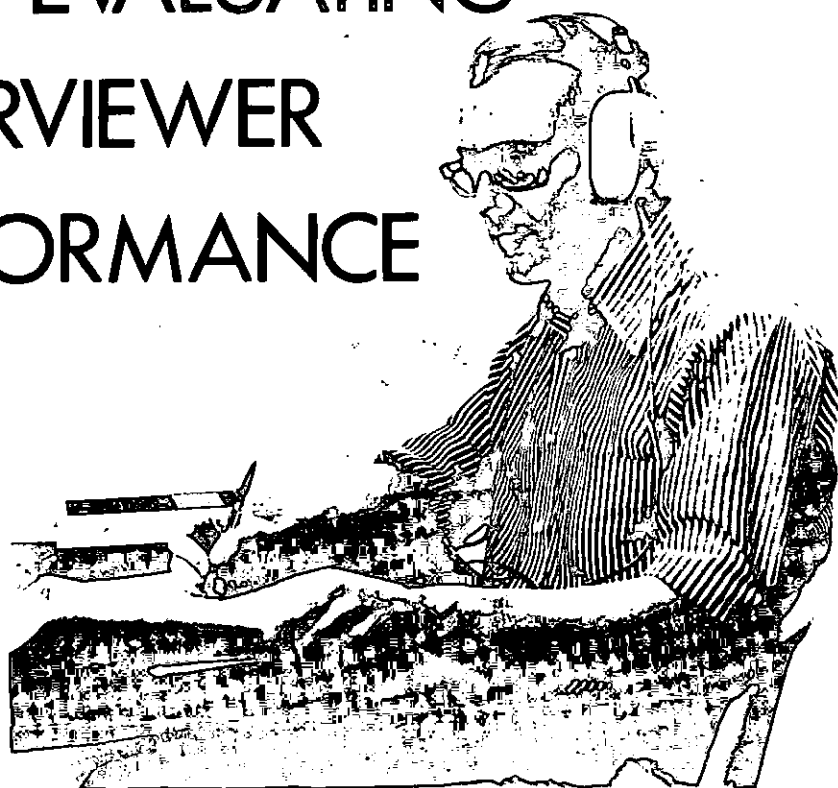


CHARLES F. CANNELL
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DORIS L. HAUSSER

A TECHNIQUE FOR EVALUATING INTERVIEWER PERFORMANCE



A Manual for Coding and Analyzing Interviewer Behavior
from Tape Recordings of Household Interviews

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PREFACE

This manual describes a new coding technique to be used in training and supervising interviewers. Section A, the first of three sections, consists of a single chapter which contains a brief description of the system, including information about its development and the rationale underlying the procedures, the purposes for which it is intended, and the ways in which it has been used.

Section B contains descriptions of the codes, their uses, and the procedures for coding tape-recorded interviews. These chapters are directed toward those who train and supervise coders and those who will use the results for training and supervising interviewers.

Section C consists of sample materials, including a basic, detailed manual (Chapter 7) for coders on coding tape-recorded interviews. This section also contains documentation for the computer program and information for interviewers on the use of tape recorders.

We will appreciate hearing about reactions to the process in practical situations. We are anxious to learn from the experiences of our users, and to make changes in procedures in accordance with their suggestions.

The development of the coding system and the preparation of this manual have been extended over a considerable time, and the finished products represent the contributions of many people. We particularly want to recognize some of the major contributors: Tracy Berckmans and John C. Scott, of the Survey Research Center Field Office suggested many useful ideas for procedures and assisted in the original field studies; Lois Moore and Jacqueline Thorsby did the observational ratings of the interviews; Peter Solenberger prepared the computer program and provided the documentation found in Chapter 11; Morris Klein did much of the statistical analysis. We also want to extend our especial appreciation to those people in the field who recorded their interviews for our use, to the coders who helped us to develop the codes, and to the SRC field supervisors who used preliminary codes to evaluate the strengths and weaknesses of the system. Our thanks also to Alice Sano who typeset the manuscript and to Marlene Ellin who did the final editing.

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**SECTION A: OVERVIEW OF CODING SYSTEM
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CHAPTER 1

INTERVIEWER SUPERVISORY TECHNIQUE

INTRODUCTION

This manual describes a new technique for evaluating interviewer performance based on the coding of recordings of interviewer behavior. The system uses codes which encompass all of the interviewer's major verbal activity and is designed for use in both training and on-the-job supervision. For each class of behavior there are codes to evaluate the quality of the interviewer's performance. For example, there are several codes which classify the interviewer's reading of a question: there is a code for questions which he asks correctly and completely; one for those which he asks with minor changes and omissions, and one for those which he either rewords substantially or does not complete.

Overall, the coding system indicates whether questions were asked correctly or incorrectly, whether probes were non-directive or directive, whether responses were summarized accurately or inaccurately, and whether various other behaviors were appropriate or inappropriate. The coded results reflect the degree to which the interviewer employs the methods in which he has been trained. That is, an "incorrect" or "inappropriate" behavior is defined as one which the interviewer has been trained to avoid.

This system is useful in three ways:

1. In initial training, it teaches the novice interviewer which interviewing techniques are acceptable and which are not.
2. It serves as a basis for interviewers and supervisors to review work in the field by coding interviews and discussing the problems which the coding reveals.
3. It provides an assessment of an interviewer's performance, which can be compared both with the performances of other interviewers and with the individual's own performances during other interviews. In order to make such comparisons, the distribution of good and poor behavior for each interviewer is compared with the distribution for all interviewers.

This technique provides objective data for evaluation. It also pinpoints specific instances of inadequate performances on the audio tapes, so that the interviewer and supervisor can listen to each mistake and discuss appropriate corrective measures.

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BACKGROUND

There is abundant evidence that personal interviews are often distorted and invalid and that the interviewer's performance may be responsible for these biases. Most persons who work closely with interviewers are aware of the need for on-the-job supervision, but they have neither the appropriate techniques nor the available time for the type of supervision which would help to insure good performance.

As a consequence, evaluations of interviewers' performances are usually based upon an office review of such factors as response rates, legibility, omissions, uncodable responses and costs, while the techniques which the interviewer used to obtain the responses are largely ignored.

None of these office reviews enables a supervisor to determine whether or not an interviewer has asked the questions correctly, has probed in acceptable ways, or has recorded the answers accurately. H. D. Willcock¹ reports an experiment in which interviewers were observed and evaluated in the field, and the errors listed were compared with those which were found by editing the questionnaires. Only 12% of the errors which were made by the interviewers could be detected through a careful inspection of the questionnaire. The most common of these "invisible errors" were: failure either to probe for additional information or to clarify answers (39%); misclassification of answers in the recording process (22%); the use of incorrect wording or biased probing which altered the scope of a question (19%); and incomplete or inaccurate recording of verbatim answers (11%).

One of our studies of tape recordings showed that 36% of the questions were not asked as written and 20% were altered sufficiently to destroy comparability. Nineteen percent of the probes were directive in nature, which increased the likelihood of biased responses.

If only office supervision is used, interviewers cannot be evaluated on the basis of those behaviors which relate to their most important activity: their use of the questionnaire and the principles of interviewing. This limitation has two undesirable consequences. First, since the interviewer's performance is evaluated only on the basis of selected aspects of his role, any reinforcement is likely to influence the particular behavior which has been reinforced but is not likely to encourage improvement in interviewing techniques generally. Secondly, skill in interviewing is acquired through continual evaluation and feedback. There is evidence which shows that the absence of such feedback results in a lowered level of performance.

¹H. D. Willcock, "Field Observation: A Progress Report." Social Survey Papers, Methodological Series, No. M53 (1952). Reprinted in M. Harris (ed.), *Selected Papers on Interviewers and Interviewing*. London: The Social Survey and J.M.S.O., 1956, pp. 125-131.

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We can describe some research findings which show that unreinforced interviewer behavior deteriorates rapidly after training. With reinforcement this deterioration does not occur. In a study of reporting of hospitalizations,² a sample of some 2,000 hospital discharge records was obtained. Twenty-seven experienced interviewers called at the home addresses and asked a family member whether anyone in the family had been hospitalized overnight or longer within the past year. The findings showed that the more interviews an interviewer conducted, the less likely it was that the person being interviewed would report the known hospitalization.

In another study of accuracy of reporting physician visits³ which occurred during the two weeks preceding the interview, a systematic sample was drawn from clinic records of patients. Each week's interviews was an independent random sample of patients who had visited the clinic during the week. Ten inexperienced interviewers were hired and trained for one week. The interviewing extended over five weeks. The percentage of people who failed to report a visit to a physician was 18% for the first week of interviewing and increased steadily (and significantly) to 29% during the fifth week of interviewing.

