

# The Use of the Psychological Laboratory To Study Sensitive Survey Topics

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## ABSTRACT

Maximizing the tendency of the survey respondent to answer truthfully when sensitive questions are presented is critical issue in survey methodology. A recent development devoted generally to the reduction of response error in survey data is the use of cognitive laboratory techniques during the survey development phase. The chapter categorizes and describes the various cognitive techniques that have been applied, by Federal agencies and other researchers, to the study of sensitive questions. Based on this analysis and review, a number of recommendations are made concerning specific aspects of survey design, when sensitive questions are administered.

## INTRODUCTION

A vital practical problem addressed by survey researchers is the under-reporting, and response error in general, associated with asking questions that are sensitive because the answers are either embarrassing or admissions of illegal activities. A number of studies have addressed this problem through the use of experiments that manipulate, within a fielded survey, variables that are relevant to survey administration. This chapter focuses on an alternative, recently developed methodology—the use of the cognitive laboratory—to study the response to sensitive survey topics. Cognitive laboratory study is distinguished from field experimentation in that this research is carried out as an explicit psychological experiment in the laboratory, rather than under the guise of an actual survey; it is generally small in scale and qualitative in nature; and the aims of laboratory study are somewhat different from those of field experiments.

The results of field experiments have been inconsistent in determining the effects of particular survey administration variables, such as mode (self- or interviewer-administration) and the nature and

extent of anonymity and confidentiality provided to the respondent (Fowler 1993; Jobe et al., in press). The use of the psychological laboratory to study sensitive topics has been, in part, a response to these inconsistent findings. Under this approach, the cognitive aspects of the survey response are emphasized, and explicit attention is paid to the ways in which dominant response trends can be intensively studied through a variety of interviewing techniques that purport to study the thought processes of the tested individual (see Jobe and Herrmann 1994, for a discussion of the cognitive models that are proposed to underlie the survey response process).

Cognitive laboratory procedures generally use either focus groups or group discussions, or cognitive interviewing of individuals. In this chapter, all variants of these methods are termed "laboratory procedures," whether they are carried out in a laboratory or in some other location; the sole intent of the term is to distinguish these investigatory studies from experiments that are embedded in fielded surveys. Approaches that use laboratory procedures will be described in turn. Then, a number of preliminary hypotheses and conclusions arising from these studies will be reviewed.

## COGNITIVE LABORATORY PROCEDURES

### Focus Groups

Focus groups, in which a small number of individuals are studied in a group discussion format, have been useful early in the development of surveys involving sensitive topics (although see Schechter et al. 1993, who advocate the use of focus groups later in the questionnaire development process). Usually, the major intent of the focus group discussion is to determine the feasibility of a general approach, to develop hypotheses concerning the dominant variables that appear to influence survey responses, and to gather a range of reactions from prospective respondents that may guide survey development (see Krueger 1994 for a practical guide to conducting focus groups). For example, Tourangeau and colleagues (1992) used focus group discussion as part of a study on sensitive questions on women's health to highlight the major concerns that women appeared to have, relating both to the survey questions and the data-collection procedure used to ask the questions. Further, O'Brien (1993) reported on focus groups with gay and bisexual men that were designed to inform the development of survey questionnaires and procedures. Focus groups have the advantage of distributing the discussion of the

topic among a number of participants, so that embarrassing topics can be discussed without any particular person feeling as though he or she is being targeted. On the other hand, the results of focus group discussions are notoriously difficult to document, and a large amount of qualitative information must be reduced to a useful summary form.

### Cognitive Interviewing

The use of cognitive interviewing of individual laboratory subjects emphasizes the adaptation of verbal probing techniques, as described by Ericsson and Simon (1980, 1984). As the survey research community increasingly emphasizes sources of response error that impact on overall survey data quality, these techniques have been used extensively to study the response process with respect to survey topics. A general review of these studies is contained in Jobe and Mingay (1991). In general, these studies rely on verbal reports by the laboratory subject that are in addition to the answers given to the survey questions themselves, and are elicited either through think-aloud methods (asking the subject to spontaneously "talk through" their thoughts), or by interviewer probing methods (the interviewer asks additional questions, beyond the written survey questions, to explore the respondent's thinking processes). The qualitative results of these investigations are normally used as a basis for modifying survey questionnaires so that these are in a form that eases completion of the question-answering task for the respondent, presumably resulting in an improvement in data quality.

