DATA EVALUATION AND METHODS RESEARCH

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Number 41

Effect of Some Experimental Interviewing Techniques on Reporting in the Health Interview Survey

A methodological study designed to test the effectiveness of certain questionnaire designs and interviewing techniques used in the collection of data on health events in a health interview.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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NATIONAL CENTER FOR HEALTH STATISTICS

DIVISION OF HEALTH INTERVIEW STATISTICS

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Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies.

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FOREWORD

This study, conducted by contractual arrangement with the Survey Research Center, Institute of Social Research, The University of Michigan, is one in a series of studies designed to investigate the effects of some experimental interviewing techniques on the amount and quality of information obtained during a health interview. The plan for this series was motivated by the findings of an earlier study on interviewer-respondent behavior also completed by the Survey Research Center. The basic study, which is described in *Vital and Health Statistics,* Series 2, Number 26, indicated that reporting in an interview can be more effectively improved by increasing the behavioral interaction of the respondent and the interviewer during the interview than by changing the basic attitudes of the respondent or increasing his levels of information.

In view of this finding, it seemed that improved reporting might be obtained by the introduction of techniques by the interviewer to encourage respondent reaction during the interview which would stimulate maximum recall. This approach, however, varied substantially from the usual practice of training interviewers to behave in a standardized manner during an interview. The standardized manner, which was restricted to asking questions and recording responses, was an attempt to reduce the known biasing influence on survey data that has been attributed to interviewer performance.

The design of this series of studies has taken advantage of the fact that interviewers can influence respondents, and it has attempted to bring the potentially biasing behavior cues under control—in effect, to incorporate them as a part of the "standardized" behavior. Through the interaction between the interviewer and the respondent it was expected that the systematic changing of the interviewer's technique would change the activity level of the respondent, thereby increasing the amount and quality of reported health information.

Because of the complex relationship between methods of interviewing, the performance of interviewers, and the reporting of respondents, the problem of obtaining accurate data in a household interview is not a simple one. The findings from this investigation of experimental interviewing techniques indicate that verbal "reinforcement" of the respondent (i.e., appreciative comments by the interviewer following fruitful recall efforts by the respondent), question length, direct memory probing, an intensive interview, and a diary procedure can have important effects on survey interview data. More investigation is needed to determine the appropriateness of specific techniques for the collection of certain types of health information and to evaluate their effectiveness in terms of the validity, reliability, and amount of data reported.

Elijah L. White
Director
Division of Health Interview Statistics

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SYMBOLS

Data not available----------	---
Category not applicable----------	...
Quantity zero----------	-
Quantity more than 0 but less than 0.05-----	0.0
Figure does not meet standards of reliability or precision----------	*

EFFECT OF SOME EXPERIMENTAL INTERVIEWING TECHNIQUES ON REPORTING IN THE HEALTH INTERVIEW SURVEY

Kent H. Marquis, Ph.D., and Charles F. Cannell, Ph.D., *Survey Research Center, Institute for Social Research, The University of Michigan*

INTRODUCTION

This experimental field study was carried out to test certain questionnaire designs and interviewing techniques which might improve the reporting of health events in a modified Health Interview Survey household interview.

This study is one in a series conducted for the National Center for Health Statistics (NCHS); the hypotheses tested and the techniques used were derived from preceding studies in this series. Some of the relevant prior findings are presented below.

Previous Research on the Household Health Interview

Most studies have indicated that respondents fail to report all pertinent health information. There is considerable evidence, for example, that the reporting of chronic and acute morbidity is especially poor.[1-3] The amount of underreporting varies considerably with the type of information being sought. Hospital episodes [1,3-5] are more likely to be reported than physician visits,[1,6] and physician visits are better reported than are chronic and acute conditions.[1,2] Memory parameters such as recency and impact account for much of the underreporting. For example, the longer the time between some particular health event and the interview, the lower the probability is that it will be reported accurately. The less important an event is to the individual, the less likely it is to be reported. Events perceived by the respondent as being socially unacceptable or personally threatening are underreported at higher rates than events which are approved of socially or which are not threatening.

Finding a way to increase the frequency with which chronic and acute conditions are reported in the household health interview is a major problem. One approach is to ask only about recent, important, and socially acceptable health events. Applications of this approach (i.e., asking only for recent information and asking whether morbidity has been medically attended) have been used and do improve accuracy, but even then underreporting response bias is still present.

A recent study[7] was conducted in an effort to learn more about some of these reporting problems. The behavior of both interviewer and respondent during the interview was recorded, and followup interviews were conducted with both respondents and interviewers. Perhaps the most significant aspect of the study was its failure to find certain expected relationships.

For example, no correlation was found between demographic or personal characteristics of the respondent (e.g., age and income) and an index of reporting accuracy. Health reporting accuracy was not influenced by the amount the respondent knew about the sponsor of the survey,

about surveys in general, or by whether or not he had read the material about the survey sent to him prior to the interview.

Significant also was the fact that the respondents' attitudes toward the interview and their perceptions of it (as measured by a personal interview the day following the health interview) were not related to the quality of health reporting, nor were the interviewer's attitudes, expectations, or preferred style of interviewing, as measured in a separate interview at the close of the study.

However, an analysis of interviewer and respondent behavior during the health interview produced interesting results. Two kinds of behavior were measured: that relating to the interview task (e.g., question answering, elaborating information, and pausing to consider replies), and irrelevant behavior which might detract from the interview task (irrelevant conversation, primarily). It was discovered that these two types of behavior are not independent of each other, nor are they negatively correlated. Empirically, task-oriented and nontask-oriented behaviors showed positive correlation in each of the interviews. In other words, if the respondent engaged in a high level of task-oriented behavior during the interview, the probability was high that he also engaged in a great deal of nontask-oriented behavior. Regardless of whether behavior items were considered individually or in some combined form, there was always a high correlation between behavior frequency and the amount of morbidity reported.

Finally, it was impossible to ascertain what caused the wide variation in behavior levels between respondents. Data clearly indicated that respondent behavior level (and hence reporting level) was unrelated to such things as demographic characteristics and attitudes. The most promising lead seemed to have been the positive correlation between interviewer behavior level and respondent behavior level. Although it is not at all clear that interviewer behavior level *causes* respondent behavior level, the correlation does suggest that variables which affect frequency of activity reporting during an interview are to be found in the respondent-interviewer verbal interaction rather than in the more remote social, attitudinal, cognitive, perceptual, or motivational characteristics of the two participants. Finding a strong relationship between behavior level and reporting of health events stimulated the study discussed in this article.

The foregoing may be summarized as follows:

- Omission and underreporting constituted a major type of response bias.
- Underreporting was more a function of the psychological dynamics of human memory, or recall, than of the respondent's general unwillingness to divulge personal information.
- Respondent behavior level was highly correlated with the level of reporting health events and may be a cause of it.
- Variables which determine respondent behavior level (the amount of effort he puts into the job of reporting) were more likely to be found in the immediate verbal interaction between him and the interviewer than in the respondent's personal or social psychological characteristics.

This interpretation of the results of previous studies suggests that one may obtain improved reporting in the interview by introducing techniques designed specifically to encourage the respondent to put a maximum amount of effort into the task of recalling.

Two such approaches are explored in this study: one is aimed at prodding memory directly, and the other is designed to affect memory indirectly by furnishing rewards for fruitful recall efforts.

General Description of the Experimental Study

This study attempts to ascertain the effects of (1) a particular kind of interviewing technique and (2) using a set of warmup questions before seeking the desired morbidity data. The dependent variables are the frequencies at which health information (viz, symptoms, chronic and acute conditions, and physician visits) were reported. The study is also designed to produce some information on how the interviewing techniques affect reporting (1) of recent and less recent events, (2) of events of varying degrees of embarrassment to the respondent, (3) of medically and nonmedically attended conditions, and (4) for

self and by proxy. In addition, some measures of the respondents' psychological characteristics are made, since it was hypothesized that these characteristics would cause the experimental interviewing techniques to vary in effectiveness.

SUMMARY

Survey practitioners have long been aware that interviewers represent a potential biasing influence on survey data. The typical attempt to resolve this situation has been to try to minimize interviewer effects by training interviewers to behave only in standardized ways during the interview and to restrict this behavior to asking questions, probing, and recording answers. If the interviewer is allowed to engage in "extra" behavior, it is usually for the purpose of creating rapport with the respondent.

This study demonstrates that training the interviewer to engage in a variety of controlled "extra" behaviors (i.e., reinforcements, extra words, facial-postural cues) had a beneficial effect on reporting frequency in the interview. Essentially the study design capitalized on the fact that interviewers can bias data, but it brought the potentially biasing behavior cues under control and used them to get more data. Additional work is needed, however, to evaluate the quality of such additional information.

While the findings seem to be entirely consistent with the theories and experiments concerned with social behaviorism, further research is desirable in order to acquire a complete understanding of the phenomenon of interviewer influence. For example, this study was not completely effective if it allowed the motivational effects of the reinforcement procedure to be extinguished before the interview was over. Further studies which employ reinforcement throughout the entire interview or which use different schedules of reinforcement should establish whether or not this problem exists. There is another question: Could reporting be increased merely by a general increase in friendly behavior by the interviewer, or must interviewer behavior be used as a reward for desired respondent behavior? In other words, could the same effects be achieved if the interviewer gave longer introductions and asked longer questions, or must he also use reinforcing statements which are contingent on respondent performance?

Finally, this study demonstrates that experimenting with techniques for controlling and influencing psychological factors in the interviewer-respondent interaction can be effective in changing respondent reporting behavior. The findings suggest this as a fruitful field for further experimentation to improve the quality of data in the survey interview.

THE STUDY PLAN

Independent Variables: The Three Interview Techniques

Three different modifications of the standard Health Interview Survey (HIS) household interview were used, one modification for each of the three sample groups drawn for the study. The three sets of interview procedures which are the major independent variables in this research are described below with a schematic outline of the procedures shown in tables 1-3.

1. *Reinforcement technique.*—This experimental technique comprised three procedures:

   a. The interviewer "reinforced" the respondent every time he reported a symptom, condition, or illness either for himself or for another family member. The specific reinforcing statements to be used in the order given were printed at the beginning of each interview section (table 1).

   b. The interviewer used extra words both in introducing each new section of the interview and when asking certain questions (tables 2 and 3). A complete description of the wording used throughout the interviews may be found in the questionnaires in the appendix. The introductory statements used in the reinforcement technique emphasized the importance of complete reporting of health events; the extra words used in the questions, on the other hand, conveyed no partic-

ular meaning of the health items asked about, nor did they give a more exact definition of the items.

c. Interviewers also looked at the respondent, smiled at her, occasionally leaned toward her when questioning her, and used hand and arm gestures when they seemed natural.

d. Included in the questions was a list of symptoms. The respondent was asked whether or not she had each symptom. The list was included to attempt to sensitize the respondent to health reporting. Use of this technique without reinforcement was the basis for the second experimental technique described below.

2. *Sensitization technique.*— This procedure included a sensitizing process (reading of the symptoms list) at the beginning of the interview. However, interviewers did not use reinforcing statements, extra words, or positive facial and postural cues. It was hypothesized that the inclusion of the symptoms list might sensitize or "warm-up" the respondent to the health reporting task ahead. The purpose of the sensitization technique, therefore, was to test the effects of the sensitizing at the beginning of the interview on later reporting of health information, independent of reinforcement.

3. *Control technique.*— With this technique, the interviewer used no reinforcing state-

Table 1. Reinforcing statements used by interviewers in the three interview techniques, by type of technique and section of interview

Section of interview	Interview technique	
	Reinforcement	Sensitization and control
Symptoms list-------	"(Yes) That's the kind of information we need." "(That's it) This is all valuable information." "(Yes) We need to know about things like that." "(I see) You have (had) (symptom)."	No statements
Morbidity recall questions----------	"(Yes) That's important (information)." "(Um-hmm) We're interested in that." "(Thank you) That's very useful." "(I see) You have (condition)."	No statements
Chronic conditions list----------	Same list as for morbidity recall questions	No statements

NOTE: After the first report of morbidity by the respondent, the first reinforcing statement was read by the interviewer; after the second reported item, the second reinforcing statement was read, and so on. The list was repeated if the respondent mentioned more than four health items. Initial words in parentheses could be interchanged or omitted at the option of the interviewer, but no substitute phrases or words could be used.

ments, extra words, or the positive facial and postural cues; in this respect it was the same as the sensitization technique. It differed in that the list of symptoms (the initial sensitization) was placed near the end of the interview, where it would have no effect on the reporting of other health information.