One other relevant study does not have validity measures. The dependent variable was the number of health conditions and behaviors which were reported. Because the procedures required interviewers to use carefully controlled interviewing techniques, it was necessary to institute special field supervisory procedures. Each interviewer was observed every week during the field work by a supervisor who was present during actual household interviews. Attention was focused on interviewing techniques and each interview was carefully reviewed with the interviewer. In contrast to the findings of other studies, physical conditions, symptoms and physician visits were reported *more* frequently in the second half of the interviewing period than they had been in the first half. Again, a reinforcement interpretation is appropriate. In this study attention was given to the interviewer's technical performance, while in previous studies all of the feedback was focused on the quality of the completed questionnaire. It seems likely that this shift in the focus of attention from the questionnaire to the interviewer's technique increased the interviewers' skills and heightened their motivation to perform adequately. Conversely, when there was no specific feedback on techniques, motivation seemed to diminish, and the number of events reported dropped correspondingly. It is not surprising that an interviewer's lack of incentive or interest in conducting

²Charles Cannell, Gordon Fisher & Thomas Bakker, *Reporting of Hospitalizations in the Health Interview Survey*, *Vital and Health Statistics*, U.S. Public Health Service, Series 2, No. 6, July 1965.

³C. F. Cannell, and F. G. Fowler, *A Study of the Reporting of Visits to Doctors in the National Health Survey*. Survey Research Center, University of Michigan 1963. Unpublished report.

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an interview results in poor performance, but the rate at which the interviewer's performance appears to drop, according to the findings of these studies, is surprising.

These data with regard to poor interviewer performance led us to consider whether there might be better methods of evaluating and correcting interviewing performance. Essentially, there are three questions which must be considered in any system which evaluates the effectiveness of an interviewer. First, does the interviewer know what constitutes an adequate performance? Second, is the interviewer sufficiently skilled to behave in the correct manner? Third, is the interviewer motivated to perform correctly and adequately? Knowledge of correct behavior is, of course, a major component of the interviewer's training. The principles and techniques which are specified during interviewer training are the "correct" behaviors, so that evaluations of a performance may differ in some respects from one staff to another, depending upon the principles of interviewing which each one teaches or stresses. The appraisal system should then focus on the major behaviors which are taught during training, identify each one, and evaluate its performance.

GOALS OF AN EVALUATION SYSTEM

There are some generally accepted principles which define the goals of an evaluation system which can be used as a frame of reference to describe the interviewer evaluation system in this manual. Briefly, these principles state that:

1. The system should foster a positive supportive relationship between the individual, his supervisor and the organization.
2. The system should be based upon objective and rapid feedback of actual (not role-played) performance.
3. The system should help the individual to perceive his own deficiencies.
4. The system should focus on the behaviors which are most central to and most important for good performance.
5. The system should not be too costly to operate and maintain.
6. The appraisal procedures should not interfere with the interviewer's performance of his interviewing tasks.

The procedure which is usually used, if in fact any system is used for evaluating actual interviewing performance, is some form of field observation in which a supervisor accompanies an interviewer into the household and observes the interview. This procedure is distasteful to the interviewer and disrupting to the interview. Furthermore, since the supervisor must take notes on his observations it is usual to focus on examples of bad performance rather than a more balanced evaluation. The results, thus, tend to appear quite negative with resulting poor morale. It is also an expensive process for a supervisor to spend his time accompanying interviewers as they call on sample houses. The

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supervisor's efficiency is low and he may spend an entire day and observe only one or two interviews. Finally, there is a problem of reliability of the supervisory observations; especially, there is frequently a lack of agreement between the interviewer and supervisor as to what actually occurred. For these and other reasons, observation of interviewers is frequently not done and if carried out is generally disagreeable for both interviewers and supervisors and disruptive of the interview.

INTERVIEWER REACTIONS TO THE SYSTEM

In an attempt to avoid these problems and to provide a better procedure for evaluating interviewer performance, we developed a technique based on tape recordings of interviews made in respondents' homes. These recordings are coded, with a code which identifies each interviewer behavior as acceptable or unacceptable. This procedure helps to overcome most problems of the observational procedures.

To investigate the effects of this coding, 60 regular sample interviews were recorded and subjected to two procedures:

1. The interviews were evaluated by field supervisors as they would have done in an observational interview in the household.
2. The same interviews were coded using the interviewer behavior code.

This comparison between supervisors' observations of interviewers and coded information on behavior for the same interviews showed great difference, as might be expected, in the quantity of behavior reported. The on-the-spot observations listed an average of 10.4 behaviors per interview, while the codes of the recorded data showed 291.9 behaviors. Another revealing statistic is that of the behaviors recorded in the observations: 13.5% were rated as "good" performances, and 86.5% were rated as "inadequate" performances. The recordings rate 75.5% as "good" performances and 23.5% as "inadequate" performances. It is characteristic of observational evaluative methods to focus on the negative aspects of a performance.

A questionnaire was sent to 112 interviewers on the Survey Research Center staff who had both been observed and had tape recorded actual interviews in order to see how they reacted to each method.

Would you prefer to record interviews or be observed?

Prefer tape recording	40%
No particular preference	29
Prefer observation	26
Don't know	<u>5</u>
	100%

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The questionnaire responses showed that interviewers perceive both observational interviews and recordings as to some extent distracting to both the respondent and the interviewer. Surprisingly, they considered a recording somewhat more distracting to the interviewer than an observer though they considered it the preferable method. The tape recording has several advantages over an observer. Generally, the tape recorder is relatively unobtrusive, since it is small, immobile and silent when it is in operation. Most respondents appear to forget that it is present soon after the interview begins. The most important advantage, however, is that a recording constitutes an exact and complete record of the interview. It can be used to focus attention on specific interviewing techniques and on the detailed interaction between interviewer and respondent. It can be studied and discussed with the interviewer and can be used to illustrate points by reproducing the actual behavior rather than depending upon the observer's memory and thus minimizes disagreements between interviewer and supervisor.

Another of its significant advantages is its salutary effects on the interviewer's morale. As previous data suggest, since an observer can record only a small fraction of the interviewer behavior, he tends to focus on those aspects which need correction. The evaluation feedback session is then essentially negative, focusing on errors and faults. With the recording and coding technique, a better balance is achieved. Unless the interviewer is an absolute failure, "good" behaviors are coded far in excess of the "bad" ones. Feedback can then be more balanced with comments on both positive and negative aspects of the performance so that the interviewer will be less defensive and will have a more positive reaction overall to the evaluation process.

The coding of the interview provides objective measures of the interviewer's performance. The reliability of the coding is high with adequate training. The scores can be used to compare interviewers with each other, to chart the progress of an individual interviewer over time, to evaluate the training program, and to supply indicators for the program's weaknesses.

Usually, the tape recording procedure is cheaper than is the observation method. Once the tape recorders have been purchased, the recordings themselves are inexpensive, since tapes can be reused many times. The biggest cost saving, however, is in terms of supervisors' time. In order to observe household interviews on probability samples, the supervisor must spend a considerable amount of time following the interviewer as he makes fruitless calls at homes whose occupants are absent.

The taping system does have some obvious weaknesses. As in any other evaluative situation the person being recorded is frequently somewhat tense and uneasy about the process, so that the performance may not be as good as it would have been under normal circumstances. Conversely, since the interviewer recognizes the reason for the recording, he will try to exhibit

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his best performance, which may not be typical of his usual behavior. However, if an interviewer records five or six interviews and the first two are not coded, the initial awkwardness with the recording technique may dissipate and the results may be more representative.

Another weakness of the technique is that the original contact at the respondent's door is not recorded. This is not a technical, but an ethical issue. It is unethical (and perhaps illegal) to record interviews without the subjects' knowledge and permission, and since that is obtained only after an introduction has been made, the initial contact is lost. This omission is unfortunate, since recordings of the initial contact could be useful in improving response rates by helping interviewers to improve their introductory behavior.

Adequate and rapid feedback is necessary for an effective supervisory technique. The feedback from the tape coding method is often not as immediate as with an observer. Several days or weeks may intervene between the recording session and the discussion concerning it. The effect of this delay is partially alleviated by playing back the tape during the review session to recapitulate the original experience.

Another deficiency of the tape is that it cannot record non-verbal behavior. The significance of this omission is difficult to assess. At times non-verbal cues are significant to the interpretation of verbal behavior. It is our subjective impression, however, that even without these cues, the coding procedures are still quite valid.