Variations of verbal report methods have recently been used to study the reactions of individually tested laboratory subjects to a number of presented materials that are relevant to sensitive surveys (see Blair et al. 1992; Forsyth et al. 1992; Holland and Willis 1991; Willis et al. 1994). Two major types of approaches have been taken in these studies, each of which is discussed briefly below.

**The Direct Questioning Method.** This method closely parallels the approach often taken for testing nonsensitive survey questions: Subjects are asked to answer survey questions in the laboratory, much as they would be asked the questions in an actual survey, and then are administered further verbal probes so the interviewer can explore the basis for their answers. This procedure may be conducted with either subjects of known status with respect to sensitive behaviors (e.g., subjects from drug treatment clinics, such as discussed by Willis et al. 1994), or with subjects of unknown status (such as recruitment of members of the general public, or of those deemed likely to have

engaged in particular behaviors based on age or some other characteristic) (Tourangeau et al. 1992). This procedure allows a straightforward examination of the sensitive topics queried, but is possible only if subjects are willing to divulge and openly discuss sensitive behaviors.

**The Indirect Questioning Method.** Using this method, subjects are not asked sensitive questions directly, but are instead queried about their perceptions, opinions, or responses associated with a number of issues related to the administration of these questions, and in particular, question content and administration procedure (Willis et al. 1994). This method is more likely to be used when subjects cannot be expected to report in detail on their own behavior with respect to sensitive topics, especially where they may be reticent to do so because of embarrassment or mistrust.

#### Cognitive Processes Studied Through Cognitive Laboratory Procedures

The focus of both direct and indirect studies is on specific cognitive processes, including the three discussed below.

**Comprehension Processes.** Survey developers are often interested in respondent comprehension of key terms, phrases, explanations, procedures, and concepts used (e.g., street drugs, sexual partner). For example, in a project to develop questions about teenage sexual behavior, teenage laboratory subjects were asked to circle terms they did not understand (Willis 1991). In other studies conducted at the National Center for Health Statistics (NCHS), subjects paraphrased definitions of key terms used in sensitive questions, and drug users undergoing treatment were asked to provide the best terminology for particular questions (examples of the techniques used to probe subjects can be found in Willis 1994a). Further, Tourangeau and colleagues (1992) and Forsyth and colleagues (1992) used cognitive interviewing techniques to study subjects' comprehension of drug questions; Holland and Willis (1991) studied teenagers' comprehension of key terms used in a survey of risk behavior; and Blair and colleagues (1992) assessed understanding of terms used in a survey of human immunodeficiency virus (HIV) risk behaviors. Study of subject comprehension can assess not only the semantic meaning of a term, but its emotional and associative meanings as well. For example, subjects can be asked to directly or indirectly rate or rank question sensitivity (Willis et al. 1994).

Comprehension can also be assessed with respect to the survey administration procedures used, rather than the survey questions themselves. In particular, cognitive researchers are interested in laboratory subjects' understanding of procedural mechanics, and of their associated perceptions of risks to the survey respondent. For example, Willis and colleagues (1994) have studied laboratory subjects' reactions to different forms of the randomized response technique (RRT), developed by Warner (1965, 1976) and by Horvitz and colleagues (1967), in which anonymity is maintained by the use of a randomizing device (usually a coin) to determine which of a pair of questions the respondent is to answer, and where only the respondent knows which question is being answered. Moriarty and Wiseman (1976) and Soeken and Macready (1982) also conducted psychological laboratory-based experiments with respect to understanding of RRT, and Miller (1984) conducted similar work in a study of the item count procedure for administering sensitive questions in which the respondent counts the number of behaviors that he or she has engaged in and reports only that number.