Table 2. Introductory phrases used by interviewers in the three interview techniques, by type of technique and section of interview

Section of interview	Interview technique	
	Reinforcement	Sensitization and control
List of people in dwelling unit------	"As I mentioned, this is a health survey. Before we start on the questions, I'd like to find out something about who lives here."	No introductory statement
List of symptoms----	"Now I'm going to ask you questions about your health. By asking these questions, the Public Health Service can get a good picture of the nation's health. And to make the information valuable, it's important that you report all your sicknesses, no matter how small or unimportant they may be. Have you ever had: (list of symptoms follows)"	"Have you ever had: (list of symptoms follows)"
Morbidity recall questions----------	"This survey covers all kinds of illnesses. These next questions refer to all of last week and all of the week before, that is, the two-week period outlined in red on this calendar. (HAND CALENDAR) You may have told me about some of this information before, but please mention it again here so I will be sure to get all your sicknesses."	"This survey covers all kinds of illnesses. These next questions refer to all of last week and all of the week before, that is, the two-week period outlined in red on this calendar (HAND CALENDAR)."
Chronic list conditions----------	"Now for one of the most important parts of the interview. I'm going to read a list of conditions. Please tell me if you or your_____have had any of these conditions during the past 12 months."	"Now I'm going to read a list of conditions. Please tell me if you or your _____ have had any of these conditions during the past 12 months."

Table 3. Examples of extra words used in questioning respondents in the three interview techniques, by type of technique and section of interview

Section of interview	Interview technique	
	Reinforcement	Sensitization and control
List of symptoms----	"Ever had loose bowels?" "How about pain or soreness in the female organs?" "Ever had pain or burning when you go to the bathroom?" "How about painful or swollen joints?" "The next item is broken bones. Have you ever broken any bones?"	"Loose bowels?" "Pain or soreness in female organs?" "Pain or burning when you go to the bathroom?" "Painful or swollen joints?" "Broken bones?"
Chronic list conditions----------	"Have you or your _____ had repeated attacks of bronchitis?" "Repeated attacks of sinus trouble?" "How about bladder trouble during the past year?" "The next thing I want to ask you about is hemorrhoids or piles." "Have you or your _____ ever had a hernia or rupture during the year?"	"Repeated attacks of bronchitis?" "Repeated attacks of sinus trouble?" "Bladder trouble?" "Hemorrhoids or piles?" "Hernia or rupture?"

Note: The interviewer inserted the "stem" to the list (i.e., "Have you ever had _____") if morbidity was reported on the last item or if "no" answers were received on the previous four consecutive items. Therefore more "extra words" were included in the sensitization and control interviews than are indicated here.

Table 4 shows which controlled behaviors were used in each of the three interviewing techniques.

Some interviewing operations were common to all three techniques. All interviewers were instructed to make the same introductory statement to the respondent regardless of the type of questionnaire used. This statement was:

> "I am _____ from the Survey Research Center, The University of Michigan; here is my identification. We are making a survey for the United States Public Health Service."

Interviewers were instructed to use probes in all instances where responses were unclear. Probes were to be nondirective and used with about equal frequency for all three interviewing techniques.

Interviewers were instructed not to initiate any extraneous conversation with the respondent during the interview. If the respondent began to digress, the interviewer was instructed to reply with a noncommital statement such as "um-humm" or "I see" and to guide the respondent back to the task at hand as quickly and politely as possible.

Table 4. Controlled behavior used by interviewers in the three interview techniques, by type of technique

Controlled behavior	Interview technique		
	Reinforcement	Sensitization	Control
Reinforcing statements, extra words, facial-postural cues	Yes	No	No
Sensitization list at beginning of interview	Yes	Yes	No

During the interview, the respondent was required to give information about herself and also some information about another member of the household. If this other person was present during the interview, he was discouraged from reporting information about himself. It was desirable to have the respondent do all the reporting, both for herself and for the other person.

Dependent Variables: Frequency of Reporting Health Events

The major dependent variables used in this study are average *frequencies* of reported health information. A previous study[7] indicates that accuracy of reporting certain types of health information such as hospital episodes and physician visits is correlated with the number of chronic and acute conditions reported. Thus it can be assumed that on the average those respondents reporting many chronic and acute conditions tend to report all health information more completely than do those reporting few chronic and acute conditions.

The most important dependent variable in this study is the average number of reported chronic and acute conditions per person. The number of such conditions was obtained by counting the nonredundant items either volunteered for questions 4 through 7 or reported for the chronic conditions recognition list (question 8). Reported items which could be classified as symptoms were not included.

Chronic and acute condition data were subdivided and examined in two ways: (1) by the number of items coming from the recognition list (question 8) and the number volunteered on other questions and (2) by the number of medically attended conditions reported and the number of nonmedically attended items mentioned. Medical attention was ascertained by the response to the question "Did you (your___) ever at any time talk to a doctor about (condition)?"

The number of chronic conditions reported for a person was determined by counting the "positive" responses received for that person on the chronic conditions list. When a definite yes or no response was not obtained by the interviewer, that item was not used in the analysis and a chronic conditions list score was not calculated for that individual. The chronic conditions list used was similar but not identical to that used in the Health Interview Survey interviews.

Two other major dependent variables are the number of symptoms reported and the number of physician visits reported for the respondent and for one other person. The number of reported symptoms was obtained by counting the "yes" responses to items on a list of 17 symptoms (see List S, appendix). The number of reported physician visits is the sum of the number of

visits reported for "last week" and the number reported for the "week before."

Other Measures

In order to assess the effects of the sensitization and the reinforcement techniques on reporting socially disapproved information, respondents were asked about symptoms and chronic conditions which differed in the amount of probable embarrassment involved in reporting them.

The level of embarrassment was determined in the following way. One hundred forty-five advanced undergraduate psychology students at The University of Michigan were asked to rate each item on a list of symptoms and conditions on a five-point scale. They were asked, "How willing would you be to have other people know you had_____?" The five-point scale was 1. very willing; 2. somewhat willing; 3. wouldn't mind either way; 4. somewhat unwilling; and 5. very unwilling.

On the basis of the students' ratings, each list item was assigned to either a low, moderate, or high embarrassment group. Since there appears to be an inverse correlation between the "embarrassment rating" of an item and its true incidence rate in the population, an attempt was made to create embarrassment groups which had approximately equal aggregate incidence rates. That is, if respondents were reporting accurately and completely, the probability that they would report an item in the low embarrassment group would be equal to the probability that they would report an item in the high (or moderate) embarrassment group. Because of the limitations on current estimates of incidence of specific morbidity for the special population sampled, the equating of the embarrassment groups is only an approximation. It does, however, represent a reasonable approximation of the true conditions and serves the purpose intended in this study. The symptoms and chronic conditions grouped by reporting embarrassment level are listed in table 5.

Table 5. Items on lists of symptoms and chronic conditions classified by level of embarrassment

Level of embarrassment	Chronic conditions list	Symptoms list
Low	Asthma Bronchitis Sinus trouble High blood pressure Rheumatic fever	Trouble sleeping Headaches Shortness of breath Stomach cramps Sore throats Broken bones
Moderate	Hernia or rupture Kidney trouble Varicose veins Hardening of the arteries Heart trouble Stroke	Fainting or blackout spells Heart beating hard or acting funny Pain in or around the heart Gas in stomach Itching skin Backaches Swollen joints
High	Bladder trouble Hemorrhoids Trouble with female organs Prostate trouble Tumor, cyst, or growth Cancer	Coughing up blood Loose bowels Pain in female organs Pain going to the bathroom Mental illness Venereal disease

Other Variables

Four additional measures were included to provide a better understanding of the dynamics of the household interview. The respondent's rating of her own health was one such measure. All respondents were asked: "In general, would you say your health was excellent, good, fair or poor?"

The respondent's awareness that the interviewer wanted her to report *all* her health events, even minor ones, was another variable that might have affected her reporting level. At the close of the interview, respondents were asked two questions which were designed to ascertain whether or not she had "learned" that she should report the state of her health as completely as possible:

> "Will people think we want them to report all their illnesses, or only the important ones?"
>
> "Why might that be?"

A respondent was coded "aware" if she said in effect that people should report all illnesses because that is what the interviewer (survey, Government) wanted or because it would result in accurate data.

Recently, Marlowe and Crowne [8] published the Marlowe-Crowne Social Desirability Scale (the M-C Scale) with accompanying validation information which they claim evaluates individual differences in the need for social approval. A shortened version of the M-C Scale was administered to all respondents of this study to see whether variations in scores would produce variations in replies to questions eliciting health information.

M-C scores were available for 332 college students who had taken the test in connection with an undergraduate course in motivation at The University of Michigan. Item-with-total-score correlations were obtained from these data, and 17 items showing the highest correlations with total score were selected and pretested with household interview respondents. Interviewers read each item to the respondent and recorded his answer.

Initial pretests indicated that respondents had a great deal of difficulty with the items, particularly in adopting the "true or false" convention for responding. Respondents had trouble also with double negative items such as: "True or false; I have never intensely disliked anyone." Several items were generally inapplicable to female respondents; e.g., "I never make a long trip without checking the safety of my car."

In a second pretest, different items from the M-C Scale were substituted for some of the inapplicable and double negative sentences and also for items which contained a large number of words. The revised list was administered to about a dozen respondents, but many problems were still encountered. The respondents at times failed to understand the true-false convention and still had to receive considerable probing from the interviewers.

At this point it appeared that the task could not be made easier without completely revising the item format and mode of response. Since such a revision was not practical and since the interviewers were playing a very active part in administering the Scale (a potential for uncontrolled interviewer bias), the third and final pretest used the second version of the Scale which was printed on a separate piece of paper and *handed to the respondent* to be self-administered. Whether the self-administration procedure eliminated the confusion evident in the earlier pretests is uncertain. The number of respondent questions was reduced markedly, however, and the interviewer's participation became negligible.

The social-approval scale (in the form used in this study) was given to the respondent for self-administration near the end of the interview, after all health related data had been obtained. The final scale contained 17 items, nine scored true and eight false. Most of the items were less than 12 words in length, and only four were "double-negative" sentences.

Implicit in much of the planning of household interviews is the notion that if a respondent enjoys the interview and is positively oriented toward it, he will cooperate by giving accurate and complete information. Conversely, if the individual does not like the interview experience, he is unlikely to report accurately and completely. To investigate whether or not the respondent's attitude toward the interview was in fact related

to the level of reporting of health events, respondents were asked the following three questions, which were designed to ascertain their reaction to the interview experience:

"Now a couple of questions about the interview. Was it a good time for me to call on you or was there some other time that would have been better?"

"We are going to be interviewing a number of people in this part of the city, and I'm interested in how you think they will feel about the interview. How do you think they will feel about taking *time* for the interview?"

"How will they feel about the interview; will they like it, not like it, or what?"

Questionnaire Sequence

The order in which the independent, dependent, and other variables were used in the three interviewing techniques is shown in table 6. It should be noted that the reinforcing statements and other characteristics peculiar to the reinforcement technique were limited to the beginning of the interview. It was during this part of the interview that symptom, condition, and illness information was obtained from the respondent. The remainder of the interview was devoted to obtaining important but secondary measurements.