USE OF BEHAVIOR CODING IN INTERVIEWER TRAINING

Most interviewer training programs emphasize practice in interviewing rather than listening to lectures about techniques as a means of becoming a competent interviewer. Training usually includes frequent role-playing by the trainees as well as actual household interviewing once the trainee has enough experience and confidence in his ability to conduct an interview.

Practice is effective only if the trainee is aware of and can identify and correct unacceptable behavior. For this reason, a training program usually teaches the trainee to differentiate between good and bad techniques and teaches him the most effective ways in which he can use good techniques. The trainee needs much practice in order to become proficient both in interviewing and in evaluating his own performance. The audio tape and coding system technique is designed to help the novice in these learning processes.

The behavior code identifies and classifies each behavior according to its conformance to, or divergence from, a behavioral principle. All of the major principles of interviewing are operationalized in this way.

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The coding system is constructed so that it:

1. Includes all concepts and principles which are considered to be important targets in training.
2. Identifies various forms of verbal behavior which are representative of each of these principles.
3. Classifies each behavior as either satisfactory or unsatisfactory according to the principles.

Training in the use of the codes is of major assistance in familiarizing the trainee with the principles of interviewing, in helping him to differentiate adequate from inadequate behavior, and in providing him continuous evaluations of his own performance. Self-coding provides the trainee with regular and frequent reinforcement.

The tape recorder should be introduced very early in the training sessions, so that its strangeness and the potential threat of the recording procedure will have dissipated by the time actual field interviewing begins. There are several ways in which recordings are useful in training. When the interviewer first starts to practice interviewing (usually within the training group) he can make use of the codes as he listens to his own interviews. Role-playing interviews are usually conducted in groups of three with one person acting as the observer or evaluator. The observer can use the codes as a basis for his feedback to the interviewer. As training progresses, the trainer or supervisor can code selected interviews both to assist in training the interviewer and to obtain a basis for determining the point at which the interviewer has achieved an acceptable level of performance for production interviewing.

USE OF CODES BY SUPERVISORS

Supervisors can use the codes to reinforce the training of both new and experienced interviewers and to identify and correct weaknesses in their performance. Supervisors have found that by listening to tapes together with the interviewer, coding and discussing as they proceed, they can increase the interviewer's involvement in the process and provide immediate feedback for each performance.

The supervisor can also code parts of several interviews conducted by each person in order to ascertain whether their errors are consistent over a number of respondents or whether they are the idiosyncrasies of a particular respondent or interview situation.

OFFICE CODING AND SUPERVISION

For a larger interviewing staff which requires supervision over a long period of time it is more efficient and less expensive to employ trained coders to code the tapes than for the supervisors to do their own coding. A computer program is available for handling the variable length records of behaviors; it converts them into a format in which the OSIRIS system (available from

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the Institute for Social Research) or other statistical programs can be used. The output can then be sent to the supervisor.

EVALUATING THE ACCURACY OF THE INTERVIEW CONTENT

These tape recordings can be used to determine the degree of accuracy with which the interviewer recorded the respondents' replies. This can be done by applying the same content code to the written interview report and then to the tape recording. The discrepancies indicate the number and types of errors which the interviewer made when he was writing up the interview.

FLEXIBILITY OF THE CODES

The codes which are presented in this manual are consistent with a particular set of interviewing principles and techniques. These techniques are widely applicable not only to survey research interviewing, but also to other types of interviews. The code categories can be changed, expanded, depleted, and adapted to fit particular needs. It is essential, however, that the behavior which is to be coded be clearly and uniquely described, so that coding decisions can be made with high reliability.

If the codes are to be used for non-survey interviews, they will require considerable alteration. Survey research uses fixed questions, and the codes which relate to behavior in question asking are designed with this in mind. New evaluative categories would be required for interviews in which the interviewer also frames the questions. The principles, however, are generally consistent for all types of interviewing because all interviewers attempt to obtain unbiased responses. The interviewer behaviors shown here then, are applicable to a wide range of interview types and this system should be useful in training and evaluating interviewers in fields such as medicine, law, journalism, and social work.

The remainder of the manual describes the procedures and uses of this system in training and supervising interviewers. It describes the codes, the coding process and uses of the coded data in the detail necessary for someone planning to use this technique.

SECTION B: DESCRIPTION OF THE CODE, THE CODING PROCEDURE, AND ITS USE IN TRAINING AND SUPERVISING INTERVIEWERS

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CHAPTER 2

THE INTERVIEWER BEHAVIOR CODE¹

Before the procedure for using the behavior code can be described (Chapter 4), some explanation of the code itself is necessary. The coding system is organized around the following interviewer activities: (a) asking the question, (b) probing for adequate responses, (c) providing clarification about the question, (d) general activities, such as giving the respondent feedback, (e) non-recorded activities, such as omitting a question because of a skip pattern on the questionnaire, and (f) mentioning the study background. The system also considers the pace at which the interview is conducted and the interviewer's voice inflection. The codes are grouped into numerical clusters according to these types of behaviors. The chart below shows this system of organization.

Organization of Code

10's - Correct Question

Question read correctly or with slight change which does not alter frame of reference.

20's - Incorrect Question

Question read incorrectly, and frame of reference distorted, or question read that should have been skipped.

30's - Appropriate Probes

Non-directive probes and clarifications which effect no limitation or change in either frame of reference or potential response.

40's - Inappropriate Probes

Directive probes and clarifications which either limit or change the frame of reference of the question or response.

50's - Other Appropriate Behavior

Helping behaviors such as feedback which do not jeopardize validity by influencing the respondent.

60's - Other Inappropriate Behavior

Behaviors which may jeopardize validity by influencing the respondent, such as giving opinions or interrupting.

¹ Supervisors or trainers should study all of Section B, while the persons they then train in the use of the code might need only Chapter 7, the Coder Manual.

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70's - Non-Recorded Behavior

Non-verbal behavior, such as question skipped or no sound on tape

80's - Pace and Voice Inflection

Speed of interviewer pace and voice inflection.

90's - Study Background

Information concerning background and intent of study.

The following chart is a brief introduction to each of the individual codes within this framework. (For a more complete discussion of these codes, the reader should refer to Chapter 7, a manual designed for use during coding, which contains more elaborate descriptions and examples of the behaviors in each category, along with rules for making choices among similar codes.)

Category	Code	Used When the Interviewer . . .
1 - Asks question as printed	11	reads question exactly as printed on the questionnaire
	12	reads question making minor modifications of the printed version, but does not alter frame of reference
2 - Asks question incorrectly	21	reads main stem of question as printed, but modifies or incorrectly reads any response categories in the question (does not apply therefore to open questions, since they do not have response categories)
	22	either significantly alters main body or stem of question while reading it, or reads only part of it
	23	does not read question, but instead makes a statement about the response he anticipates
	27	asks a question which should have been skipped
3 - Probes or clarifies non-directively	31	makes up in own words a probe (query) which is non-directive
	32	repeats printed question or part of it correctly
	34	repeats respondent's response, or part of it, correctly
	35	confirms a frame of reference for respondent correctly and in a non-directive manner
4 - Probes or clarifies directly	41	makes up a probe which is directive, limiting or changing the frame of reference of either the question or the potential response
	42	either repeats question and/or response choices incorrectly or gives incorrect summary of respondent's response
	43	gives an introduction which is directive
	45	either interprets question by rewording it or confirms a frame of reference incorrectly

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Category	Code	Used When the Interviewer . . .
5 - Other appropriate behavior	51	helps respondent to understand his role, for example by task-oriented clarification
	58	exhibits other acceptable behavior, such as volunteering general feedback
6 - Other inappropriate behavior	62	interrupts respondent
	63	gives personal opinion or evaluation
	67	records response incorrectly or incompletely on questionnaire
	68	exhibits other unacceptable behavior
7 - Non-recorded	71	omits question correctly (due to skip pattern)
	72	omits question incorrectly
	73	writes in inferred or previously obtained answer
	75	fails to probe after inadequate answer
	78	missing data, no sound on tape
8 - Pace and voice inflection	81	reads question more slowly than 2 words/sec.
	82	reads question at 2 words/sec.
	83	reads question more quickly than 2 words/sec
	84	conducts entire interview too slowly
	85	conducts entire interview at right pace
	86	conducts entire interview too quickly than 2 words/sec.
	87	reads questions in a wooden, expressionless manner
	88	reads questions with a rising inflection at the end
	89	reads questions with voice dropped, so that they sound like a statement
9 - Background of study	91	mentions own name
	92	mentions sponsorship
	93	mentions anonymity
	94	mentions respondent selection procedures
	95	mentions purpose of study

If it is desired, the code scheme may be reduced to a single digit. That is, instead of codes 11 and 12, the code 1 could be used for both of these behaviors, the code 2 could be used for all behaviors in the 20's and so on. This method facilitates more rapid coding, but it reduces the amount of information which is obtained for analysis, and the evaluative information

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becomes more limited. The table below outlines this alternative version of the code.

