questions delivered in a monotonous and uniform way are unsuitable (maximum: approximately 20 items), and complicated questions cannot be asked (preferably questions with only three response choices). However, this is also difficult in face-to-face interviews, although it is common practice.

The duration of the interview is limited. Although some telephone interview sequences are set to last an hour, normally they should not be longer than 20 or 30 minutes, 40 minutes being the maximum.

The duration of a telephone interview depends to a large degree upon the subject of the study (trivial questions cannot be posed for as long a period as profound ones), the interview sampling (for example with regard to the educational level of the target persons or the degree to which they are affected by the subject), the structure of the interview (telephone questionnaires do not have the same appearance as questionnaires for face-to-face interviews), the number of ramifications (less general, more specific information) and the general thrust (qualitative versus quantitative). Experience has shown that in a given time period, communicating by telephone makes it possible to gather considerably more information than through the face-to-face interview and that the temporal restrictions on telephone interviews thus prove to be of secondary importance.

However, telephone interviews must take into account the fact that telephone conversations usually are rapid and intensive. The technical equipment must be able to keep up (the screens must visualize rapidly, there can be no delays when jumping from one question to another, etc.). The questions asked must be simple and, above all, must always be geared to the situation of the target persons (i. e. it must be possible to ask the same question with a different wording and to visualize it automatically on the screen, adapting it to the responses given). The interviewers must be talkative, sensitive and nimble, and they must have the appropriate training. This has often led to the use of students for telephone interviews to a greater extent than for face-to-face interviews; the impact of this fact on telephone interviews has hardly been investigated.

The questionnaire, which with CATI interviews is more like a script, must be adapted for the telephone (introduction, structure, sequence, formulations, time considerations, types of questions, etc.). In practice, that is more difficult to realize than it might seem at first glance. The reaction of target persons to a poorly conducted procedure is simple, but final: they hang up.

Lastly, the contracting party or institute and the topic of the study must be legitimate (giving sense to the interview and credible, in that it guarantees data protection. This is necessary because unless the target person calls the institute, it is impossible to determine whether the latter is legitimate, whereas in the case of face-to-face interviews, the target person can ask to see an accompanying letter, the interviewer's identification, etc. However, the question of legitimacy can easily be resolved by sending an explanatory letter in advance.

4. Opinion of the Target Persons

The best interview method is useless if it is not accepted by the target persons. The Link Marketing Institute of Luzern has conducted a representative poll of methods that offers insights into the acceptance of the most common interview procedures (Table 3). The poll reveals that telephone interviews are regarded as more convenient, the face-to-face interview more entertaining and the written questionnaire more anonymous than the other methods. Telephone and face-to-face interviews are more or less equally popular and clearly favoured over written questionnaires.

Table 3
Various forms of survey as seen by the population

Assesment Criterion	Type of Survey		
	telephone	face-to-face	written
Which type of interview is least disruptive of your privacy?	35%	16%	42%
Which type of interview is most anonymous, making it easiest for you to speak your mind?	34%	16%	40%
Which type of interview is most convenient?	53%	25%	23%
Which type of interview is most entertaining?	30%	43%	8%
For which type of interview are people easiest to reach?	55%	20%	25%
To which type of interview would you most like to respond?	36%	39%	15%

Source: Link opinion poll of 607 persons, quoted in P. Zeugin: Possibilities and limitations of the method of using telephone interviews for gathering sensitive data, Conference "Assessing Aids Prevention", Montreux, September 1990.

Putting aside the written questionnaire, which for many reasons does not constitute a real alternative, the telephone interview does noticeably better than the face-to-face interview with regard to the protection of the privacy of the target

persons. As such, it is particularly suited for difficult or taboo subjects, such as sexuality, drug use, deviant behaviour and the like, whereas for general subjects, it has the same level of acceptance as face-to-face interviews.

5. Conclusions

For the above-mentioned reasons, telephone interviews are increasingly used for large-scale surveys, surveys of specific target groups and for interviews with difficult subjects and complex question structures. For example, the Swiss Federal Office of Statistics has been employing telephone interviews for large-scale surveys for some time; reference is made in that context to the surveys carried out in Switzerland on the subjects of the workforce and health, each involving 10,000 interviews, as well as various microcensuses and the survey on rents. We have already made mention of the studies conducted in the framework of the Swiss Federal Office of Health's Aids prevention campaign. A good example from the academic sphere is the study on reproductive medicine of the St. Gallen School of Economics (Maeder 1992).

Although costs have increasingly become an important factor, the choice of telephone interviews is also justified for methodological reasons: person-to-person interviews are not only less suited for certain questions, but they are also more difficult to conduct and more prone to error. Thus, given certain conditions, and properly used, telephone interviews are not only a viable alternative to person-to-person interviews, but are clearly the best technique for collecting sensitive data, from both methodological and practical points of view.

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