Table 6. Sequence of interview sections in each of the three interview techniques, by type of technique

Interview section	Interview technique		
	Reinforcement	Sensitization	Control
Initial[1,2]	Dwelling unit listing Symptoms list Recall of recent illness Chronic conditions list	Dwelling unit listing Symptoms list Recall of recent illness Chronic conditions list	Dwelling unit listing Recall of recent illness Chronic conditions list
Other	Detailed information on already reported morbidity Physician visits Health rating Social-approval scale Attitude questions Awareness of purpose questions Education and income	Detailed information on already reported morbidity Physician visits Health rating Social-approval scale Attitude questions Awareness of purpose questions Education and income	Detailed information on already reported morbidity Physician visits Health rating Symptoms list Social-approval scale Attitude questions Awareness of purpose questions Education and income

[1] In this section of the reinforcement interview, reinforcing statements, extra words, and facial-postural cues were used.

[2] In this section of both the sensitization and control interviews, the interviewer minimized the use of reinforcing statements, extra words, and facial-postural cues.

NOTE: Questionnaires used for each of the interviews are shown in the appendix.

Interviewers

Seven interviewers were employed for this study. Only two had had previous interviewing experience: one had been an enumerator on the U.S. decennial census, and one had some market research experience. Novice interviewers were chosen so that they could be trained to follow the particular techniques of this study without first having to unlearn other techniques. Interviewers underwent an initial training period of 1 week. Much of the time was spent in practice interviewing, with emphasis on close adherence to the three distinct interviewing techniques. After this initial formal training, each interviewer was observed by the field supervisor and one of the researchers at frequent intervals during the field work to ensure conformity to the specified techniques.

Experimental Hypothesis

The purpose of this study was to discover how the different interviewing procedures might affect the average number of chronic and acute conditions reported per person. It was expected that the reinforcement technique would elicit a greater average number of chronic and acute conditions per person than either the sensitization or control techniques. It was expected that the sensitization technique would elicit a greater average number of chronic and acute conditions per person than the control technique. It was hypothesized that the reinforcement technique would increase the number of all types of health events reported for each person, although (because of the small sample sizes) these effects were expected to be somewhat unstable.

THE SAMPLE

An experimental sample design was used as a basis for comparisons among interviewing procedures. No attempt was made to design the sample to obtain estimates of rates of morbidity or health service utilization for the general population. The population sampled was selected to be relatively homogeneous with respect to demographic characteristics in order not to confound treatment effects with other sources of variation stemming from the inclusion of subgroups known or suspected to have distinctive reporting characteristics and distinctive health problems. It was hoped that this restriction would maximize the variance between treatments relative to the variance within treatments.

Definition of the Respondent Population

The population sampled for this study was restricted to women living within the Detroit city limits. On the basis of the 1960 census data, census tracts were chosen in which the average value of the dwelling units ranged from $7,000 to $14,999 or where average monthly rental was from $61 to $70. Only tracts with white inhabitants and with less than 18 percent of its female population aged 65 and over were used. The effect of these criteria was to eliminate most foreign-born persons from the sample population. Generally the population sampled can be described as white native-born women aged 17 to 65 of low to middle income living in urban areas.

Definition of the Other Person

Each respondent was asked to furnish information about herself and about one other person in the family. This is a departure from the usual Health Interview Survey procedure which allows respondents to act as proxy only if related household members are absent at the time of interview. This was done to standardize the number of persons reporting by proxy. In this study an attempt was made to obtain information about the respondent's husband whenever possible. If the respondent was unmarried, widowed, or separated, she reported for some other person. Preference was given to selecting the male most closely related to the respondent by blood, marriage, or adoption. If no related male resided in the dwelling unit, the respondent was asked to be a proxy for the most closely related female resident in the same dwelling unit. If the household contained no person related to the respondent, no second person was selected and the respondent reported for herself only.

Sample Size and Sampling Fraction

It was decided that for a new interviewing technique to have practical value, the reporting rate of chronic and acute conditions must show an

increase of 25 percent or more over that for the control group. The sample size, then, was derived from estimates of the number of interviews which would be required for a 25-percent increase in the reporting rate of chronic and acute conditions to be statistically significant at the 5-percent level of confidence.

A recent study provided a basis for predicting the distribution of reporting frequency for chronic and acute conditions. On the basis of this information, it was estimated that each of the three experimental procedures would require approximately 175 cases (or 525 in total) for the 25-percent increase in reporting rates to be statistically significant at the 5-percent level. The overall sampling fraction for the selected sample was 1/29.

Selection of Addresses

From the census tracts described above, 110 blocks were selected with probability proportional to their size. All addresses on each block were listed using the half-open interval technique to include unlisted addresses between a sample address and the next address listed in the *Detroit City Directory*.[a] In addition, a procedure was employed to select a proper proportion of multi-dwelling addresses to be interviewed.

Assignment of Interviewers to Addresses

Interviewers were assigned systematically to addresses in such a way that interviewer effects were controlled to a large extent in the analysis. No attempt was made to isolate response variance due to individual interviewers.

Characteristics of the Samples

The number of interviews actually completed was below the expected figure. A total of 429 interviews were obtained; 151 using the reinforcement technique, 143 using the sensitization technique, and 135 using the control technique. The reason for the lower number of interviews was that an unexpectedly large number of dwelling units had no eligible respondent. Response rates are given in table 7.

Table 7. Sample and response information

Sample information	Sample size
1. Addresses in original sample	
Total	673
Original sample addresses	664
Additional dwelling units located at sample addresses	9
2. Addresses eliminated from sample	
Total	190
Address not a dwelling	45
No eligible respondent at dwelling unit	132
House vacant	13
3. Dwelling units with eligible respondents (item 1 minus item 2)	
Total	483
4. Noninterviews	
Total	54
No one at home	10
Refusals	44
5. Interviews obtained by type of interview technique (item 3 minus item 4)	
Total	429
Reinforcement	151
Sensitization	143
Control	135
6. Overall response rate (item 5 divided by item 3) multiplied by 100	89 percent

[a] R. L. Polk and Company: *Detroit City Directory*, 1964 edition.

Samples for each of the three procedures were examined for major differences in distribution of demographic characteristics. Statistics from HIS indicate that reported morbidity rates differ among demographic groups. Any large differences in demographic composition between treatment samples therefore could produce differences due to composition of the groups rather than to effects of interview treatments.

Distributions of demographic characteristics of the three groups were found to be quite similar. Table 8 summarizes the demographic composition of the samples, showing that the respondents and the other persons in the reinforcement group tended to be somewhat younger than those in the other groups. Interview data indicate that morbidity rates tend to increase with age, but differences were negligible within the restricted age range of respondents used for this study. The reinforcement group also differed slightly on the sex of the second person and on family size. Although adult males tended to have lower rates of morbidity and health service utilization, the data do not suggest the possibility of a significant sex bias in these results.

The slight differences in average family size should have had a minimal effect on results, since each respondent was asked to report for two persons and only two. This design avoids effects on the rate of reporting health events which would exist if respondents reported for varying numbers of family members.

In summary, distributions of demographic characteristics were similar among the three groups involved. The differences which were found may possibly have resulted in fewer conditions being reported by respondents in the reinforcement group.

EFFECTS OF DIFFERENT INTERVIEWING PROCEDURES

The effects of different interviewing procedures on the number of health items reported are examined by comparing the results from the three interviewing techniques used. This comparison consisted of two phases. First, the effects on health reporting of the reinforcement interview are compared with its control, the sensitization interview. Next, the effects of the sensitization

Table 8. Average values and standard deviations of the effects of the three interviewing techniques on the reporting of certain demographic information, by type of interview

Demographic characteristic	Interview technique					
	Reinforcement	Sensitization	Control	Reinforcement	Sensitization	Control
	Average value			Standard deviation		
Age of respondent----	42.5	43.6	43.9	13.8	12.0	12.0
Age of second person-	44.0	45.7	46.1	16.6	15.2	14.8
Years of education (respondent)-------	10.9	10.9	11.0	2.4	2.4	2.2
Family size----------	3.2	3.4	3.5	1.5	1.6	1.7
Percent of male second persons-----	89	86	87			

NOTE: Median family income for each of the three groups was $7,000-$9,999.

interview are compared with those of the "control" interview, where warmup techniques were not used.

Reinforcement Technique

Chronic and acute conditions.—The major emphasis in this research was to test the effect of the three interviewing procedures on the number of chronic and acute conditions reported by respondents in a household interview. The interview using the reinforcement technique elicited a significantly higher rate of reporting of chronic and acute conditions than did the sensitization interview (table 9). Respondents in the reinforcement group reported 25 percent more conditons for themselves and 24 percent more for the other person than did the average respondent in the sensitization group.

Symptoms and physician visits.—The two other health variables included in this study (reporting of symptoms and physician visits) were examined for effects of the interviews using the reinforcement and the sensitization techniques. Table 10 shows that the reinforcement interview elicited significantly more reports of symptoms than did the sensitization interview. However, the reinforcement procedure failed to elicit a significantly higher number of reported physician visits for the respondent or for the other person. The likeliest explanation for the lack of a significant difference in the number of reported physician visits seems to be that reinforcement was not used in any of the three techniques during the portion of the interview in which information about physician visits was collected.

In the following paragraphs, study data chronic and acute condition, symptom, and phy-

Table 9. Number of persons and mean number of chronic and acute conditions reported per person in the reinforcement and sensitization interviews, with difference between the means, p, and percent increase, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[2]	Percent increase[3]
	Reinforcement		Sensitization				
	Number of persons[1]	Mean	Number of persons	Mean			
Total chronic and acute conditions for self-------	151	2.74	143	2.20	0.54	.02	25
Total chronic and acute conditions by proxy-------	142	1.88	135	1.43	0.45	.01	24

[1]The number of persons is not always the same as the total sample size because of nonresponse, unclassifiable response, or lack of other person for proxy reporting.

[2]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

[3]Computed as: $\frac{\bar{X}_R - \bar{X}_S}{\bar{X}_S}$

Where $\bar{X}_R$ = average number of chronic and acute conditions reported per person in the reinforcement interview.

and $\bar{X}_S$ = average number of chronic and acute conditions reported per person in the sensitization interview.

sician visit reporting rates) are separated into their component parts to permit a more detailed analysis of the effects of the reinforcement technique on the reporting of different kinds of health information.

Chronic conditions on a recognition list.—Comparative frequencies of how respondents reported conditions from the list of chronic conditions (see question 8 of the questionnaire in the appendix) in the reinforcement and sensitization interviews are shown in table 11. The number of conditions reported from the list is part of the total chronic and acute conditions score (see section on "Dependent Variables" above). The results indicate that on the average more conditions on the list of chronic conditions are reported in the reinforcement interview than in the sensitization interview. The reinforcement technique obtained about 20 percent more conditions on the list for respondents and 48 percent more for the other person. For some unknown reason, respondents in the sensitization group who reported by proxy seemed to have reported an abnormally low number of chronic conditions.

Medically attended morbidity.—The respondent was asked whether or not each of the chronic or acute conditions reported was medically attended. Table 12 shows that respondents reported greater numbers of medically attended conditions for themselves and for the other persons in the reinforcement interviews than in the sensitization interviews. Therefore the effects of the reinforcement interview extend to conditions reported on a checklist, to conditions for which medical attention was claimed, and to chronic and acute morbidity obtained in response to less structured questions.

Table 10. Number of persons and mean number of symptoms and physician visits reported per person in the reinforcement and sensitization interviews, with difference between means, p, and percent increase, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[1]	Percent increase[2]
	Reinforcement		Sensitization				
	Number of persons	Mean	Number of persons	Mean			
Symptoms for self	149	6.45	141	4.99	1.46	.01	29
Physician visits for self	150	0.32	142	0.43	-0.11	[3]n.s.	-26
Physician visits by proxy	138	0.30	132	0.23	0.07	n.s.	26

[1] Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

[2] Computed as: $\frac{\bar{X}_R - \bar{X}_S}{\bar{X}_S}$

Where $\bar{X}_R$ = average number of symptoms or physician visits reported per person on the reinforcement interview.

and $\bar{X}_S$ = average number of symptoms or physician visits reported per person in the sensitization interview.

[3] "n.s." indicates p is ≥ 0.10.