Reduced Code

Code	Definition
1 - Correct Question Asking	Interviewer reads question either exactly as printed on the questionnaire or with minor modifications which do not alter the frame of reference
2 - Incorrect Question Asking	Interviewer either significantly alters part of question, or omits part of question, or replaces question with own statement, or reads question which should have been skipped
3 - Probes or Clarifies Non-directively	Interviewer either makes up in own words a probe which is non-directive, repeats all or part of either question or respondent's answer in a non-directive manner, or confirms a frame of reference for respondent correctly
4 - Probes or Clarifies Directively	Interviewer either makes up probe which is directive, repeats question or respondent's answer incorrectly, gives a directive introduction, or confirms a frame of reference incorrectly
5 - Other Appropriate Behavior	Interviewer gives either acceptable task-oriented clarification or other appropriate feedback
6 - Other Inappropriate Behavior	Interviewer either interrupts respondent, or gives personal opinion, or records responses incorrectly on questionnaire
7 - Non-recorded Activity	Interviewer either omits a question, or there is missing data
8 - Pace	Interviewer conducts interview either too slowly or too rapidly
9 - Background of Study	Interviewer mentions own name, study sponsorship, respondent selection, anonymity, purpose of study

(Expanded definitions of these categories are found in the Coder's Manual, Chapter 7)

In addition to the behaviors which are included in the code scheme, there are a few interviewer behaviors which are left uncoded. For instance, comments which relate to interviewing equipment, such as, "here's a blue card" are not coded, because interviewers who use gestures would be disadvantaged. Also, if an introduction to a question or section is optional, it is not coded unless the introduction is inappropriate. Brief acceptable feedback such as "Uh-huh" is not coded. However, if the brief feedback is in the form of complete words or phrases such as "I see," "Thank you," "Fine," it is coded. Finally, conversations which occur between the interviewer and some third person in the room who is not a respondent are not coded.

The trainer or supervisor should review the questionnaire which is being coded in order to determine whether there are any questions which require exceptional treatment. In particular, the following steps must be performed.

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1. Check all questions for parenthetical remarks. Indicate for the coder whether or not the interviewer is required to read them, and whether or not the interviewer is allowed to make any substitutions in the wording.
2. In each question, circle any words that may be left out of an "exact" reading ("exact" means that the coder may code the reading, code 11).
3. Underline or note any words which may be either added or omitted for a code 12 (question slightly modified) on each question.
4. Place parentheses around any part of a question which the interviewer is not required to read.

If the supervisor follows these steps, the coders can then be consistent when they evaluate the degree of correctness with which interviewers read the question.

CODING DISCRETION

Coding is used to classify appropriate and inappropriate behaviors. The odd-numbered categories represent those behaviors which are considered appropriate in accordance with the principles of general interviewing theory, while even-numbered categories represent inappropriate behaviors. The standards that were employed in designing the code and which are clearly reflected in the definitions of the code categories, were derived from existing principles of interviewing which have been generally accepted and stressed in training.

It is possible to develop some generalized standards for acceptability and correctness which differ from those which are implicit in this coding system. Because the code distinguishes between acceptable and unacceptable versions of the same behavior, anyone who uses the code may either re-define categories or change particular examples if they wish. There are some instances in which the questionnaire in use may make this desirable. If a questionnaire is written so that it requires many very specific answers, the researchers may consider it appropriate to probe in a more directive manner than is customary in order to obtain the required information. For such a questionnaire, the coder could be instructed to be more generous in his use of non-directive categories in the 30's.

Generally, the codes in the 50's and 60's are most open to interpretation. For instance, if in a particular study the interviewers were instructed to maintain a professional demeanor, then coders could be instructed to be very restrictive in their use of 50's codes when the interviewer behaved in a casual manner. This type of change in the coding interpretation would usually be anticipated in the case of special studies for which the interviewer has been instructed to behave in a manner which differs from the behavior he has been taught in traditional training sessions.

A final factor which determines the assignment of codes to behaviors is the general level or degree of stringency which will be applied to the criteria

THE INTERVIEWER BEHAVIOR CODE

for all codes. For instance, at one degree of rigor, the code category (12), for cases in which the question is asked with a slight change which does not alter the frame of reference, may be defined very narrowly, so that if the question as asked deviates *at all* from the printed question, a code from the 20 series (question asked incorrectly) will be assigned. The resulting data would then reflect a perfection/something-other-than-perfection dichotomy, rather than a continuum from perfection through minor changes to major changes. Likewise, the definition of "appropriate" behavior may be more or less rigorous for all of the individual codes. Because the degree of severity with which the coder approaches his task does affect the outcome of the coding procedure, it is essential that this variable be given considerable attention. Each time the code is used, whether it be for a one-time examination of a group of interviewers in order to determine trouble spots in the pre-test of a questionnaire, or whether it be for a long-term interviewer evaluation program, users of the coded data must agree on the level of stringency that is desired.

For example, a researcher conducting a survey which uses a series of questions being repeated from earlier studies may want some data to indicate the reliability of that replication. To obtain these data, he could define 'question asked correctly' to mean 'no deviation from the question as printed' (or any other definition, as long as it is comparable and reliable). This degree of stringency could be restricted only to those questions which are being replicated; it need not cover the entire survey. Likewise, it may be desired for a variety of reasons to allow a very broad range of alteration for particular questions. The Coder Manual in Chapter 7 employs a high level of stringency, and reflects the professional manner one expects of interviewers.

In summary, special standards of judgment and any exceptional cases must be identified so that the more general coding can be adapted to them in order to increase coder objectivity and the reliability of the data. It is our impression that more stringent definitions provide greater clarity in the coding task and increase the reliability of the data. In addition, it appears that the more thorough definitions (regardless of the level of stringency) facilitate greater reliability among coders.

CHAPTER 3

MAKING THE TAPE RECORDINGS

The first step in the behavior coding process is obtaining the tape-recorded interviews. In a typical situation, the interviewer carries a small cassette tape recorder to the interview. Ideally the machine is equipped with a self-contained microphone and can operate on batteries; these features help to minimize the time and effort required to set up the machine for recording and eliminate the possibility of misplacing accessories.

The interviewer makes his usual doorstep introduction, identifying himself and explaining the purpose of the interview. Only after the respondent has agreed to be interviewed does the interviewer introduce the tape recorder. He explains that it is standard procedure to tape record interviews and that if there are no objections, he would like to record this one. If necessary, he may add a comment about wanting to insure that the respondent's answers and opinions are recorded accurately. The respondent has the right either to refuse to tape the interview or to ask that the taping be stopped at any point during the interview. However, of several hundred respondents whom we have interviewed, only a few said they preferred not to have the interview recorded.

Some interviewers are concerned that the presence of the tape recorder may exert a negative influence upon respondents. Some respondents, they feel, withhold information when the tape recorder is present, and occasionally report additional information after the interview because they do not want it to be recorded. A study by Belson¹ showed no significant differences between interviews which were recorded and those which were not, although there were some indications of differences according to the socio-economic status of the respondent. Also, factors such as the degree of difficulty of the recall task required for responding and the degree of personal information which the questions demand may have an effect on the accuracy of responses made during tape-recorded interviews. More systematic research needs to be conducted in order to determine the extent of any effect which the presence of the tape recorder may have on the accuracy and quality of responses.

¹Belson, William A. Tape Recordings—Its Effect on Accuracy of Response in Survey Interviews. *Journal of Marketing Research*, Vol. 4, Issue 3, August 1967.

MAKING THE TAPE RECORDINGS

It appears that the interviewer can help to eliminate any hesitancy on the part of the respondent. It is essential that the interviewer have a working knowledge of the recorder and its maintenance requirements. (See Chapter 10 for sample instructions.) Instructions for operating a particular machine are supplied by the manufacturer upon purchase. The interviewer should use a tape recorder throughout his initial training, so that it becomes as much a part of his interviewing technique as does the interview schedule. If the interviewer is comfortable with the machine, has no difficulty in setting it up, and generally behaves as though taping were a standard interviewing procedure, the respondent accepts this, shows little reluctance, and soon forgets that the tape recorder is there. At the end of the interview, when the interviewer stops the recording process, respondents are often interested in hearing their own voices, and interviewers frequently play back part of the recording for the respondent's amusement.