**Recall Processes.** In order to study the recall of sensitive information, the investigator may ask about subjects' judgments of confidence in their answers, or mechanisms that subjects report using to retrieve information. These practices are somewhat more difficult than asking about comprehension, because they almost invariably involve a request for the disclosure of sensitive information (i.e., direct questioning). However, for subjects who are willing to disclose such information, it may be valuable to carry out these activities. For example, Forsyth and colleagues (1992) probed the 12-month recall of laboratory subjects in the development of the National Household Survey on Drug Abuse (NHSDA); Keer and colleagues (1992) inquired about long-term effects of drug use; Tourangeau and colleagues (1992) asked about reproductive history; and Holland and Willis (1991) studied teens' recall of topics such as drinking behavior.

**Decision Processes.** These processes can be divided into two subcategories:

- *Determinants of truthful response.* Subjects can be asked about features of the survey administration context that would lead them to respond truthfully or untruthfully. Note that asking about whether "you" would respond truthfully inevitably leads to self-disclosure, because the subject will have to then report *why* he or she would do so, and this necessarily involves a direct-questionnaire approach. For an indirect

questioning approach, one can instead develop descriptions of hypothetical situations, including vignettes (Willis et al. 1994), so that the subject may make a judgment concerning how a described individual would answer a particular sensitive question.

- *Comprehensive/general study.* As a general category of cognitive decision processes studied, the researcher often investigates laboratory subjects' perceptions of the entire range of stimulus variables that may be relevant to the subjects' decisions to answer sensitive questions truthfully or not. This research emphasizes social psychological factors, including interviewer characteristics, as well as specific survey administration variables.

## FINDINGS FROM COGNITIVE LABORATORY-BASED RESEARCH

The following general findings are relevant to survey practice when sensitive questions are asked. They are mainly based on a number of experiments done in the NCHS Questionnaire Design Research Laboratory by researchers under contract to NCHS or by other authors who have applied similar laboratory-based techniques. All findings are presented as hypotheses to be considered by survey methodologists rather than as established truths. Where possible, results from field experiments are compared to those obtained from the cognitive laboratory.

### Interviewer Variables/Introduction of Survey

**The Stated Justification for the Survey Is Critical.** Tourangeau and colleagues (1992) reported that focus group respondents expressed a concern that the results of surveys actually be used to benefit someone, and these authors found that subjects were especially critical of the role of the Federal Government in collecting private information on reproductive behavior. Results of a cognitive interviewing study by Willis (1989) also suggest that the survey researcher should make clear the purpose of the study, or demonstrate that the information collected is actually useful to members of the general public or the subpopulation surveyed.

Based on these preliminary findings, it may help to justify data collection in some cases by providing respondents with demonstration materials, such as newspaper articles, that describe results from an

earlier, related survey. In addition, one might begin survey administration with a letter and a carefully worded brochure that succinctly outline the major uses of the survey. The use of such an approach is supported by suggestions of some authors that even the title of the survey can be important to respondents. For example, Caspar (1992) suggests that responses to the National Household Survey on Drug *Abuse* would be improved by renaming the National Household Survey of Drug *Use*; the title of the survey may communicate the nature of its intended uses.

**Respondents May Focus Attention on the Interviewer Rather Than on Other Aspects of Survey Administration.** Based on observations of laboratory subjects by Rasinski (1993) and by Willis and colleagues (1994), the usual survey-administration situation is complex and, from the respondent's point of view, contains a number of inherent uncertainties. Further, when sensitive questions are asked, the presented situation represents a classic case of decisionmaking under conditions of uncertainty, and under conditions of potential risk, as the respondent who reveals sensitive information may be placing him or herself in considerable jeopardy if the information is disclosed (Dawes 1988).

Under such conditions, survey administrators often implicitly assume that respondents will determine the credibility of the procedure by assessing the mechanisms used to administer the survey, such as information contained on confidentiality forms and the procedures used to physically protect response security. However, to the extent that laboratory subjects are typical of survey respondents, it appears they do not necessarily focus heavily on these sources of information, but instead make decisions concerning whether to respond truthfully based on a more limited number of known factors, and in particular on their assessment of the interviewer's characteristics. It may be that, quite often, respondents make an initial assessment of the interviewer that, in essence, asks: "Do I trust this person?"