Table 11. Number of persons and mean number of conditions reported from chronic condition list per person in the reinforcement and sensitization interviews, with difference between means, p, and percent increase, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[1]	Percent increase[2]
	Reinforcement		Sensitization				
	Number of persons	Mean	Number of persons	Mean			
Chronic conditions for self----------	149	1.52	133	1.26	0.26	.09	20
Chronic conditions by proxy----------	133	1.30	124	0.88	0.42	.04	48

[1]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

[2]Computed as: $\frac{\bar{X}_R - \bar{X}_S}{\bar{X}_S}$

Where $\bar{X}_R$ = average number of chronic conditions reported per person in the reinforcement interview.

and $\bar{X}_S$ = average number of chronic conditions reported per person in the sensitization interview.

Embarrassing morbidity.—The lists of chronic conditions and of symptoms were constructed to include three levels of embarrassment: low, moderate, and high (table 5). The effectiveness of the interviewing techniques, therefore, can be compared on the basis of rates of reporting items with different levels of embarrassment for the respondent. Table 13 shows that the reinforcement interview obtained a higher average number of reported items per person in eight of the nine comparisons, which suggests that the reinforcement procedure is effective for all conditions, whether or not they cause the respondent embarrassment. The magnitude of the differences and of the p values, however, shows that the reinforce- procedure had a greater effect on reporting of some conditions than on reporting of others. For example, on the symptoms list (the first health items to be asked during the interview), the reinforcement procedure appeared to have had its strongest effects on the reporting of highly embarrassing items or, more probably, the sensitization technique somehow suppressed the reporting of highly embarrassing symptoms.

An interesting pattern emerged from the reporting of chronic conditions on the recognition list, which occurred later in the interview. The reinforcement procedure seemed to facilitate the mention of low embarrassment items (e.g., asthma and high blood pressure) by the respondent for herself, and high embarrassment items (e.g., bladder trouble and hemorrhoids) for the other person.

Table 12. Number of persons and mean number of medically attended conditions reported per person in the reinforcement and sensitization interviews, with differences between means, p, and percent increase, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[1]	Percent increase[2]
	Reinforcement		Sensitization				
	Number of persons	Mean	Number of persons	Mean			
Medically attended conditions for self--------	151	2.11	143	1.69	0.42	.04	25
Medically attended conditions by proxy--------	141	1.33	135	1.07	0.26	.09	20

[1]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

[2]Computed as: $\frac{\bar{X}_R - \bar{X}_S}{\bar{X}_S}$

Where $\bar{X}_R$ = average number of medically attended conditions reported per person in the reinforcement interview.

and $\bar{X}_S$ = average number of medically attended conditions reported per person in the sensitization interview.

It appeared that the use of reinforcement in the interview increased the number of conditions reported, regardless of how embarrassing they were. There is a suggestion that reinforcement had an especially strong effect on the respondent's reporting embarrassing material about herself at the beginning of the interview; later in the interview, however, reinforced respondents tended to report more of the embarrassing material about the other person and more of the minimally embarrassing material about themselves.

It has often been speculated that a friendly, rapport-type interview is inappropriate if the respondent is expected to report embarrassing or socially undesirable information. These data seem to be relevant to such a hypothesis. It may be, for example, that the adverse effects of a rapport-based interview appear only when the respondent reports for another person, or they appear only later in the interview. Further study in this area is needed.

Recent and less recent physician visits.— The differences between the reinforcement and sensitization procedures in eliciting reports of physician visits for "last week" and the "week before" are shown in table 14. None of the differences approaches statistical significance, and it is highly probable that the different procedures would produce the same reporting frequencies in the population. There is a suggestion, however, that the reinforcement technique is especially weak in eliciting reports of doctor visits occurring in the more remote past for the respondent and

Table 13. Number of persons and mean number of chronic conditions and symptoms reported per person from recognition lists in the reinforcement and sensitization interviews, with difference between means, p, and percent increase, by type of technique, reporting variable, and level of embarrassment

Reporting variable and level of embarrassment	Interview technique				Difference between means	p[1]	Percent increase[2]
	Reinforcement		Sensitization				
	Number of persons	Mean	Number of persons	Mean			
Chronic conditions for self:							
Low	151	0.68	133	0.46	0.22	.01	48
Medium	150	0.29	141	0.33	-0.04	n.s.	-12
High	150	0.55	142	0.49	0.06	n.s.	12
Chronic conditions by proxy:							
Low	136	0.40	124	0.35	0.05	n.s.	14
Medium	138	0.29	133	0.20	0.09	.10	45
High	136	0.59	133	0.38	0.21	.03	55
Symptoms for self:							
Low	151	2.48	143	2.01	0.47	.01	23
Medium	150	2.79	141	2.23	0.56	.01	25
High	150	1.24	143	0.80	0.44	.01	55

[1]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

[2]Computed as: $\frac{\bar{X}_R - \bar{X}_S}{\bar{X}_S}$

Where $\bar{X}_R$ = average number of chronic conditions or symptoms reported per person in the reinforcement interview.

and $\bar{X}_S$ = average number of chronic conditions or symptoms reported per person in the sensitization interview.

most effective in obtaining reports of remote visits for the other person.

Proportion of persons for whom multiple health items are reported (both for self and for the other person).— At times the National Center for Health Statistics publishes data showing the proportion of persons for whom at least one health item such as a chronic condition has been reported. This approach has been followed in presenting the material shown in table 15.

A significantly higher proportion of respondents in the reinforcement group reported at least one chronic or acute condition for themselves as compared with the sensitization group. The same pattern applied to the reporting of symptoms, and it continued to be found when the condition and

Table 14. Number of persons and mean number of physician visits reported per person in the reinforcement and sensitization interviews, with difference between means, p, and percent increase, by type of technique, reporting variable, and recency of visit

Reporting variable and recency of visit	Interview technique				Difference between means	p[1]	Percent increase[2]
	Reinforcement		Sensitization				
	Number of persons	Mean	Number of persons	Mean			
Physician visits for self:							
Last week	150	0.21	142	0.25	-0.04	n.s.	-16
Week before	150	0.11	142	0.18	-0.07	n.s.	-39
Physician visits by proxy:							
Last week	138	0.17	132	0.15	0.02	n.s.	13
Week before	138	0.14	132	0.08	0.06	.10	75

[1]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

[2]Computed as: $\frac{\bar{X}_R - \bar{X}_S}{\bar{X}_S}$

Where $\bar{X}_R$ = average number of physician visits reported per person in the reinforcement interview.

and $\bar{X}_S$ = average number of physician visits reported per person in the sensitization interview.

symptom data were separated into their component parts. Consistent with previous analyses, no significant effects due to reinforcement were observed for the reporting of physician visits.

Also, in the present report, data indicate that the reinforcement technique did not substantially affect the proportion of other persons for whom one health event or more was reported. In addition, the various subcategories of conditions and the reporting of physician visits by proxy failed to show the expected differences between the reinforcement and the sensitization interviews. On the basis of these data, it is reasonable to state that the reinforcement interview does not increase the number of persons reporting morbidity by proxy.

Apparently the reinforcement technique acted to increase only the *amount* of information obtained *about* other persons. On the other hand, the reinforcement technique increased both the amount of information reported by the respondent for herself and the number of other persons for whom morbidity was reported.

Summary of the effects of reinforcement on the reporting of health information.—More symptoms, conditions, and illnesses were reported when the reinforcement technique was used than when no reinforcement was used. In this study, the reinforcement technique elicited about 29 percent more reports of symptoms than did the sensitization technique. Reinforced respondents re-

Table 15. Proportion[1] of persons for whom one health item or more was reported in the reinforcement and sensitization interviews by type of technique, with difference between proportions, p, and percent increase

Reporting variable	Interview technique		Difference between proportions	p[2]	Percent increase in proportion[3]
	Reinforcement	Sensitization			
Total chronic and acute conditions:					
For self	0.91	0.81	0.10	.01	12
By proxy	0.76	0.73	0.03	n.s.	4
Total symptoms:					
For self	0.99	0.94	0.05	.01	5
Total physician visits:					
For self	0.20	0.26	0.06	n.s.	-30
By proxy	0.18	0.17	0.01	n.s.	6
DISAGGREGATED DATA					
Chronic and acute conditions					
Medically attended conditions:					
For self	0.81	0.68	0.13	.01	19
By proxy	0.62	0.58	0.04	n.s.	7
Chronic conditions:					
For self	0.72	0.61	0.11	.01	18
By proxy	0.56	0.52	0.04	n.s.	8
Chronic conditions by embarrassment level for self:					
Low	0.50	0.37	0.13	.04	35
Medium	0.25	0.26	-0.01	n.s.	-4
High	0.39	0.31	0.08	.09	26
Chronic conditions by embarrassment level by proxy:					
Low	0.32	0.32	0.00	n.s.	0
Medium	0.19	0.18	0.01	n.s.	6
High	0.37	0.29	0.08	.09	28
Physician visits					
Recency of physician visits for self:					
Last week	0.16	0.22	-0.06	n.s.	-27
Week before	0.09	0.13	-0.04	n.s.	-31
Recency of physician visits by proxy:					
Last week	0.13	0.14	-0.01	n.s.	-7
Week before	0.12	0.08	0.04	n.s.	50
Symptoms					
Symptoms embarrassment level for self:					
Low	0.91	0.81	0.10	.01	12
Medium	0.93	0.82	0.11	.01	13
High	0.69	0.52	0.17	.01	33

[1] Persons for whom incomplete data were obtained on a variable are not included in either the numerator or denominator of the proportion calculation for that variable.

[2] One-tailed, based on Z, assuming simple random design.

[3] Computed as: $\frac{(P_R - P_S)}{P_S}$

Where P_R = Proportion of persons for whom one or more health items were reported in the reinforcement technique.

Where P_S = Proportion of persons for whom one or more health items were reported in sensitization technique.

ported more symptoms at all three levels of embarrassment, although the biggest increases seemed to be in the reporting of symptoms classified as highly embarrassing. This effect may have something to do with the fact that the respondent reported the symptoms early in the interview and only for himself. The same pattern of increases was obtained when the reinforcement and sensitization procedures are compared in terms of the number of persons for whom any symptoms are reported.

Compared with the sensitization procedure, the reinforcement technique resulted in 25 percent more chronic and acute conditions reported by respondents for themselves and 24 percent more conditions reported by proxy. Reporting increases were observed both for medically attended conditions and for chronic conditions reported in response to a list read by the interviewer. It is interesting to note the "interactive" effects of embarrassment on condition reporting. Reinforced respondents reported a large number of less embarrassing conditions for themselves but an especially large number of more embarrassing conditions for the other person. Reasons for this interactive effect may involve the fact that conditions were queried later in the interview and that the opportunity to report by proxy was present.

The effects of reinforcement on chronic condition reporting show another possible interaction. While both the number of conditions reported per respondent and the number of respondents who reported having at least one condition were greater in the reinforcement procedure than in the sensitization procedure, a different pattern was observed for proxy reporting. When data reported by proxy were examined, it appeared that the reinforcement procedure did not bring about a significant increase in the number of other persons for whom at least one chronic or acute condition was mentioned. Apparently the reinforcement effects were mainly an increase in the amount of morbidity reported for each person.

The number of physician visits reported either for oneself or by proxy and reported as occurring either last week or the week before did not differ significantly for the two interviewing methods. Possible reasons for this lack of difference are discussed more fully later in this report.

Sensitization Technique

Number of health items reported.—It was hypothesized that the use of an initial "warmup" list would increase the number of chronic and acute conditions reported in the health interview. To test this and related hypotheses, effects of the sensitization interview were compared with those of the control interview. The symptom list with the questionnaire used in the sensitization procedure (see appendix) was administered at the beginning of the interview, and the list with the questionnaire used in the control procedure was administered at the end of the interview, where it would not influence the reporting of other morbidity data. Neither the sensitization nor the control technique used reinforcing statements, extra words, or facial-postural cues. Differences in reporting frequencies between the two techniques may be attributed to the position of the sensitization list.