The tape recording is then sent either to a central office or to a supervisor to be coded. When the tape recording is received at a central point, it is logged in and given an identification number. A record is made of this number, the interviewer, the particular study for which this interview was conducted, the interviewer's interview number, and the identification number of the questionnaire which corresponds to that interview. After this, the tape can be coded by a central staff, and the results can be returned to the supervisor for evaluation.

A FEW COMMENTS ON CASSETTE TAPES, TAPE RECORDERS AND PLAY-BACK MACHINES

We will not attempt to provide a complete technical evaluation of available equipment, but we did discover early that poor tapes and poor equipment are a great nuisance, as well as a waste of time and money. The following describes our experiences with selected equipment.

Cassette Recorders

We tried several models and types of cassette recorders. We found the most satisfactory to be the Sony TC-110; it is light, and its carrying case with shoulder strap makes it easy to transport. The Sony had fewer breakdowns and malfunctions than did any other model. The prices of recorders varied at the time of our comparisons; the TC-110 was the model we chose as best suited to our needs and budget. Sony model numbers change each time a very minor change is made. Since the quality of the TC-110 appeared to be commensurate with that of the more expensive models, it would be wise to ask for the current model which most resembles the TC-110.

MAKING THE TAPE RECORDINGS

The important features of the TC-110 for recording interviews in the home are:

1. It can operate on regular household current or batteries. Also, special rechargeable battery packs are available and are most satisfactory. Recordings in the home are made on battery power, in order to avoid the fuss of locating an electric outlet in the respondent's home. Battery packs can be charged each night by plugging the machine into household current.
2. Automatic volume control is particularly important since it permits recordings of either loud or soft voices with no need for adjustment by the interviewer.
3. The machine has a built-in microphone. However, we prefer the remote, non-directional mike which is included with the machine. The built-in mike seems to pick up noise from the machine itself, and the separate mike is more discreet because it can be placed conveniently between the interviewer and respondent with the recorder itself out of the range of vision.

Cassette Tapes

Early experience showed that some tapes were more likely than others to break, tangle, or stretch. There are three brands of tapes, however, which were not prone to these problems: TDK, Maxell, and BASF. Each of these brands has several types of cassette. The "low-noise" type is best for interviewing. With these cassettes, 60 or 90 minute lengths were quite satisfactory, but the 120 minute tapes tended to break or jam and were not satisfactory.

Play-Back Equipment

In order to code from tapes, there must be some method of stopping and reversing the tape. A foot-pedal attachment which leaves the hands free is found only on dictating-type machines, which are considerably more expensive than the recorders described above. The Norelco play-back performed well mechanically and also had excellent sound quality and discrimination ability. These are particularly important considerations when the coding is extensive since they reduce coder fatigue.

The more expensive Sony tape recorders have a replay key which can be depressed without being locked into position, so that the tape can be played slowly. These machines are quite satisfactory for coding, but they are not as convenient as the foot-pedal model.

Since, in our set-up, more than one coder is working at a time, we use earphones. Those which have soft padded or air-filled ear cushions are light and comfortable. They also screen out extraneous environmental sounds, so that the recording is more audible.

MAKING THE TAPE RECORDINGS

Erasing Tapes

Although the cassette recorder has an "erase" head which erases previous sounds just prior to recording so that manual pre-erasing is supposed to be unnecessary, at times the original recording can be heard faintly in the background. This makes an interview which is not recorded under ideal conditions difficult to code at times. A small, inexpensive bulk tape eraser provides a much cleaner tape for re-use.

CHAPTER 4

THE CODING PROCESS

CODER TRAINING¹

Coder trainees should first study the section of the manual (Chapter 7) which defines the behavior code categories. That chapter contains detailed explanations of the rules governing the code categories and examples of their assignment. It should be used throughout training and retained by each coder for later reference.

After the trainees have studied the manual, more intensive training should be conducted in a group setting, with discussions led by a trainer. The group training should progress through several phases: each phase should focus upon a cluster of related codes and begin with a group discussion of those codes. After this discussion, the group should listen to a taped interview while following along in a questionnaire, and each trainee should record code assignments as he listens, choosing from the codes which the group has just discussed. These code assignments should then be discussed by the group, and any discrepancies in the assignments should be examined.

DEMONSTRATION TAPE

A demonstration tape should be made which covers each phase of the training scheme, providing examples of the behaviors under discussion. The phases should progress from frequent to infrequent codes; frequent codes which are more easily defined and understood should be explained and demonstrated before the less frequent and less comprehensible codes are demonstrated. The code subsets should be introduced in approximately this order: '10's, 30's, 20's, 40's, 50's, 60's, 90's, 70's, with the pace codes (80's) introduced at the very end.

Two persons and a tape recorder are needed to make the demonstration tape. One person should play the role of interviewer and the other the role of respondent. They should record a simulated interview, using the questionnaire which is being used in training. The behavior in the recording should follow

¹This section assumes the availability of a trainer who has read this entire manual, and mastered the code.

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the sequence described in the previous paragraph. For the first three or four questions, the interviewer should read the questions either perfectly or with only minor modifications (calling for codes in the 10's), while the respondent gives complete responses. Then for the next few questions, the respondent should give less than complete answers, so that the interviewer must probe, using behaviors described in the 30's. The demonstration interview should proceed in this manner until all of the behaviors included in the code have been encompassed. This type of phased introduction to the code gives the coders an early successful experience in assigning the easier, more frequent codes before they attempt the more difficult code assignments.

For the next phase of the group training session, the trainer should play one or two questions at a time from a tape of an actual production interview for which the trainees have questionnaires. This represents a more natural behavior sequence. The trainees should assign code categories to each section of the interview they hear, and disagreements should again be resolved through group discussion.

INDEPENDENT CODING

Next, all trainees should independently code pre-selected tapes. Several tapes may be used, but each one should be coded independently by at least two trainees. The tapes which are used for this purpose should have good sound reproduction, and should be smooth interviews conducted by well-trained interviewers with a co-operative respondent. Again, these qualities will facilitate a trainee's success in his first attempt at independent coding.

After the trainee has coded two tapes, each set of codes should be compared in its entirety with those of another trainee who coded the same interview. Disagreements can be resolved by playing the tape again. The trainer settles disagreements which are not clearly or accurately resolved by the trainees. The trainer should keep a record of each trainee's "percent agreement," that is, the proportion of the cases in which the trainee had initially assigned the correct code. (This proportion is obtained by dividing the number of correct codes by the total number of codes used in the interview. The trainer has the final authority in determining the correct code when there is a disagreement.)

If a trainee has obtained 80% agreement or better with the final resolution code on the first two tapes which he codes independently, he is ready to begin production coding. Trainees who do not reach this rate of agreement should continue to code tapes and compare codes until they reach 80% agreement on two successive tapes.

In our experience, the time required to train coders initially averages around 15 hours. A complete novice may take as many as 20 hours to train, but coders who are experienced in either content coding or other forms of behavior coding also often require additional time because they have some

THE CODING PROCESS

difficulty "unlearning" old procedures. After an initial "warm-up" period, however, there are no significant differences in the amounts of time which previously experienced coders and previously inexperienced coders require to code tapes.

STUDY-SPECIFIC BRIEFING

Before production coding for any study can begin, coders must be briefed on any particular exceptions to the coding rules in use, and also on whatever general rules regarding acceptability may be in force for that study. If a prescribed schedule of questions was used in the interview (a questionnaire), each coder should be given his own copy on which he may make notes about specific coding exceptions, acceptable rewordings, etc. (as described in Chapter 2). This questionnaire should then be used as a reference in assigning the codes.

PLAYBACK EQUIPMENT

Each coder should use a playback machine with a comfortable set of earphones. The machine does not need to have a recording capability, but it should be designed to facilitate easy, trouble-free playing, rewinding, and stopping, since coding sometimes requires repeated play-replay-stop action.

CODING SHEETS

Each coder should have pre-numbered coding sheets on which the code entries can be made. The coding sheet should be numbered to correspond to the printed questions on the interview schedule and should use numeric notations only to facilitate computer processing. Table 4-1 is an example of part of a code sheet. See Chapter 8 for a completed code sheet.