This interpretation concurs with an analysis by Groves and Cialdini (1991), who distinguish between two basic styles of information processing related to decisionmaking: A deliberate, analytical, and exhaustive consideration of all pertinent features relevant to the decision, and a shortcut heuristic that makes use of a single, highly diagnostic piece of information that has proven to be useful in making past decisions. Groves and Cialdini argue that under conditions in which an individual is required to make a relatively quick decision, with limited information, he or she will rely on the heuristic

strategy. Although these authors mention other possible salient cues, it may be that the heuristic often used by survey respondents relates directly to their conclusions concerning the trustworthiness of the interviewer. Thus, the interviewer may often serve as a "salesperson" who is selling him- or herself, rather than the survey per se. Ramifications of this conclusion, especially with regard to interviewer training, will be considered later.

### Survey Administration Procedure Variables

Survey Respondents View Administration Procedures Differently than do Survey Administrators. The key assumption of the cognitive approach to survey design is that an understanding of the respondent's viewpoint is vital when developing an optimal administration procedure. Rasinski (1993) took this approach in studying laboratory subjects' interpretations of a confidentiality form used for a questionnaire on abortion reporting, finding that understanding of the form varied widely, and that misinterpretations even included a case in which the subject thought that it meant that the interviewer was requesting identification from the respondent. Rasinski also found that participants often did not understand the term "randomly selected."

Willis (1989) also examined the comprehension of a standard confidentiality form, asking subjects to paraphrase its meaning, and found that it was extremely difficult to understand. A disturbing trend noted by both Rasinski and Willis is that many subjects believed that the information collected would be available to Government agencies in general, including the Internal Revenue Service and the Federal Bureau of Investigation. Finally, Singer and Miller (1992) presented different confidentiality forms to subjects and found that they preferred the most simple, clearly stated version (although their subjects were not particularly impressed by either form).

Further evidence supporting the notion that respondents may view the survey administration situation differently than do survey administrators consists of the finding by Willis and colleagues (1994) that in the laboratory, subjects did not differentiate survey procedures that differed widely in objective levels of threat (or the level of protection as defined by the survey administrator). Rather, subjects focused on variables that survey researchers do not normally consider, such as the facial expressions of both interviewers and respondents. In one experiment that assessed subjects' comprehension of a complex survey administration procedure, Willis and colleagues



(1994) demonstrated to subjects a variation of the randomized response procedure. It was found that subjects fell into discrete subgroups with respect to understanding this procedure, and that members of the group who did not understand statistical aspects of the procedure were very apt to report that they would select a strategy of lying, due to the fear that they were being subjected to a type of "shell game." Smith and colleagues (1974) conducted an earlier, more extensive psychological study, and reported results consistent with this notion.

The above illustrations suggest that potent factors affecting the response cannot always be predicted ahead of time, but should be the focus of debriefing or prior intensive pretesting. Note that even random-digit dialing, which appears to be an anonymous procedure from the point of view of the survey administrator (Fowler 1993; de Leeuw and van der Zouwen 1988), may appear somewhat different to the respondent who is left wondering, "How did they really get my telephone number?"

**The Potential for Social Embarrassment Should Be Taken into Account When Devising Administration Procedures.** The notion that drug users do not care about what a member of the data-collection establishment thinks of them appears to be invalid; subjects tested by NCHS researchers at a drug treatment clinic indicated that they would prefer not to talk openly about drug use, making comments such as "You don't want the interviewer to think you're a sleaze or something," "You want to keep it upbeat," or "You don't want to tell these things to an old lady" (Willis 1989). Therefore, in asking about sensitive topics such as drug use and sexual behavior, one might avoid direct, face-to-face questioning by a survey interviewer and rely instead on self-administered instruments.

This conclusion is consistent with results from several field-based experiments. For example, Schober and colleagues (1992) found greater reporting of cocaine and marijuana use with self-administration than with face-to-face interviewing. Turner and colleagues (1992), Gfroerer (1992), and Mensch and Kandel (1988) also have higher reports of drug use in a self-administered version than under face-to-face administration, and Waterton and Duffy (1984) found computer-based self-administration to produce higher reports than did face-to-face (paper questionnaire) administration for alcohol consumption. Further, Jobe and colleagues (in press) found that for questions on number of sex partners in the last year, past 5 years, and lifetime, and for questions on sexually transmitted diseases

and condom use, self-administration produced higher estimates than did interviewer administration.