Chronic and acute conditions.—Contrary to expectations, the use of a warmup or sensitization list at the beginning of the interview had a minimal effect on the reporting of chronic and acute conditions. Table 16 shows that the average number of chronic and acute conditions reported was not affected significantly by the use of the initial sensitization list.

Other health data.—The effects of the sensitization procedure on the average number of other health items reported per person are shown in tables 17-19. The average reporting frequencies per person obtained by the sensitization and control techniques are in all cases essentially the same.

Number of persons for whom one health item or more was reported.—The percentage of persons for whom each type of health information was reported in both the sensitization and control interviews is shown in table 20. While most comparisons failed to show significant differences between the proportions obtained by the two kinds of interview, the sensitization interview obtained "significantly" more other persons for whom at least one chronic and/or

Table 16. Number of persons and mean number of chronic and acute conditions reported per person in the sensitization and control interviews, with difference between the means and p, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[1]
	Sensitization		Control			
	Number of persons	Mean	Number of persons	Mean		
Total chronic and acute conditions for self	143	2.20	135	2.16	0.04	n.s.
Total chronic and acute conditions by proxy	135	1.43	125	1.39	0.04	n.s.

[1]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

Table 17. Number of persons and mean number of chronic conditions and medically attended conditions reported per person in the sensitization and control interviews, with difference between the means and p, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[1]
	Sensitization		Control			
	Number of persons	Mean	Number of persons	Mean		
Chronic list conditions for self	133	1.25	127	1.24	0.01	n.s.
Chronic list conditions by proxy	124	0.88	118	1.02	-0.14	n.s.
Medically attended conditions for self	143	1.69	135	1.67	0.02	n.s.
Medically attended conditions by proxy	136	1.07	123	1.07	0.00	n.s.

[1]Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is caluclated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

Table 18. Number of persons and mean number of symptoms and physician visits reported per person in the sensitization and control interviews, with difference between means and p, by type of technique and reporting variable

Reporting variable	Interview technique				Difference between means	p[1]
	Sensitization		Control			
	Number of persons	Mean	Number of persons	Mean		
Symptoms for self	141	4.99	134	5.30	-0.31	n.s.
Physician visits for self	142	0.43	133	0.46	-0.03	n.s.
Physician visits by proxy	132	0.23	123	0.20	0.03	n.s.

[1] Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

Table 19. Number of persons and mean number of chronic conditions and symptoms reported per person in the sensitization and control interviews, with difference between the means and p, by type of technique, reporting variable, and level of embarrassment

Reporting variable and level of embarrassment	Interview technique				Difference between means	p[1]
	Sensitization		Control			
	Number of persons	Mean	Number of persons	Mean		
Chronic conditions for self:						
Low	133	0.46	128	0.48	-0.02	n.s.
Medium	141	0.33	135	0.33	0.00	n.s.
High	142	0.49	134	0.42	0.07	n.s.
Chronic conditions by proxy:						
Low	124	0.35	119	0.36	-0.01	n.s.
Medium	133	0.20	124	0.27	-0.07	n.s.
High	133	0.38	123	0.40	-0.04	n.s.
Symptoms for self:						
Low	143	2.01	135	2.24	-0.28	n.s.
Medium	141	2.23	135	2.19	0.04	n.s.
High	143	0.80	134	0.82	-0.02	n.s.

[1] Indicated significance level of difference. Values were computed on the basis of the t statistics, are one-tailed, and were calculated taking into account clustered sample design effects on the variances. The average clustered sample design effect is small. The average variance is calculated to be 0.04 times greater than that calculated with the assumption of simple random sampling.

acute condition was reported and "significantly" more other persons for whom at least one condition on the chronic condition list was mentioned. The term "significantly" is in quotation marks to indicate that the p values may actually be false positives.

These data indicate that the sensitization interview may have had more "other persons" for whom chronic conditions were reported by proxy. This trend is not the same as that shown in table 17 for mean reporting frequencies. While the mean number of conditions reported by proxy from the chronic condition list was not significantly different for the two techniques, the trend reflected in table 17 was for respondents in the control group to report a greater number of conditions by proxy than respondents in the sensitization group.

Table 20. Proportion[1] of persons for whom one or more health items were reported in the sensitization and control techniques by type of technique and reporting variable, with difference between proportions and p

Reporting variable	Interview technique		Difference between proportions	p[2]
	Reinforcement	Control		
Total chronic and acute conditions:				
For self	0.81	0.80	0.01	n.s.
By proxy	0.73	0.63	0.10	.07
Total symptoms:				
For self	0.94	0.94	0.00	n.s.
Total physician visits:				
For self	0.26	0.25	0.01	n.s.
By proxy	0.17	0.15	0.02	n.s.
DISAGGREGATED DATA				
Chronic and acute conditions				
Medically attended conditions:				
For self	0.68	0.74	-0.06	n.s.
By proxy	0.58	0.55	0.03	n.s.
Chronic conditions:				
For self	0.61	0.67	0.06	n.s.
By proxy	0.52	0.40	0.12	.03
Chronic conditions by level of embarrassment for self:				
Low	0.37	0.38	-0.01	n.s.
Medium	0.26	0.26	0.00	n.s.
High	0.31	0.32	-0.01	n.s
Chronic conditions by level of embarrassment by proxy:				
Low	0.32	0.26	0.06	n.s.
Medium	0.18	0.19	-0.01	n.s.
High	0.29	0.28	0.01	n.s.
Symptoms				
Symptoms by level of embarrassment for self:				
Low	0.81	0.86	0.05	n.s.
Medium	0.82	0.83	-0.01	n.s.
High	0.52	0.46	0.06	n.s.

[1]Persons for whom incomplete data were obtained on a variable are not included in either numerator or denominator of the proportion calculation for that variable.

[2]Based on Z, assuming simple random sampling, two-tailed value given when difference between proportions is negative.

EFFECTS OF RESPONDENT ATTITUDE ON REPORTING

One assumption implicit in much planning of household interviews is that the respondent should have a positive orientation toward the interview if he is to cooperate by giving accurate and complete information. Conversely, if the respondent does not like the interview experience, it is unlikely that he will report accurately and completely.

This hypothesis was tested extensively in a previous study,[7] and no relation was found between the respondent's reaction to the interview and his reporting performance during the interview.

In the present study, an effort was made to ascertain how the respondent felt about the interview, and her answers were compared with her reporting rates.

At the end of the interview the respondent was asked three questions to discover how she felt about the interview experience:

Question 14. Now, a couple of questions about the interview. Was it a good time for me to call on you or was there some other time that would have been better?

Question 15. We are going to be interviewing a number of people in this part of the city, and I'm interested in how you think they will feel about the interview. How do you think they will feel about taking *time* for the interview?

Question 16. How will they feel about the interview; will they like it, not like it, or what?

For analysis purposes an attitude "index" was created for each respondent by combining her answers to all three questions into one scale. On the basis of these aggregate scores, respondents were assigned either to a "positive," "neutral or ambivalent," or "negative" group. Data in table 21 show the results of this classification for each of the treatments. It appeared that respondents in the reinforcement group reported more information if their attitudes were negative rather than positive. On the other hand, it appeared that respondents in the control group reported more symptoms and conditions if their attitudes were positive. The magnitude of these relationships was fairly small, and the data seemed to indicate that attitudes of the respondent about the interview experience expressed after the interview had been completed bore no important relationship to the quantity of data furnished during the interview.

EFFECTS OF RESPONDENT PERSONALITY ON REPORTING

Edwards[9] pioneered research on the importance of social desirability in determining answers given by people to questionnaire items. He found that a researcher can predict what answers he will get to his questions by knowing which answers are socially approved and which are not. Respondents are apt to give socially approved answers much more frequently than socially disapproved ones.

Edwards treated social-desirability response bias primarily as a problem of question construction. Recently, however, Marlowe and Crowne[8] have proposed that this kind of response bias is also a personality characteristic. These researchers have developed a procedure which, it is claimed, measures individual differences in the need for social approval—a concept very similar to Edwards' responding in a socially approved manner. According to Marlowe and Crowne ". . . individuals who display a social-desirability response set on the M-C Scale are more conforming, cautious, and persuasible, and their behavior is more normatively anchored, than persons who depict themselves less euphemistically."

A shortened version of the Marlowe-Crowne Scale was administered to all respondents in this study to test the following hypotheses:

- Respondents with a high need for social approval will report more socially acceptable information and less socially unacceptable information than respondents low in the need for approval. Social acceptability of information is defined in terms of the embarrassment rating of symptoms and conditions mentioned earlier (see table 5).

Table 21. Average frequencies of reporting and number of respondents in the three interviews, by respondent attitude, type of technique, and reporting variable

Reporting variable	Interview technique								
	Reinforcement			Sensitization			Control		
	Respondent attitude			Respondent attitude			Respondent attitude		
	Negative	Neutral	Positive	Negative	Neutral	Positive	Negative	Neutral	Positive
	Average frequency								
Total chronic and acute conditions:									
For self	3.2	2.8	2.6	2.3	2.2	2.1	1.7	2.1	2.3
By proxy	2.3	1.9	1.7	1.4	1.4	1.5	1.2	1.2	1.7
Physician visits:									
For self	0.46	0.42	0.17	0.37	0.33	0.57	0.73	0.47	0.41
By proxy	0.36	0.30	0.14	0.13	0.27	0.21	0.18	0.22	0.18
Symptoms:									
For self	7.5	6.7	5.9	6.5	4.6	5.0	4.3	5.4	5.4
	Number of respondents								
Total chronic and acute conditions:									
For self	13	78	60	19	70	54	11	73	51
By proxy	12	72	58	17	66	52	11	69	45
Physician visits:									
For self	13	77	60	19	69	54	11	73	51
By proxy	11	71	56	16	64	52	11	68	45
Symptoms:									
For self	13	76	60	18	69	54	11	72	51

- Increases in the number of chronic and acute conditons reported will be greatest for persons with a high need of social approval. This effect is hypothesized because the reinforcing statements used in the interview can be thought of as instances of giving social approval.

Before data relevant to these hypotheses are given, several related findings should be mentioned. Average social-approval motivation scores for respondents in each of the three interview groups are shown in table 22. Scores are lower for respondents in the reinforcement group than for those in the sensitization or control groups. The same tendency was observed when the interviewing procedures used in this study were being pretested; the score is evidently sensitive to situation characteristics. Alternately, the motivation to seek social approval may decrease when social approval is given in the interview situation, much as hunger decreases after food is consumed.

Table 22. Number of persons and average social-approval scores for the three interviews, by type of technique

Interview technique	Number of persons	Average social-approval score
Reinforcement	142	9.6
Sensitization	132	[1]10.2
Control	125	[2]10.4

[1] $p_{(R=S)} = .11$ (two-tailed).

[2] $p_{(R=C)} = .04$ (two-tailed).

Next, Edwards' work implies that social-desirability response tendencies are common to all population groups. Contrary to expectations, however, the approval motivation scores are positively related to the respondent's age and negatively related to the respondent's education. Table 23 shows the gamma coefficients of association between demographic characteristics and the motivation scores.

Table 23. Gamma[1] coefficients of association between demographic characteristics and social-approval scores

Demographic characteristics	Number of persons	Gamma social-approval (M-C) score
Age of respondent	397	[2]0.34
Education of respondent	398	[2]-0.19
Family income	372	-0.04
Family size	399	-0.03

[1] Gamma is a nonparametric coefficient of association ranging from -1.00 to +1.00 (see reference 11).

[2] $p \leq .05$ (see reference 12).

Persons with a high need for social approval report a smaller amount of embarrassing information than do other persons (tables 24 and 25). The hypothesis that respondents with a high need for approval report fewer embarrassing conditions than do persons with a low need for social approval was confirmed for respondents who reported chronic conditions from a checklist for self. High-need persons reported more of the less embarrassing conditions than low-need persons. As expected, the trend was present in all three interview procedures.