Table 4-1
Sample Code Sheet

Study No. _____ Interviewer No. _____ Interview No. _____

Quest. No.	Behavior Codes							
1.0								
1.1								
1.2								
2.0								
2.1								
2.2								
2.3								

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Each horizontal line on the code sheet corresponds to one printed question. The vertical lines represent some *respondent* behavior (which is not coded, of course) as it occurs between interviewer behaviors. If several interviewer behaviors occur without any respondent behavior interspersed, all of the interviewer behavior codes should be entered in the same space (or box) on the sheet. These lines can be used to ascertain at a glance whether a particular behavior occurred at the interviewer's initiative or in response to some behavior by the respondent.

Example

Printed Question	Actual Interview				
2.4 Does not having a car cause any difficulties?	I: Does not having a car cause any difficulties? (Code 11)	R: You mean because we don't have one?	I: Yes (Code 35); does not having a car cause difficulties? (Code 32)	R: No, not really	
	2.4	11	35, 32		

2.4 Does not having a car cause any difficulties?	I: Does not having a car cause any difficulties? (Code 11)	R: You mean because we don't have one?	I: Yes (Code 35)	R: Well, we save money . . .	I: Does not having a car cause any difficulties? (Code 32)	R: No, we take the bus	
	2.4	11	35	32			

If more interviewer/respondent interactions occur in relation to a single question than there are spaces provided, the spaces may be subdivided with vertical lines.

Example:

2.8	11	35	32, 51	31 / 31	31 / 31
-----	----	----	--------	---------	---------

Likewise, if an interviewer engages in more behaviors than will fit in one space, without any intervening respondent behavior, a vertical line can be cancelled by lining it out.

Example:

2.9	33,	11	62, 34,	32, 51	58
-----	-----	----	---------	--------	----

THE CODING PROCESS

CHECK CODING

Once production coding begins, check coding should be performed in order to establish and maintain a high level of coding reliability. For each interview which is coded, a second coder should independently code 20% of that interview. When a standardized interview schedule is used, the portions of the tape which cover every fifth page of the questionnaire should be check coded; the starting page should be chosen randomly. Since interviewer and respondent styles both vary greatly, it is advisable to check code in this manner, rather than simply to check every fifth interview.

When both sets of codes are available for an interview, a supervisor should tally the two sets and compute a reliability figure. Disagreements concerning the codes assigned should be resolved by the supervisor, who should listen to those precise portions of the interview which caused the discrepancies. If there are systematic patterns of disagreement, the supervisor should discuss the errors with whichever coder has been making them. The individual feedback to each coder which this check coding system generates should help to maintain acceptable levels of performance and prevent either any "coding drift" or the occurrence of unintentional changes in the decision rules. The time required for production coding and check coding should average about 2.5 hours for a 45 minute interview. In addition, code sheets must be keypunched and verified. This involves considerable additional time, but we hope to develop a more efficient system similar to the Optical Character Recognition System.

CODING RELIABILITY

Reliability scores should be computed on a code-by-code basis for each interview by calculating the percentage of agreement, as described earlier. In this way, the percentage of agreement between coders on each individual code, as well as on the total code, can be obtained for each interview.

Using these methods of coder training, check coding, and reliability scoring, the overall reliability scores which have been obtained range from 80% to 92%. These figures compare favorably with other reports of reliability in coding complex behavior.

Disagreements often focus not upon which of two codes should be used for a behavior, but rather upon whether or not a particular behavior should be coded at all. The coding scheme does not uniquely identify a "unit of behavior." Unfortunately, the accommodations which have been made for this uncertainty in other coding procedures, such as coding the activity which is predominant in a prescribed time period, are unsuitable for this system because it is most desirable to try to code *all* of the behaviors which occur, sometimes almost simultaneously, during an interview. The absence of a defined behavior unit, then, will be a common cause of coding disagreements.

THE CODING PROCESS

COMPUTER PROCESSING

After production coding and check coding are completed, the identifying information and behavior codes from the coding sheets should be prepared for computer input. For each interview, there should be an identification card and one card for each question in the interview (including all skipped questions), which contains the codes for all of the behaviors which occurred in relationship to that question. These data should then be transferred to computer tapes. Presently, these tapes can be processed using a program which is available for use on an IBM 360/40. Chapter 11 contains the set-up and other specifications for this program. Since a wide range of possible uses of any data from the coding system was anticipated, the computer program incorporates a great deal of flexibility in output formats. The appropriate format is determined by the character of the intended use of the data.

When the behavior data are ready to be reported to the interviewer, the computer output and the tape recordings on which the data are based should be returned to the interviewer or his supervisor. The determination as to which individual should review which data should be governed by the specific form and purpose of the feedback in any individual situation. Some possibilities for the disposition of the data are described in the section on feedback.

If only a few interviews have been coded, computer processing is not necessary. The individual codes can be tallied by hand and converted to percentages of total behavior. This is a useful method when a supervisor is coding only one or two interviews to review an interviewer's current performance.

CHAPTER 5

INTERVIEWER TRAINING AND SUPERVISION

Interviewers are introduced to the behavior code early in their training so that they can use the code for evaluating their own performance. Prior to their first role-played (practice) interviews, instructions on the use of the code are given. Following that, the role-played interviews are recorded and the participants (the observer, the interviewer and the respondent) all code the interview. Any coding differences are discussed with the trainer. This process helps the participants to understand the codes. In later role-played interviews, the trainer codes the interviews and uses the codes as a basis for discussions of interviewing techniques, focusing on errors which occur at this stage of training. This method serves three purposes: first, it enables the interviewers to identify and classify each behavior; second, it enables them to differentiate good from bad techniques; and third, it supplies the interviewers with immediate feedback.

An assistant trainer (or a coding clerk) can do the actual coding so that the trainer will be free for other training activities. At the end of training, however, the interviewer should understand the code and have experience in using it, so that he can code his own interviews during actual field work.

INTERVIEWER CODING

As they begin their field work, interviewers should be encouraged to listen to and code portions of their first interviews. Many early problems are caused neither by ignorance of acceptable techniques nor by an inability to recognize good techniques, but rather by a lack of skill and experience in using proper techniques during the stress of the interview. In many cases, the interviewer can simply hear his own mistakes on tape and then avoid making the same errors in future interviews.

DIAGNOSING INTERVIEWING PROBLEMS

The computer output of the behavior data, or a hand-calculated version, constitutes the basic information which should be used to identify both general and specific interviewing problems, and is therefore the basic information which should be available for feedback to interviewers. The computer

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can provide percentages, distributions of each behavior code for each interview, and a summary of averages both for all interviews and for individual interviews.

The average of all interviewers should be obtained so that each interviewer's performance can be compared with those of others. Averages should be calculated for each study since the form, type, and level of difficulty of a particular questionnaire will change the behavior profiles. There are no standards available for use in evaluating the proportion of behavior in each class, but the reasons for individual averages which deviate markedly from the total averages should be determined. For example, a low percentage figure on probes may indicate that the interviewer is doing an inadequate job of obtaining full responses, but may also indicate that the interviewer has a particularly cooperative respondent. Information such as that contained in Table 5-1 (see page 36) is used primarily as an indicator of potential difficulties for interviewers whose percentages vary markedly from the average.

Table 5-2 (see page 37) provides information for more specific evaluations of performance. Averages can be examined for groups of codes which represent appropriate and inappropriate performances, and if appropriate behaviors are low, individual codes within each group can be examined in order to isolate the difficulty. In this table particularly, the range is important in identifying potential problems. If there is a high proportion of inappropriate behavior for one or more interviews, even if the overall average for that behavior is at a satisfactory level, one should attempt to ascertain the reason for the deviation. The computer output for the particular deviant interview should be examined to see whether or not the pattern suggests a difficult respondent. If the interviewer has other interviews with the same kind of respondent, one can also examine the output for these interviews. The output may indicate either that the respondent was uniquely difficult (low intelligence, very negative, language problem, etc.) or it may indicate that the interviewer normally has trouble with a particular type of respondent. Some interviewers, for example, have difficulty with respondents whose social or educational classes differ markedly from their own.

Another technique which is useful in diagnosing potential problems is to look through the coding sheets for the deviant items to see whether the problems are associated with particular kinds of questions; for example, open or multiple choice formats, questions with complex phrasing, etc.

In order to provide complete feedback to an interviewer, the supervisor should identify the activity he wishes to discuss with the interviewers, and then identify particular examples of that inadequate behavior on the code sheets, circling the corresponding question numbers in color. The supervisor should use the tapes of those interviews to demonstrate the sections which were coded as inadequate, and then discuss techniques which could be used to improve the

INTERVIEWER TRAINING AND SUPERVISION

interviewer's performance. The supervisor should also provide the interviewer with detailed copies of the codes so that he will recognize the activity and the way in which it was coded.