On the other hand, there are also cases when it appears that the factor of social embarrassment may be more in the minds of the survey administrators than in those of respondents. In the initial phase of development of an NCHS survey of teenagers on sexual behavior, drug use, and other risk behaviors, high school health teachers were enlisted to demonstrate the draft questionnaire to their classes and to follow a protocol that prompted student opinions (Willis 1991). Similarly, Holland and Willis (1991) used focus groups to determine the major concerns that teens would have about answering sensitive questions on fighting, drug use, and sexual behavior. In both studies, it became clear that the teens did not feel that questions on sexual behavior or drug use were especially invasive or embarrassing. Rather, teens were mainly concerned about the possibility of their parents' discovering their answers. These results were interpreted as indicating that it is feasible to ask these sensitive questions of teens in a household survey, but that it is important to develop an administration procedure that ensures that parents would not be able to determine respondents' answers.

**Technology Used for Administration Can Have an Impact on Responding to Sensitive Questions.** Audio computer-based self-administration, or audio-CASI (Turner et al. 1992), has been reported to be a promising technology. The respondent listens through earphones to the microcomputer-based digital speech presentation of the survey questions, and responds directly using the computer keyboard. Preliminary tests of this technology, as reported by Lessler (1994) and by O'Reilly and colleagues (1994), suggest that this could be a useful method for collecting sensitive information because of the inherent privacy afforded by the procedure, and because literacy problems are for the most part circumvented.

Reservations have sometimes been expressed about computers with respect to sensitive topics: The computer may be perceived as too impersonal, or its use may make evident to respondents that the information will be stored in a form that makes it very easy to duplicate and distribute individual responses. However, in a very preliminary laboratory study, there was no strong indication that computers are seen as objectionable (Willis 1989). This is clearly an unresolved issue, given that Jobe and colleagues (in press) have found in a field study that for interviews conducted outside of the household, using a computer may actually be intimidating.

**Laboratory Subjects Express the Inherent Multifactor Complexity of the Impact of Administration Variables.** When asked about their feelings concerning a particular set of survey administration circumstances, laboratory subjects are extremely likely to qualify their opinions by stating that "it depends," and then explaining exactly what they think a truthful response will depend on (Willis et al. 1994). It appears that, in effect, subjects are able to spontaneously recognize and articulate potential interaction effects between a large set of relevant variables. This trend is consistent with results of focus group interviews of survey interviewers reported by Groves and Cialdini (1991), who report that interviewers strongly endorse the practice of *tailoring*, or taking into account a number of key contextual variables, and adjusting their survey approach depending on perceived characteristics of the respondents (for example, dressing nicely in a wealthy neighborhood or dressing down in a poor one). It appears that both interviewers and laboratory subjects use implicit knowledge gained through social interaction to make inferences about cues and behaviors that likely will influence the behavior of others.

It is unclear whether attention to contextual features will result in standard procedures that will actually improve compliance with sensitive questions, but this may be an area worthy of intensive study. In particular, it may be possible, in interviewer training, to stress the types of situational factors that respondents are likely to attend to when sensitive questions are administered. Note that this point is consistent with several observations made earlier concerning the ways in which interviewer characteristics, explanations attempting to justify the survey, and other situational variables not normally anticipated by the survey administrators influence respondents' willingness to admit to sensitive behavior.

**Laboratory-Based Procedures Can Be Used To Develop Survey Administration Procedures, but the Results Must Be Interpreted With Caution.** The various concerns discussed above raise a critical issue with respect to the use of the laboratory study of sensitive topics as an analog to the field environment. Clearly, the practice of using laboratory subjects to select an optimal survey administration procedure is fraught with potential methodological problems because of the suspect validity of subjects' hypothetical judgments of "What would I do when faced with a particular administration procedure?" Because of this limitation, cognitive laboratory results cannot be used to predict the absolute frequency of truthful responding. Blair and

colleagues (1992) also report limitations due to the hypothetical nature of asking, "How would someone react?"