This same hypothesis is not unequivocably supported by symptom data. Persons high in motivation for social approval reported fewer symptoms of all kinds: fewer high embarrassment symptoms as expected, but also fewer low embarrassment symptoms (table 25).

This unexpected result may be due to the influence of other sources of variation. For example, symptom information and condition data were collected in different parts of the interview: in the reinforcement and sensitization interviews symptom information was collected before condition information, and in the control interview the order was reversed. Since the trend for respondents with a low need for approval to report more symptoms was present in all three interviews, one can rule out the hypothesis that position of the list in the interview was responsible for the fact that the embarrassment hypothesis was not confirmed. Another potential explanation may be the difference between methods of collecting symptom and condition information: the latter was obtained both for the respondent and one other person, while symptom information was asked for the respondent only. The relationship of approval motivation and embarrassment to proxy reporting is not readily explained, but table 26 does show a very interesting effect: for the reinforcement and sensitization treatments, respondents with high need for approval reported as many or more highly embarrassing conditions for the other person than did persons low in need for approval. (It should be recalled that these persons reported fewer highly embarrassing conditions for themselves; see table 24.)

Table 24. Number of persons and mean frequencies of reporting chronic conditions from a checklist for self in the three interviews, by social-approval score, level of embarrassment, and type of technique

Social-approval (M-C) score	Level of embarrassment	Interview technique					
		Reinforcement		Sensitization		Control	
		Number of persons	Mean	Number of persons	Mean	Number of persons	Mean
High	High	41	0.49	46	0.41	50	0.30
Low	High	52	0.69	41	0.54	30	0.50
High	Low	41	0.71	43	0.65	45	0.44
Low	Low	52	0.67	40	0.45	29	0.38

NOTE: Intermediate levels of item embarrassment and social-approval scores have been omitted above.

Table 25. Number of persons and mean frequencies of reporting symptoms for self in the three interviews, by social-approval score, level of embarrassment, and type of technique

Social-approval (M-C) score	Level of embarrassment	Interview technique					
		Reinforcement		Sensitization		Control	
		Number of persons	Mean	Number of persons	Mean	Number of persons	Mean
High	High	41	1.1	47	0.5	50	0.6
Low	High	51	1.4	41	1.0	29	1.3
High	Low	41	2.1	47	1.8	50	2.2
Low	Low	52	2.6	41	2.1	30	2.4

NOTE: Intermediate levels of item embarrassment and social-approval scores have been omitted above.

Table 26. Number of persons and mean frequencies of reporting chronic conditions from a checklist by proxy in the three interviews, by social-approval score, level of embarrassment, and type of technique

Social-approval (M-C) score	Level of embarrassment	Interview technique					
		Reinforcement		Sensitization		Control	
		Number of persons	Mean	Number of persons	Mean	Number of persons	Mean
High	High	38	0.61	45	0.51	46	0.45
Low	High	46	0.59	39	0.33	28	0.57
High	Low	38	0.61	42	0.33	42	0.36
Low	Low	46	0.33	38	0.42	28	0.43

NOTE: Intermediate levels of item embarrassment and social-approval scores have been omitted above.

The trends are not very strong, but they do suggest some possible interpretations. One is that respondents with a high need for approval experienced a conflict between wanting to report more morbidity (for which they received a social reinforcement) and not wanting to report highly embarrassing information (for which there was an expectation of receiving social disapproval). The respondent seems to have resolved this conflict at times by reporting more of the socially approved conditions for herself and more of the socially disapproved information for another person.

Owing to this conflict, one might doubt that the data would support the second major hypothesis that respondents with a high need for approval, when given the reinforcement interview, would show higher reporting rates than persons in any other group. Data in table 27 show that the hypothesis *is* confirmed when reporting is by proxy but that it is *not* confirmed when reporting is for self. In other words, the second hypothesis does not allow for the score-depressing effect of respondents' reluctance to report socially disapproved information about themselves. The data therefore suggest that the suppression effect is present for self-reporting but not for proxy reporting.

In summary the effects of the respondent's need for social approval of her reporting are complex and somewhat ambiguous. A person's approval motivation does not seem to affect reporting to any great extent in an interview in which the interviewer does not use reinforcing statements. Reinforcement does enhance the reporting of all respondents, but it has special effects on persons who are highly motivated to receive such social approval. The reinforcement procedure seems to establish a conflict situation which enhances overall morbidity reporting but which suppresses reporting of socially undesirable information by the respondent about herself. When the opportunity to report for another person is presented (for chronic conditions, but not for symptoms), the conflict may be resolved by reporting greater amounts of embarrassing information by proxy.

Table 27. Number of persons and mean frequencies of reporting for self and by proxy in the three interviews, by type of technique, social-approval score, and reporting variable

Reporting variable	Interview technique											
	Reinforcement				Sensitization				Control			
	High approval		Low approval		High approval		Low approval		High approval		Low approval	
	Number of persons	Mean	Number of persons	Mean	Number of persons	Mean	Number of persons	Mean	Number of persons	Mean	Number of persons	Mean
For self												
Total chronic and acute conditions	41	2.6	52	3.0	47	2.1	41	2.7	50	2.0	30	2.2
Chronic conditions	41	1.6	51	1.7	43	1.5	40	1.4	45	1.2	29	1.1
Medically attended conditions	41	2.1	52	2.4	47	1.7	41	1.9	50	1.6	30	1.6
Symptoms	41	6.0	51	6.7	46	4.2	40	5.6	50	4.9	29	6.1
Physician visits	40	0.43	52	0.42	47	0.53	41	0.39	50	0.40	30	0.47
By proxy												
Total chronic and acute conditions	39	2.2	48	1.7	46	1.4	40	1.5	47	1.3	28	2.1
Chronic conditions	37	1.7	45	1.1	42	1.2	38	0.8	42	1.1	28	1.4
Medically attended conditions	39	1.5	47	1.2	46	1.0	40	0.9	46	0.9	28	1.6
Physician visits	38	0.37	47	0.19	44	0.15	40	0.13	46	0.15	28	0.18

EFFECTS OF INTERVIEWING PROCEDURES ON NONREPORTING VARIABLES

It is useful to examine the study data for effects of the three interviewing procedures on variables other than reporting frequency. Such an analysis may clarify the ways in which the reinforcement, sensitization, and control procedures influenced reporting rates, whether as an increase or a decrease.

Respondent Social-Approval Scores

Study data show that the M-C Scale scores are affected differently by the interview procedures. The M-C scores were significantly lower for the reinforcement interview group than for the sensitization and control groups. It may be that reinforced respondents are less subject to a social-desirability response bias and that they are actually more likely to be telling the "truth." The conclusion on "truth" is derived from one of the major characteristics of the M-C Scale,

namely, that one must lie about oneself to receive a high score. The fact that reinforced respondents scored lower on the scale may indicate they were responding more objectively about themselves.

Respondent Attitude

The respondent's attitudinal reaction to the interview was not influenced by the procedure used (table 28). Hence the reinforcement procedure does not appear to achieve its effects by making the respondent more "positively disposed" toward the interview situation. Conversely, the lower reporting frequencies observed in the sensitization and control techniques were not associated with a negative respondent reaction to the interview.

Respondent's Understanding of Her Task

At the close of the interview, the respondent was asked two questions designed to discover whether or not she had "learned" that she was supposed to report the state of her health as completely as possible.

Question 17. Will people think we want them to report all their illnesses or only the important ones?

Question 17a. Why might that be?

The distribution of the combined answers to these questions for the individual interview procedures is shown in table 29. There was a slight trend for reinforced respondents to say that other people would think reporting of all illnesses was wanted and to give the "correct" reasons for that answer: because that's what the interviewer (or government, etc.) wants or because it results in useful data. The lack of dramatic differences among the three procedures suggests that the reinforcement interview probably did not achieve its effects by making the task intellectually understandable to the respondent. An analysis indicates that respondents classified as "aware" reported no better than "unaware" respondents when treatment effects were controlled.

Perception of Own Health

All respondents were asked to rate their own health in question 12. "In general would you say that your health is: excellent, good, fair, poor?"

The health rating appeared to be affected slightly by interviewing technique (table 30). Reinforced respondents evaluated their health as being poorer than did sensitized and controlled respondents. Therefore the interview characterized by social reinforcement appeared to bring about a change in the respondent's perception of her own health. The perceptual change seemed to be in the direction of evaluating herself as less healthy.

Table 28. Number of persons and percent distribution of respondent attitude in the three interviews by type of attitude, according to type of technique

Interview technique	Number of persons	Total	Respondent attitude		
			Negative	Neutral	Positive
		Percent distribution			
Reinforcement	151	100	8	52	40
Sensitization	143	100	13	49	38
Control	135	100	8	54	38

Table 29. Number of persons and percent distribution of answers to questions regarding illness to be reported in the three interviews by type of answer, according to type of technique

Respondent answer	Interview technique		
	Reinforcement	Sensitization	Control
Number of persons	151	142	135
	Percent distribution		
Total	100	100	100
Aware:			
Report all illness plus correct reason[1]	37	27	28
Indeterminate:			
Report all illness plus incorrect reason or reason not ascertained	28	26	30
Unaware:			
Report only important illness	35	47	42

[1]Indicated that reporting all illness was what the survey, the interviewer, the Government, and others wanted or that reporting all illness would result in good data.

Table 30. Number of persons and percent distribution of rating of own health in the three interviews, by type of technique

Type of technique	Number of persons	Total	Rating of own health				
			Excellent	Good	Fair	Poor	Not ascertained
		Percent distribution					
Reinforcement	151	100	22	44	29	5	0
Sensitization	143	100	25	55	15	4	1
Control	135	100	30	45	22	3	0

Length of the Interview

When the interviewing procedures were designed, an attempt was made to have them each take the same length of time to administer. The symptoms list, for example, was appended to the control interview where it served only to equalize the length of the overall reporting task for the control group with that of the reinforced and sensitized respondents. There was only one "built-in" difference in the questionnaires which might have affected the length of the interview. In the reinforcement procedure the interviewer read two extra introductory sentences and used two or three standard extra words in asking about each of the health symptoms and conditions on the prepared checklists (see tables 2 and 3). These extra words probably would have accounted for less than a minute of total interview time (which averaged about 22 minutes).

However, the reinforcement interviews lasted about 1.5 to 2 minutes longer than the other interviews (table 31). Although data are not presented here, substantial positive correlations were found within each of the procedures between the frequency of reporting health items and the length of the interview.

Thus the reinforcement interview was longer apparently because more information was being reported. The differences in the length of interviews were not large enough, however, to suggest that the reinforcement interviews (or similar interviews in which frequent reporting was obtained) would increase field costs significantly.

The reinforcement procedure lowered respondents' M-C scores, yielded a slightly better understanding of the respondent task, altered the reported perception of the respondents' own health, and caused the interview to take slightly longer. The reinforcement procedure does not alter the attitude of the respondents toward the interview.

Table 31. Number of persons and average duration of interview, by type of technique

Type of technique	Number of persons	Average number of minutes per interview
Reinforcement	151	23.6
Sensitization	142	22.0
Control	134	21.4

REPORTING OF PHYSICIAN VISITS

In contrast to its effect on the reporting of conditions and symptoms, the reinforcement technique did not increase the rate of reporting physician visits. While this failure might be attributed to some chance sampling factor, there are at least two other explanations.

Extinction Hypothesis

In the reinforcement interviewing procedure, reinforcing statements were used for the first part of the interview only (table 6). During the course of the interview, the respondent was questioned in some detail about the conditions reported earlier. Answers to these and the remaining questions were not reinforced. Toward the end of the interview, the respondent was asked to report how many times she had utilized the services of a physician in the last 2 weeks. Because these questions came late in the interview, it is possible that there was an "extinction" or "wearing off" of the reinforcement effects. This phenomenon is often found in laboratory studies of reinforcement and performance.