DIAGNOSING PROCEDURES

In order for feedback to be an effective tool for improving performance, the interviewer must know why he performed inadequately. There are at least three major situations which produce inadequate performances:

1. The interviewer does not know what constitutes an adequate performance. The training has not been successful in communicating the theory or concepts which he can use to evaluate his performance.

2. The interviewer may understand the *principles* of good performance but not be able to determine whether or not a particular behavior conforms to those principles. For example, he may not be able to differentiate directive (inappropriate) from non-directive (appropriate) probes, or he may fail to read the alternatives in the question properly because he did not recognize them as part of the question. In both of these instances, the interviewer knows the correct principle, but he cannot distinguish between behavior which does or does not conform to that principle.

3. The interviewer knows the principle, and can distinguish between adequate and inadequate performances, but he still lacks skill in performance. This situation is of course characteristic of new interviewers, but it also sometimes plagues experienced interviewers who have not been active for some time, and those who lack poise or are ill at ease and feel pressured during the interview. As was mentioned earlier, however, this situation may explain an interviewer's behavior only with particular kinds of respondents.

Some insight into the reasons for inadequate performances can be obtained by examining the information in the tables, the computer output for individual interviewers, etc. Most of the information, however, must be obtained from the interviewer as part of the feedback.

The supervisor should play several short segments of tapes which contain examples of inadequate behavior and ask the interviewer to identify any poor performance he recognizes. If he does identify the poor performance, he should then be asked to explain his criteria for the evaluation. His answers should provide the basis for a diagnosis. A new interviewer or a particularly poor interviewer may find this process threatening, but for most experienced interviewers there is a great deal of adequate behavior which can be pointed out at the beginning of the feedback session. This allows the supervisor to focus upon inadequate behavior, but to maintain it in perspective so that it does not become too threatening.

INTERVIEWER TRAINING AND SUPERVISION

THE FEEDBACK PROCESS

We will not discuss general principles of feedback, but only mention a few specific techniques which are germane to this special situation. It is less threatening to the interviewer, and therefore more effective, if he identifies his own inadequate performances, indicates his recognition of the difficulties, and suggests his own corrective measures. Samples of the code sheets and the original tape recordings of problem interviews should be used, and the interviewer should listen to the tapes and analyze his own behaviors. The supervisor should help to identify problems on the tapes and assist the interviewer both in making a correct assessment of each problem and in formulating a solution to correct it. Retraining then would be an integral part of the feedback process.

USE OF PERFORMANCE DATA OVER TIME

Ideally, feedback should enable the interviewer to formulate goals for his future performances. At the end of each session, the supervisor should encourage the interviewer to pay particular attention to the problems they have just discussed in his next interviews, then keep track of his improvements using the space provided in the two feedback tables. Because the code is based on behaviors which should be used in any interviewing situation, the performance data which the code generates can be compared over time and across studies. An interviewer's performance can be examined as he either improves or maintains desired standards of behavior in accordance with goals which may be formulated at one feedback session. Once each goal has been met, it is still necessary to examine behaviors in order to insure that the target performance is maintained and to insure that other desirable behaviors have not suffered because of the attention to the target behavior.

EXAMPLES OF FEEDBACK TO INTERVIEWERS

The following discussion demonstrates the actual use of the system with two interviewers. One is Interviewer Number 2 (from Tables 9-3 and 9-4 in Chapter 9), and the other is a new interviewer (see Tables 5-3 and 5-4 for data). In both cases, the interviewers are part of a national staff and live some distance from the research center. Each has a regional supervisor who is responsible for their training and supervision, and who receives copies of these tables. Alice Jones' (the new interviewer) supervisor has been alerted to Alice's need for immediate additional training.

Mary Smith (Tables 5-1 and 5-2) appears to be a good interviewer. She does somewhat less probing than the average interviewer and considerably less than she has done in previous performances. However, she seems to do an adequate amount of probing for these interviews. The interviews analyzed here were conducted with highly educated respondents whose generally superior performance decreased the need for probing. The interviewer asked questions well

INTERVIEWER TRAINING AND SUPERVISION

(Table 5-1), improving considerably since her previous performance. Her major problem was that she asked questions too quickly, and tended to rush into the next question without giving the respondent adequate time to reply. She was told to consult the section of her *Interviewer's Manual*¹ which discusses the interview pace. Since her performance was generally good, the tapes of her interviews were not returned to her for study.

Alice Jones is a new interviewer, working on her first study. Her performance shows some serious weaknesses. She either was not adequately trained or she is being somewhat overwhelmed by the interviewing situations, and requires rapid attention and help. The problems which manifest themselves in her work tend to be characteristic of new interviewers, but hers appear to be more serious than usual. It is likely that with additional training, her performance will show rapid and marked improvement. If it does not, she will have to be dropped from the staff. Copies of the coding sheets were provided on which problems were circled in red. She was also referred to her *Interviewer's Manual* to help her to recognize the principles underlying the issues being raised. This feedback is designed to correct all three of the situations which produce poor performances (page 33); it provides:

1. Identification and analysis of specific examples of poor performance (tapes and coding sheets).
2. Means to understanding the principles being violated by consulting appropriate sections of an *Interviewer's Manual*.
3. Recognition of the need to acquire greater skill; for example, an interviewer might be asked to examine his poor probes and then to reword them effectively.

This material also provides a sound basis with which the interviewer and supervisor can formulate goals for improvement, and training can be focused directly upon instances in which the interviewer performed inadequately. During the training, the interviewer should record several more sessions for practice only, and together she and the supervisor should code the tapes while the supervisor provides feedback.

¹The Survey Research Center of the Institute for Social Research (The University of Michigan) publishes an interviewer's manual which contains information on interviewing techniques. This is available for purchase from the SRC Publishing Division.

INTERVIEWER TRAINING AND SUPERVISION

Table S-1

Report to Interviewers on Analysis of Recorded Interviews

NAME OF INTERVIEWER: MARY SMITH Date: Nov. 1974
 This report is based on interviews numbered 042, 123, 132, 142, 201,
 taken on Study number 764.

Table A
 PERCENTAGE OF INTERVIEWER ACTIVITIES

Activity	Average all Interviewers	Average for your Interviews	Range of your Interviews	Your previous Average
Question asking	78.7	86.8	68-97.4	74.3
Probing	17.9	11.3	2.1- 27.8	22.9
Other	2.1	.8	0 - 2.8	1.5
Q. skips	1.3	1.1	0 - 5.9	1.3
TOTAL*				100 %

*Inaudible portions of tape and other unclear activity is omitted from this analysis.

OVERALL RATINGS:

A. Pace of interviews

Much too
fast

Somewhat
too fast

About
right

Somewhat
too slow

Much
too slow

B. Voice inflection

Especially at the beginning of interviews, you have a tendency to read the questions too fast and not pause after a response.

In reading the list in Q42 you had a tendency to drop your voice on each item. Should be asked as question.

NOTES:

This analysis shows you are doing much better in asking questions as worded. You are probing less than before. The probes used are more often acceptable non-directive ones. Overall this analysis shows improvement over previous performance. Good work!

You should watch your speed in question-asking (see your Interviewers' Manual.)

INTERVIEWER TRAINING AND SUPERVISION

Table 5-2

PERCENTAGE OF EACH TYPE OF ACTIVITY WHICH WAS ACCEPTABLE AND UNACCEPTABLE

Activity	Average for all Interviewers	Average for your Interviews	Range of your Interviews	Your previous Average
Question asking:				
Codes 11	94.8	93.3	82.8- 99.1	
12	9.1	5.4	0.5- 13.3	
% acceptable	94.5	98.1	96.1- 100	78.2
Codes 21	0.0	0.0	0-0	
22	6.4	1.3	0-3.9	
23	0.1	0.0	0-0	
% unacceptable	5.5	1.3	0-3.9	21.8
Probing:				
Codes 31	19.0	25.6	0-99.3	
32	41.5	34.8	0-47.9	
33	0.0	0.0	0-0	
34	18.7	20.4	0-21.7	
35	10.7	9.6	0-10.0	
% acceptable	89.9	90.4	75- 100	80.1
Codes 41	2.2	2.6	0-14.3	
42	5.9	5.0	0- 7.4	
43	0.0	0.0	0-0	
45	1.8	3.9	0- 8.5	
% unacceptable	11.1	9.6	0-25.0	19.9
Other:				
Codes 51	19.4	7.1	0-14.2	
57	0.0	0.0	0-0	
58	28.7	42.9	0-100.0	
% acceptable	48.1	50.0	0-100.0	47.3
Codes 62	14.0	7.1	0-14.2	
63	22.1	35.8	0-73.8	
67	0.0	0.0	0-0	
68	13.8	7.1	0-14.2	
% unacceptable	51.9	50.0	0-100.0	52.7
Other (skips):				
Code 71	90.5	93.2		
% acceptable	90.5	93.2		92.5
Codes 72	6.7	5.6		
73	2.8	1.2		
75	0.0	0.0		
78	0.0	0.0		
% unacceptable	9.5	6.8		7.5

INTERVIEWER TRAINING AND SUPERVISION

Table 5-3

Report to Interviewers on Analysis of Recorded Interviews

NAME OF INTERVIEWER: ALICE JONES Date: Nov 1974

This report is based on interviews numbered 004, 005, 009, 016, 023, taken on Study number 764.