Therefore, laboratory researchers have attempted, at a minimum, to demonstrate different administration procedures to laboratory subjects, and to ask which one subjects would prefer, in order to obtain *relative* measures of preference for these procedures. It remains to be determined whether the ranking of preferences obtained in the cognitive laboratory bears a resemblance to findings from the field. Rasinski (1993) found that for survey questions on abortion, laboratory subjects preferred a self-administered procedure to face-to-face administration, and preferred the telephone the least, an ordering that also reflects the results of some field experiments cited previously. When asked why they prefer self-administration, subjects tend to give explanations that are consistent with the notion of the maintenance of a social distance between interviewer and respondent.

#### Respondent/Response Variables

**Nonresponse Is Not an Adequate Measure of Data Quality.** It is sometimes thought that a low nonresponse rate to particular questions indicates a fairly high degree of respondent compliance, and by extension, truthfulness. Laboratory research suggests that this conclusion may be erroneous, however. Laboratory subjects have frequently reported that, for "yes/no" questions asking about whether they have engaged in a particular behavior, they would prefer to lie than to refuse to respond to a question; refusal is seen as tantamount to admitting to having carried out the sensitive behavior (Willis 1989).

**The Respondents' Socioeconomic Status and Degree of Prior Disclosure Appear To Be Important for Questions on Drug Use.** Two laboratory experiments reported by Willis and colleagues (1994) found that drug clinic subjects believe that drug users are not of one type, but may represent, at the extreme, two subtypes: relatively high-status, recreational users whose drug use is mostly secret, and low-status, heavier users whose drug use has already been generally disclosed. The clinic subjects suggested that the first category of user will be extremely unlikely to reveal drug use in a survey, while the latter will be somewhat more likely to do so because they have little to lose as a consequence of such an admission.

**Some Decision Factors May Not Be Amenable to a Rationally Based Approach.** Survey administration approaches that systematically

vary justifications, administration procedures, and other elements make the implicit assumption that respondent behavior is rational, and is determined by a systematic integration of perceptions of potential risks, losses, and benefits related to the provision of truthful responses. This hypothesis has been investigated preliminarily in the laboratory by Sirken and colleagues (1991) and by Willis and colleagues (1994). These researchers concluded that to some extent, laboratory subjects do appear to behave according to a rational, probabilistic response mechanism that Willis and colleagues (1994) have labeled the "cognitive utility model."

However, laboratory-based studies also suggest that there are limits to the application of this approach. In particular, the tendency towards absolute denial of certain forms of behavior among some drug users may be relatively intransigent (Keer et al. 1992; Willis et al. 1994). This concept was operationalized by one subject tested by NCHS researchers at a drug treatment center, who suggested that drug users he knew would not respond by answering "yes" to a self-administered question on drug use even if the survey administration procedure involved burning the questionnaire immediately after marking the answer. Therefore, it may be that for a certain proportion of drug users, no administration procedure, and no amount of confidentiality or anonymity, will have a positive effect on the decision of whether to answer truthfully.

### Survey Questionnaire Variables

**Respondent Perceptions of Question Sensitivity Cannot Be Assumed Ahead of Time.** It has already been noted that several studies found teenagers not to be embarrassed or offended by questions on sexual behavior and drug use. Further, in a laboratory-based study of intravenous (IV) drug users, Willis and colleagues (1994) found that, contrary to expectation, anal intercourse was not as sensitive as were behaviors such as needle sharing. Smith (1992) also has found in a field experiment that questions on number of sex partners represent a fairly complex pattern with respect to sensitivity; in general, having too few sex partners is sensitive to men, and too many is sensitive to women. Locander and colleagues (1976) made the point that is clearly represented by these findings: Researchers need to measure, rather than to assume, level of question or topic sensitivity. If it is the case that the scaling of question sensitivity is somewhat the same in the field as in the laboratory situation, the laboratory interview can be a valuable tool for assessing this factor.

**It Is Useful to Distinguish Between Sensitive Questions and Sensitive Answers.** Groves and Cialdini (1991, p. 94) define sensitive topics as "those that the respondents believe would reveal socially undesirable attributes they possess." Based on the results of laboratory studies discussed in this chapter, this statement appears to be only partially correct. Reactions of laboratory subjects make clear that some survey questions are sensitive to respondents regardless of the true answer, so that sensitivity is not necessarily dependent on the disclosure of socially undesirable attributes. In particular, even people who have nothing to hide may find detailed questions on sexual behavior to be embarrassing and offensive.