Negative-Response Set Hypothesis

During the course of the interview, the respondent was asked several questions about the details of illness and treatments for illnesses which she had reported earlier. In a previous study[10] respondents sometimes characterized these questions as repetitious, difficult, or annoying. The respondent has no way of knowing when he reports a health condition earlier in the interview that he will be questioned in detail about it later. However, by the time the interviewer asks about physician visits, the respondent has been through the detailed questioning and may think "If I report something, the interviewer is going to ask me all these hard questions about it." Therefore one reason the reporting of physician visit is un-

affected by the reinforcement procedure may be that the respondent assumes a general "negative-response set" to avoid being trapped into more detailed questioning.

There is no reliable way of ascertaining whether extinction effects operate when the reinforcement procedure is used. A separate experimental study is needed on this question. It is possible, however, to test directly whether or not the respondent has acquired a "no-response set." Respondents in the sensitization group were asked to report their symptoms at the beginning of the interview, while control respondents were asked to do this near the end of the interview, soon after physician visits had been reported. If the respondent acquires a "negative-response set" as a result of being taken through the detailed probe questions, reporting of symptoms should be less frequent for the control group treatment than for the sensitization group. Since neither group received reinforcement, any differences in reporting would be attributable to the position of the symptoms list in the interview.

However, the rates of symptom reporting were not appreciably different for the two techniques (table 32). The control procedure, in fact, obtained a higher average symptom reporting rate; this refutes the hypothesis that respondents acquire a "no-response set." Hence, the failure of the reinforcement procedure to increase the volume of physician visits reported is not due to the development of this kind of competing response set.

Table 32. Number of persons, average number of symptoms reported, and percent of respondents reporting no symptoms for the sensitization and control interviews, by type of technique

Type of technique	Number of persons	Average number of symptoms reported	Percent reporting no symptoms
Sensitization	141	4.99	6
Control	134	5.30	6

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APPENDIX. QUESTIONNAIRES

QUESTIONNAIRE USED WITH REINFORCEMENT TECHNIQUE

The University of Michigan
Survey Research Center
Project 935
Bureau of the Budget
Number 68-6523
Expires March 31, 1966

March, 1966

1. Interviewer's Name _____

2. Your Interview Number _____

3. Address _____

_____

4. Block Number _____

5. CALL RECORD

CALL NUMBER	1	2	3	4	5	6	OTHER (SPECIFY)
TIME OF DAY	am	am	am	am	am	am	
	pm	pm	pm	pm	pm	pm	
DATE							
DAY OF WEEK							
RESULTS							

Time Started ___:___ AM PM

"As I mentioned, this is a health survey. Before we start on the questions, I'd like to find out something about who lives here."

1. INTERVIEWER: FILL OUT THE CHART BELOW BY LISTING EACH PERSON BY BOTH FIRST AND LAST NAMES AND RELATIONSHIP TO THE HEAD OF THE HOUSEHOLD.

   a. What is the name of the head of this household?
   b. What are the names of all the other persons who live here?
   c. I have listed (READ NAMES). Is there anyone else staying here now such as friends, relatives, or roomers?
   d. Have I missed anyone who usually lives here but is now away from home?
   e. Do any of the people in this household have a home anywhere else?

2. How is -- related to -- (head of household)?

3. How old was -- on his last birthday?

NAME	RELATIONSHIP TO HEAD	SEX (M or F)	AGE	INDICATE RESPONDENT BY R PROXY BY X
	HEAD			

IF NO ELIGIBLE RESPONDENT, COMPLETE LISTING AND ASK Q11.

ASK FOR RESPONDENT ONLY LIST [S]

"Now I'm going to ask you questions about your health. By asking these questions, the Public Health Service can get a good picture of the nation's health. And to make the information valuable, it's important that you report all your sicknesses, no matter how small or unimportant they may be."

AFTER EACH "YES":

a. _____ (Yes) That's the kind of information we need.
b. _____ (That's it) This is all valuable information.
c. _____ (Yes) We need to know about things like that.
d. _____ (I see) You have (had) _____(symptom)_____.

Have you ever had:

	YES	NO
Bad Headaches?		
Have you ever coughed up blood?		
How about fainting or blackout spells?		
Have you ever had bad sore throats?		
Shortness of breath?		
The next item is backaches. Have you ever had serious backaches?		
Ever felt your heart beating hard or acting funny?		
How about pain in, or around your heart or chest?		
How about gas in your stomach? Have you ever had that?		
Bad stomach cramps?		
Ever had loose bowels?		
How about pain or soreness in the female organs?		
Ever had pain or burning when you go to the bathroom?		
How about painful or swollen joints?		
The next item is broken bones. Have you ever broken any bones?		
How about itching skin?		
Ever have any mental illness?		
How about venereal disease?		
Have you ever had trouble sleeping?		

This survey covers all kinds of illnesses. These next questions refer to all of last week and all of the week before, that is, the two week period outlined in red on this calendar (HAND CALENDAR). You may have told me about some of this information before, but please mention it again here so I will be sure to get all your sicknesses."

AFTER EACH REPORTED CONDITION:

a._____ (Yes) That's important (information).
b._____ (Um-hmm) We're interested in that.
c._____ (Thank you) That's very useful.
d._____ (I see) You have ____(condition)____

	RESPONDENT		PROXY	
4. Was -- sick at any time last week or the week before? (The 2 weeks shown on that calendar)	YES	NO	YES	NO
a. (IF YES) What was the matter?				
b. Did -- have anything else during that two week period?	YES	NO	YES	NO
c. (IF YES) What was the matter?				
5. Last week or the week before, did -- take any medicine or treatment for any condition (besides ... which you told me about)?	YES	NO	YES	NO
a. (IF YES) For what condition?				
b. Did -- take any medicine for any other condition?	YES	NO	YES	NO
c. (IF YES) For what condition?				
6. Last week or the week before, did -- have any accidents or injuries?	YES	NO	YES	NO
a. (IF YES) What were they?				
b. Did -- have any other accidents or injuries during that two week period?	YES	NO	YES	NO
c. (IF YES) What were they?				
7. Did -- ever have any (other) accident or injury that still bothers him or affects him in any way?	YES	NO	YES	NO
a. In what way does it bother him? (RECORD PRESENT EFFECTS)				

REPEAT Q7 UNTIL "NO" ANSWER OBTAINED

8a. "Now for one of the most important parts of the interview. I'm going to read a list of conditions. Please tell me if you or your -- have had any of these conditions during the past 12 months?"

AFTER EACH POSITIVE REPORT:
a. _____ (Yes) That's important (information).
b. _____ (Um-hmm) We're interested in that.
c. _____ (Thank you) That's very useful.
d. _____ (I see) You have _____ (Condition)

	R		PROXY	
	YES	NO	YES	NO
Asthma?				
Have you or your -- had repeated attacks of bronchitis?				
Repeated attacks of sinus trouble?				
How about bladder trouble during the past year?				
The next thing I want to ask you about is hemorrhoids or piles.				
Have you or your -- had hernia or rupture during the year?				
How about kidney stones or trouble with your kidneys?				
(Males only) has your -- had prostate trouble?				
(Females only) During the past 12 months have you had trouble with female organs?				
The next thing we want to find out is have you or your -- had swollen (varicose) veins in your legs?				
How about tumors, cyst or growth?				

8b. "Have you or your -- ever had any of these conditions?

	R		PROXY	
	YES	NO	YES	NO
Hardening of the arteries?				
Ever had heart trouble or anything wrong with the heart?				
How about high blood pressure?				
How about rheumatic fever? Have either of you had that?				
Stroke?				
The next item is cancer. Have you or your -- ever had cancer?				

9. "Does -- have any other ailments, conditions, or problems with his health?"

a. (IF YES) What is the condition?

b. When did -- first notice ...?

c. Any other problems with his health?

d. (IF YES) What are they?

e. When did -- first notice ...?

RESPONDENT		PROXY	
☐ YES	☐ NO	☐ YES	☐ NO
☐ YES	☐ NO	☐ YES	☐ NO

CONDITIONS TABLE

10. Fill out one line for each condition, accident, or injury reported in questions 4 - 9

COLUMN 2 2. Did -- ever at any time talk to a doctor about ...? (DO NOT ASK FOR ACCIDENT OR INJURY - GO TO COL.4)		COLUMN 3a 3a. IF A DOCTOR WAS TALKED TO, ASK: What did the doctor say it was? Did he give it a medical name? IF A DOCTOR NOT TALKED TO, RECORD ADEQUATE DESCRIPTION OF CONDITION OR ILLNESS.	COLUMN 3b ASK FOR ALL CONDITIONS EXCEPT THOSE NOTED AT BOTTOM OF TABLE:* What was the cause of ...? (IF NOT CLEAR) What part of the body is affected?	COLUMN 3c FOR ANY ENTRY THAT INCLUDES THE WORDS: Asthma "Ailment" Cyst "Condition" Growth "Disease" Measles "Disorder" Tumor "Trouble" ASK: What kind of ... is it? FOR ALLERGY OR STROKE, ASK: How does the allergy (stroke) affect him?	COLUMN 4 IF AN ACCIDENT OR INJURY, ASK: What part of the body is affected now? How is his ... (part of body) affected?
YES	NO				

*Acne, Appendicitis, Arteriosclerosis, Arthritis, Athlete's foot, Bronchitis, Bursitis, Chickenpox, Cold, Constipation, Corns, callúses, bunions, or warts, Croup, Diabetes, Epilepst, Goiter, Hardening of the Arteries, Hay fever, Hemorrhoids or piles, Hernia (all types), High blood pressure, Hypertension, Kidney stones, Laryngitis, Migraine headache, Mumps, Phlebitis (Thrombophlebitis), Pneumonia, Prostate, Rheumatism, Rheumatic fever

CONDITIONS TABLE—Con.

COLUMN 1a Name of the condition, illness, or injury	COLUMN 1b Question no. from which the condition came	COLUMN 1c Who has the condition: R or X (proxy)	
		R	X

Sciatica
Sinus trouble (Sinusitis)
Strep (Streptococcus) throat
Tonsillitis
Ulcer (duodenal, stomach, peptic, or gastric)
Varicose veins (any mention of)
Whooping cough

11. Doctor Visits

	RESPONDENT	PROXY
a. Last week or the week before did you or -- talk to a doctor or go to a doctor's office or clinic?	☐ YES ☐ NO	☐ YES ☐ NO

b. (IF YES) Who went to the doctor (office, clinic)?

c. How many times did -- see or talk to a doctor last week?		
d. How many times did -- see or talk to a doctor the week before?		

12. In general would you say that your health is excellent, good, fair, or poor?

EXCELLENT GOOD FAIR POOR

INTERVIEWER: ASK LIST S

13. "Those are all the questions on health. Here are a few questions about how you feel about some other things. Check "True" or "False" before each statement; that is, whether it is true or false for you."

INTERVIEWER: BE SURE ALL STATEMENTS HAVE BEEN ANSWERED. IF ANY ARE NOT ANSWERED, READ THOSE STATEMENTS TO THE RESPONDENT AND CHECK HER ANSWER.

13. Please check true or false beside each statement:

TRUE	FALSE	
☐	☐	1. I have never intensely disliked anyone.
☐	☐	2. I sometimes feel resentful when I don't get my own way.
☐	☐	3. I am always careful about my manner of dress.
☐	☐	4. I like to gossip at times.
☐	☐	5. No matter who I'm talking to, I'm always a good listener.
☐	☐	6. I can remember playing sick to get out of something.
☐	☐	7. There have been occasions when I took advantage of someone.
☐	☐	8. I'm always willing to admit it when I make a mistake.
☐	☐	9. I always try to practice what I preach.
☐	☐	10. I sometimes try to get even rather than forgive and forget.
☐	☐	11. I am always courteous, even to people who are disagreeable.
☐	☐	12. At times I have really insisted on having things my own way.
☐	☐	13. There have been occasions when I felt like smashing things.
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☐	☐	15. I have almost never felt the urge to tell someone off.
☐	☐	16. I am sometimes irritated by people who ask favors of me.
☐	☐	17. I have never felt that I was punished without cause.

14. Now, a couple of questions about the interview. Was it a good time for me to call on you or was there some other time that would have been better?

    a. (IF BAD TIME) Why was this time not good?

15. We are going to be interviewing a number of people in this part of the city, and I'm interested in how you think they will feel about the interview. How do you think they will feel about taking time for the interview?

16. How will they feel about the interview; will they like it, not like it, or what?

    a. Why will they feel that way?

17. Will people think we want them to report all their illnesses or only the important ones?

    a. Why might that be?

"Now a couple of final questions:"

18. What was the highest grade that you attended in school? _____

19. Did you finish that grade? _____

20. Income Card: "Which of these groups represents your total combined family income for the past 12 months? That is, yours, your --'s (your --'s etc.) (HAND CARD) Include income from all sources such as wages, salaries, social security or other benefits, help from relatives, rents, and so on.

---

21. Was the proxy present? ☐ yes ☐ no (IF YES) ☐ Responded for self entirely
    ☐ Responded for self partially
    ☐ Did not respond for self

22. Did the respondent consult other sources of information? ☐ yes ☐ no

23. Was anyone else present during the interview?_____

24. (IF YES) Did he (she) participate? _____

25. Time now ___:___ AM PM

26. How long was the interview? _____ minutes.

QUESTIONNAIRE USED WITH SENSITIZATION TECHNIQUE

The University of Michigan
Survey Research Center
Project 935
Bureau of the Budget
Number 68-6523
Expires March 31, 1966

March, 1966

1. Interviewer's Name _____

2. Your Interview Number _____

3. Address _____

_____

4. Block Number _____

5. CALL RECORD

CALL NUMBER	1	2	3	4	5	6	OTHER (SPECIFY)
TIME OF DAY	am	am	am	am	am	am	
	pm	pm	pm	pm	pm	pm	
DATE							
DAY OF WEEK							
RESULTS							

Time Started ___:___ AM PM

1. INTERVIEWER: FILL OUT THE TABLE BELOW BY LISTING EACH PERSON BY BOTH FIRST AND LAST NAMES AND RELATIONSHIP TO THE HEAD OF THE HOUSEHOLD.
   a. What is the name of the head of this household?
   b. What are the names of all the other persons who live here?
   c. I have listed (READ NAMES). Is there anyone else staying here now such as friends, relatives, or roomers?
   d. Have I missed anyone who usually lives here but is now away from home?
   e. Do any of the people in this household have a home anywhere else?
2. How is -- related to -- (head of household)?
3. How old was -- on his last birthday?

NAME	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX (M or F)	AGE	INDICATE RESPONDENT BY R; PROXY BY X

IF NO ELIGIBLE RESPONDENT, COMPLETE LISTING AND ASK Q11.

ASK FOR RESPONDENT ONLY LIST [S]

"Have you ever had:"

	YES	NO
Bad headaches		
Coughed up blood		
Fainting or blackout spells		
Bad sore throats		
Shortness of breath		
Serious backaches		
Felt your heart beating hard or acting funny		
Pain in, or around your heart or chest		
Gas in your stomach		
Bad stomach cramps		
Loose bowels		
Pain or soreness in female organs		
Pain or burning when you go to the bathroom		
Painful or swollen joints		
Broken bones		
Itching skin		
Mental illness		
Venereal disease		
Trouble sleeping		

"This survey covers all kinds of illnesses. These next questions refer to all of last week and all of the week before, that is, the two week period outlined in red on this calendar (HAND CALENDAR). You may have told me about some of this information before, but please mention it again here so I will be sure to write down all your sicknesses."

	RESPONDENT		PROXY	
4. Was -- sick at any time last week or the week before? (The two weeks shown on that calendar)	YES	NO	YES	NO
a. (IF YES) What was the matter?				
b. Did -- have anything else during that two week period?	YES	NO	YES	NO
c. (IF YES) What was the matter?				
5. Last week or the week before, did -- take any medicine or treatment for any condition (besides ... which you told me about)?	YES	NO	YES	NO
a. (IF YES) For what condition?				
b. Did -- take any medicine for any other condition?	YES	NO	YES	NO
c. (IF YES) For what condition?				
6. Last week or the week before, did -- have any accidents or injuries?	YES	NO	YES	NO
a. (IF YES) What were they?				
b. Did -- have any other accidents or injuries during that two week period?	YES	NO	YES	NO
c. (IF YES) What were they?				
7. Did -- ever have any (other) accident or injury that still bothers him or affects him in any way?	YES	NO	YES	NO
In what way does it bother him? (RECORD PRESENT EFFECTS)				

REPEAT Q7 UNTIL "NO" ANSWER OBTAINED

8a. "Now I'm going to read a list of conditions. Please tell me if you or your -- have had any of these conditions during the past 12 months?"

	R		PROXY	
	YES	NO	YES	NO
Asthma				
Repeated attacks of bronchitis				
Bladder trouble				
Hemorrhoids or piles				
Hernia or rupture				
Kidney stones or trouble with your kidneys				
(MALES ONLY) Prostate trouble				
(FEMALES ONLY) Trouble with female organs				
Swollen (varicose) veins in your legs				
Tumor, cyst, or growth				
Repeated attacks of sinus trouble				

8b. "Have you or your -- ever had any of these conditions?"

	R		PROXY	
	YES	NO	YES	NO
Hardening of the arteries				
Heart trouble or anything wrong with your heart				
High blood pressure				
Rheumatic fever				
Stroke				
Cancer				

9. Does -- have any other ailments, conditions, or problems with his health?

a. (IF YES) What is the condition?

b. When did -- first notice ...?

c. Any other problems with his health?

d. (IF YES) What are they?

e. When did -- first notice ... ?

RESPONDENT	PROXY
☐ YES ☐ NO	☐ YES ☐ NO
☐ YES ☐ NO	☐ YES ☐ NO

CONDITIONS TABLE

10. Fill out one line for each condition, accident, or injury reported in questions 4 - 9

COLUMN 2 2. Did -- ever at any time talk to a doctor about ...? (DO NOT ASK FOR ACCIDENT OR INJURY - GO TO COL.4)		COLUMN 3a 3a. IF A DOCTOR WAS TALKED TO, ASK: What did the doctor say it was? Did he give it a medical name? IF A DOCTOR NOT TALKED TO, RECORD ADEQUATE DESCRIPTION OF CONDITION OR ILLNESS.	COLUMN 3b ASK FOR ALL CONDITIONS EXCEPT THOSE NOTED AT BOTTOM OF TABLE:* What was the cause of ...? (IF NOT CLEAR) What part of the body is affected?	COLUMN 3c FOR ANY ENTRY THAT INCLUDES THE WORDS: Asthma "Ailment" Cyst "Condition" Growth "Disease" Measles "Disorder" Tumor "Trouble" ASK: What kind of ... is it? FOR ALLERGY OR STROKE, ASK: How does the allergy (stroke) affect him?	COLUMN 4 IF AN ACCIDENT OR INJURY, ASK: What part of the body is affected now? How is his ... (part of body) affected?
YES	NO				

*Acne, Appendicitis, Arteriosclerosis, Arthritis, Athlete's foot, Bronchitis, Bursitis, Chickenpox, Cold, Constipation, Corns, calluses, bunions, or warts, Croup, Diabetes, Epilepst, Goiter, Hardening of the Arteries, Hay fever, Hemorrhoids or piles, Hernia (all types), High blood pressure, Hypertension, Kidney stones, Laryngitis, Migraine headache, Mumps, Phlebitis (Thrombophlebitis), Pneumonia, Prostate, Rheumatism, Rheumatic fever

CONDITIONS TABLE—Con.

COLUMN 1a Name of the condition, illness, or injury	COLUMN 1b Question no. from which the condition came	COLUMN 1c Who has the condition: R or X (proxy)	
		R	X

Sciatica
Sinus trouble (Sinusitis)
Strep (Streptococcus) throat
Tonsillitis
Ulcer (duodenal, stomach, peptic, or gastric)
Varicose veins (any mention of)
Whooping cough

11. Doctor Visits

	RESPONDENT	PROXY
a. Last week or the week before did you or -- talk to a doctor or go to a doctor's office or clinic?	☐ YES ☐ NO	☐ YES ☐ NO

b. (IF YES) Who went to the doctor (office, clinic)?

c. How many times did -- see or talk to a doctor last week?		
d. How many times did -- see or talk to a doctor the week before?		

12. In general would you say that your health is excellent, good, fair, or poor?

EXCELLENT GOOD FAIR POOR

INTERVIEWER: ASK LIST S

13. "Those are all the questions on health. Here are a few questions about how you feel about some other things. Check "True" or "False" before each statement; that is, whether it is true or false for you."

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☐	☐	4. I like to gossip at times.
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    a. Why will they feel that way?

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19. Did you finish that grade? _____

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21. Was the proxy present? ☐ yes ☐ no (IF YES) ☐ Responded for self entirely
    ☐ Responded for self partially
    ☐ Did not respond for self

22. Did the respondent consult other sources of information? ☐ yes ☐ no

23. Was anyone else present during the interview? _____

24. (IF YES) Did he (she) participate? _____

25. Time now ___:___ AM PM

26. How long was the interview? _____ minutes.

QUESTIONNAIRE USED WITH CONTROL TECHNIQUE

The University of Michigan
Survey Research Center
Project 935
Bureau of the Budget
Number 68-6523
Expires March 31, 1966

March, 1966

1. Interviewer's Name _____

2. Your Interview Number _____

3. Address _____

_____

4. Block Number _____

5. CALL RECORD

CALL NUMBER	1	2	3	4	5	6	OTHER (SPECIFY)
TIME OF DAY	am	am	am	am	am	am	
	pm	pm	pm	pm	pm	pm	
DATE							
DAY OF WEEK							
RESULTS							

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   d. Have I missed anyone who usually lives here but is now away from home?
   e. Do any of the people in this household have a home anywhere else?
2. How is -- related to -- (head of household)?
3. How old was -- on his last birthday?

NAME	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX (M or F)	AGE	INDICATE RESPONDENT BY R; PROXY BY X

IF NO ELIGIBLE RESPONDENT, COMPLETE LISTING AND ASK Q11.

"This survey covers all kinds of illnesses. These next questions refer to all of last week and all of the week before, that is, the two week period outlined in red on this calendar (HAND CALENDAR).

	RESPONDENT		PROXY	
4. Was -- sick at any time last week or the week before? (The two weeks shown on that calendar)	YES	NO	YES	NO
a. (IF YES) What was the matter?				
b. Did -- have anything else during that two week period?	YES	NO	YES	NO
c. (IF YES) What was the matter?				
5. Last week or the week before, did -- take any medicine or treatment for any condition (besides ... which you told me about)?	YES	NO	YES	NO
a. (IF YES) For what condition?				
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	YES	NO	YES	NO
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Swollen (varicose) veins in your legs				
Tumor, cyst, or growth				
Repeated attacks of sinus trouble				

8b. "Have you or your -- ever had any of these conditions?"

	R		PROXY	
	YES	NO	YES	NO
Hardening of the arteries				
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High blood pressure				
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Stroke				
Cancer				

9. Does -- have any other ailments, conditions, or problems with his health?

a. (IF YES) What is the condition?

b. When did -- first notice ...?

c. Any other problems with his health?

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RESPONDENT	PROXY
☐ YES ☐ NO	☐ YES ☐ NO
☐ YES ☐ NO	☐ YES ☐ NO

CONDITIONS TABLE

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	RESPONDENT	PROXY
a. Last week or the week before did you or -- talk to a doctor or go to a doctor's office or clinic?	☐ YES ☐ NO	☐ YES ☐ NO

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ASK FOR RESPONDENT ONLY LIST [S]

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	YES	NO
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22. Did the respondent consult other sources of information? ☐ yes ☐ no

23. Was anyone else present during the interview? _____

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25. Time now ___:___ AM PM

26. How long was the interview? _____ minutes.

U. S. GOVERNMENT PRINTING OFFICE: 1971-435-565/26

VITAL AND HEALTH STATISTICS PUBLICATION SERIES

Public Health Service Publication No. 1000

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