On the other hand, some questions are neither embarrassing nor offensive to ask most individuals, and it is only for those who have engaged in the targeted behaviors that the responses are problematic; in other words, it is the (truthful) *answer*, and not the *question*, that is sensitive. Questions on illegal drug use generally do not seem particularly sensitive to people who have *not* used them, but may be very sensitive to those who have, and who have also taken steps to avoid disclosure of these behaviors.

**The Generic Cognitive Processes of Comprehension and Recall Are a Significant Source of Response Error That Can Be Addressed in the Cognitive Laboratory.** The primary intent of survey researchers has been to influence the respondent's *decision* processes when sensitive questions are administered so that truthful answers will be obtained. However, laboratory studies have made evident that the basic, requisite cognitive processes of comprehension and recall that underlie response to nonsensitive survey questions are also relevant when sensitive questions are asked.

For example, Blair and colleagues (1992), in a laboratory-based developmental study of the National Household Seroprevalence Survey, found that interpretation of the term "street drugs" is not uniform across IV drug users. Forsyth and colleagues (1992) tested comprehension of terms used in the NHSDA and discovered that many terms used in the questionnaire were vague, misunderstood, or open to multiple interpretations, and could be effectively respecified (e.g., smokeless tobacco, drug use occasion, or the concept of a month). Further, Tourangeau and colleagues (1992) found that respondent comprehension of concepts such as illegal drugs and drug use during pregnancy was variable, and problematic for the design of survey questions. Finally, Keer and colleagues (1992) have suggested that recall of information on lifetime drug use can be very difficult for

users, and significantly, they found that the attribution of cause and effect related to the effects of drug use on one's life is often impossible, especially when multiple drugs have been used.

These above examples suggest that, especially in cases when those who have carried out sensitive behaviors are willing to discuss them, one can use cognitive laboratory techniques to obtain useful information that is otherwise unavailable to the survey designer, and that leads directly to explicit modifications to questionnaire content.

#### **The Use of Long Questionnaires Can Result in Respondent Fatigue and Boredom, Which in Turn Lead to Poor Quality Data.**

Development of an NCHS National Health Interview Survey drug use questionnaire by Keer and colleagues (1992) suggests that increasing the length of the survey interview may be a larger impediment to response quality when respondents are drug users than when they are nonusers because of the limited amount of time and effort that some drug users will devote to the survey response task. Such a finding does not signify question sensitivity, but rather the opposite (i.e., lack of interest), and suggests the value of using a relatively short questionnaire. This conclusion is supported by the work of Krosnick (1991), who proposes that survey respondents often "satisfice," or expend only the cognitive effort necessary to produce a response that is simply adequate (rather than accurate), especially when they are bored or fatigued.

**Open-Ended Responses to Some Sensitive Questions May Reduce Biasing Effects.** Blair and colleagues (1977) have suggested that it may be better to ask some sensitive questions in an open-ended format. In support of this conclusion, field experiments by Schwarz and colleagues have shown that the precise intervals given in a closed-ended quantitative behavioral frequency question can influence the response considerably (Schwarz and Bienias 1990; Schwarz et al. 1985). Cognitive laboratory research has also indicated that respondents use multiple sources of information, including the response options given to them, in shaping their responses to nontrivial survey questions. That is, respondents will often develop response strategies that make use of all available information, including that contained in response categories (Willis and colleagues 1994*b*). Therefore, for a question such as, "In the past 30 days, how many times did you smoke marijuana?", one may elect not to provide response intervals, to avoid possible contamination effects produced by the response categories themselves.

**Length of the Reference Period Can Influence Truthfulness of Response.** Based on laboratory results, more truthful responding can be expected for lifetime reference periods than for the last 12 months (Willis and colleagues 1994). That finding is consistent with results reported by Gfroerer (1992) and by Harrell and colleagues (1986) from a record-check study, and lends credibility to the use of the laboratory to study these issues. A related point is that, according to reports given by drug users currently undergoing treatment, *past* users of a drug may be much more likely than are *current* users to admit to drug use over any specified time period (Keer et al. 1992). On the other hand, Jick (1982) found through a record-check study that memory for details concerning past drug use is poor, whereas recall for current and recent use is relatively good. Therefore, *willingness* to admit to drug use and *quality* of information reported may be inversely related.

## SUMMARY AND CONCLUSIONS

Based on findings from cognitive laboratory-based studies of response processes when sensitive survey questions are administered, this chapter has presented several hypotheses. In assessing the usefulness of these hypotheses, two issues are clearly relevant: the extent to which they are found to be valid in a field survey context; and, if they are true, the prospects that exist for translating them into useful survey practice.

### Validity of Conclusions Based on Laboratory Studies

It is very difficult to obtain record or other data that will directly validate the use of the laboratory procedures described in this chapter (or, for that matter, use of the results of field experiments). It is argued here that the value of these procedures generally, and of the specific conclusions presented above, will be obtained through a feedback process between field and laboratory study. The results of field studies will lead researchers to wonder why certain results were obtained, and to endeavor to study these more extensively in the cognitive laboratory. Laboratory testing will produce hypotheses based on insights gained from intensive, small-scale qualitative study, and lead the researcher to test these ideas out in the field environment. If it is found that the results from field studies support the hypotheses developed in the laboratory environment, this will lend credence to the cognitive laboratory approach.



## Applicability of Laboratory Findings

Clearly, the conclusions in this chapter differ with respect to their degree of specificity and, therefore, ease of application. Some suggestions are simply procedural guidelines; for example, the suggestion that intensive cognitive laboratory study be carried out to understand respondents' perceptions of a new survey administration procedure, and use of these findings to make (as now unspecified) changes in the procedure. This suggestion is admittedly limited. Although it describes a series of steps to be taken, it does not necessarily promise an improvement in survey design or data quality.

Other suggestions made here also serve mainly as guidelines to development, but specify outcomes in which researchers might have more confidence. In particular, for purposes of reducing error associated with the basic cognitive processes of comprehension and recall, the cognitive laboratory appears to be very useful; although no studies definitively demonstrate the usefulness of cognitive laboratory procedures in reducing response error, the effectiveness of these techniques with respect to improving the quality of questionnaire data in general has been supported by several survey methodologists (Belson 1981; de Maio et al. 1993; Dippo 1989; Wellens 1994; Willis et al. 1991).

Several suggestions made in this chapter for the survey collection of sensitive information are very specific, and directly applicable to survey designs that incorporate sensitive questions. Most important, it is suggested that, based on the results of laboratory testing, the use of face-to-face or telephone administration of sensitive questions, especially when these questions pertain to illegal behaviors such as drug use, may be inadvisable. Rather, the results point to the value of a survey procedure that provides a degree of legitimacy, while at the same time affording a degree of social distance. The development of the audio-CASI procedure for administering sensitive surveys therefore appears to be a promising one, although further study in both laboratory and field environments is required.

Second, following Blair and colleagues (1977), it is suggested that behavioral frequency questions should use open- rather than closed-ended question formats because this practice will avoid biasing effects due to the nature of specific response categories provided. Third, it is recommended that questionnaires on drug use be relatively short to avoid respondent fatigue and increasing response error over the course of the interview. It may also be advisable to limit the complexity of

the concepts presented to respondents, especially where questions require them to provide a self-assessment of cause-and-effect relationships between drug use and deleterious life events.

Looking ahead to the possible further use of cognitive laboratory techniques to study sensitive issues, three points should be realized. First, these techniques are very new, and it is likely that further development and refinement will lead to a significantly enhanced understanding of the most effective means for administering sensitive survey questions. Second, as it becomes more necessary, and more acceptable, to administer sensitive questions in large-scale surveys, it is likely that survey researchers will adopt and apply cognitive techniques more extensively as a normal component of the survey development process. Finally, it is possible that, as the psychological focus of cognitive laboratory research related to sensitive survey questions becomes better developed and more widely known outside the survey research field, basic researchers in psychology, sociology, and other related fields will be motivated to both critique, and to contribute to, this promising approach.

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