Table A
PERCENTAGE OF INTERVIEWER ACTIVITIES

Activity	Average all Interviewers	Average for your Interviews	Range of your Interviews	Your previous Average
Question asking	78.7	85.6	64.0-93.5	
Probing	17.9	9.1	5.3-14.6	<i>None</i>
Other	2.1	1.3	0-1.9	
Q. skips	1.3	4.0	1.4-5.2	
TOTAL*	100%	100%		100%

*Inaudible portions of tape and other unclear activity is omitted from this analysis.

OVERALL RATINGS:

A. Pace of Interviews

Much too fast

Somewhat too fast

☒ About right

Somewhat too slow

Much too slow

B. Voice inflection *Good, reading of questions. You sound natural and interested when asking questions. Good. At times a slight tendency not to emphasize important words*

NOTES: *At times you do not probe enough to obtain adequate responses. Your probes also tend to be directive. Please review the manual and be sure you are familiar with each question's objectives. You skipped some questions. This means that you need to study the question-nairs to learn the skip patterns. These are your first interviews and we send this analysis to help you in your training. Interviewing is a complex activity, so don't be discouraged - your performance is adequate for one who is just starting to work. Your supervisor will see you soon to help you work on these problems. Good luck.*

I am returning interviews 005 + 016 (with the tapes + the f'sires) and the copies of the coding sheets for these interviews. Please listen to the tapes and follow along with the coding sheets. When you come to an unacceptable probe (marked in red) codes in 40's, stop the machine and because you know why the code is unacceptable. Think what you would do to make it acceptable. And listen for responses which should have been probed.

INTERVIEWER TRAINING AND SUPERVISION

Table S-4

PERCENTAGE OF EACH TYPE OF ACTIVITY WHICH WAS ACCEPTABLE AND UNACCEPTABLE

Activity	Average for all Interviewers	Average for your Interviews	Range of your Interviews	Your previous Average
Question asking:				
Codes 11	84.7	79.5		NONE
12	9.7	11.2		
% acceptable	44.5	90.7		
Codes 21	0.0	0.0		
22	5.4	8.4		
23	0.1	0.9		
% unacceptable	5.5	9.3		
Probing:				
Codes 31	19.0	16.5		
32	41.5	33.2		
33	0.0	0.0		
34	18.7	16.4		
35	10.7	11.3		
% acceptable	89.9	77.4		
Codes 41	2.2	4.5		
42	5.9	9.9		
43	0.0	0.0		
45	1.8	8.8		
% unacceptable	11.1	22.6		
Other:				
Codes 51	19.4	18.5		
57	0.0	0.0		
58	28.7	27.5		
% acceptable	48.1	46.0		
Codes 62	14.0	18.3		
63	22.1	16.2		
67	0.0	0.0		
68	15.8	19.5		
% unacceptable	51.9	54.0		
Other (skips):				
Code 71	90.5	90.0		
% acceptable	90.5	90.0		
Codes 72	6.7	9.2		
73	2.8	0.8		
75	0.0	0.0		
78	0.0	0.0		
% unacceptable	9.5	10.0		

CHAPTER 6

OTHER USES OF THE BEHAVIOR DATA

The interviewer behavior data can also be used for applications other than the evaluation of interviewer performances. Some applications use the data in the form in which they are fed back to interviewers; others require some modifications in the coding system itself.

ASSESSMENT OF INTERVIEWER TRAINING METHODS

The behavior codes provide a basis for evaluating the training methods which were used with the interviewer. A cumulative summary of all of the coded interviews conducted by all of the interviewers in the program can be examined for general weaknesses. A high rate of unacceptable techniques indicates that there was probably some deficiency in the training program. By examining the codes, one can develop hypotheses as to the nature of the difficulty.

EVALUATING OVERALL INTERVIEWER STAFF PERFORMANCE

It is useful to generalize about all interviewers' performances so that average proportions and percentages of behavior can be calculated, and the researcher can determine the degree to which systematic interviewing techniques were used in conducting his survey. The authors of an interview schedule may also find the total code frequencies and proportions for each question in the schedule useful. For instance, a question that is consistently read incorrectly should probably be reworded for future use. As was mentioned earlier, the behavior data which are averaged for all interviewers can also be a valuable aid in feeding back performance data to an individual interviewer. The points of comparison which they provide often encourage goal-setting by the interviewer.

CODING OTHER TYPES OF INTERVIEWS

While the behavior code was originally developed for use with interviews which are conducted with specific schedules of questions in a survey research setting, it has considerable potential for use in other kinds of interviews. Many

OTHER USES OF THE BEHAVIOR DATA

of the behaviors which occur in journalistic, legal, and medical interviews are basically the same as those which occur in a social research interview. Modifications in the code categories could be made to incorporate different question types, especially when there are rules of acceptability, as in legal examinations.

People who are being trained to conduct these kinds of interviews could receive coded data from tapes of practice interviews and role-playing situations. The data would indicate those areas in which further training and practice might be necessary.

The flexibility and adaptability of the coding scheme will permit even more varied uses for it in the future, but the coders must always be trained thoroughly in accordance with the adapted scheme, and an effort should always be made to prove the reliability of whatever coding is done.

COMPARISON BETWEEN CONTENT CODES FROM TAPES AND THOSE FROM INTERVIEW PROTOCOLS

This comparison requires that the taped interview be coded according to standards which are different from those for behavior coding. One can code the content of the interview from the tapes, using the same code which is used for the regular written interviews. By comparing the codes for the same interview from two independent coding procedures, one can check on the accuracy and completeness of the interviewer's note-taking and reporting procedures.

SECTION C: SAMPLE MATERIALS

Chapter 7	Manual for Using the Behavior Code -A detailed manual of codes, the basic reference material for coders	45
Chapter 8	Sample Coded Interview I. Sample Transcript of Tape Recorded Interview II. Coding Sheet from Sample Interview III. Questionnaire Used in Sample Interview	69
Chapter 9	Sample Analysis of Interviewer Performance -An analysis of the performance of 30 interviewers using the behavior code	85
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CHAPTER 7

MANUAL FOR USING THE BEHAVIOR CODE

The first two sets of codes cover the general area of question-asking behavior. In the two-digit system, these are codes in the 10's and 20's, and are the only codes which may not be repeated on a question. A question will have either a code from the 10's or a code from the 20's. The following provides a brief description of the category for each code, followed by clarification and examples.

Category 10—Question Asked Correctly

The first set of codes, those in the 10's, cover those instances in which the interviewer asks the question correctly.

Code

- 11 *11: Asks question and choices exactly as printed on questionnaire.*

Example:

Question as printed
on questionnaire

Question as read
by interviewer

Do you have a college degree?

I: Do you have a college degree?
(Code: 11)

Contractions such as "weren't" for "were not" are coded as correct. If it becomes necessary to paraphrase parenthetical expressions which refer to the persons included in the question, the reading should still be coded 11 as long as the paraphrase includes all of those people who should be mentioned.

Example:

We would like to know about
your (Head's) present job; are
you (Head) working now, look-
ing for work, retired, or what?

(If the wife of the Head of the
Household is being interviewed,
then the question should be para-
phrased to:)

MANUAL FOR USING THE BEHAVIOR CODE

- I: We would like to know about your "husband's" present job; is "he" working now, looking for work, retired, or what?
(11)

Code 11 should also be used if the interviewer supplies conjunctions such as "and," "or," and "well" either as transition remarks or as prefaces to questions.

Example:

Is there anything about your health that either gives you trouble with or makes it hard for you to do things you feel you should do, with your family or around the house?

- I: Is there anything about your health that either gives you trouble with or makes it hard for you to do things you feel you should do, with your family or around the house?
(11)

R: Yes, there is.

How much trouble does this give you, a lot, some, or very little?

- I: "And" how much trouble does this give you, a lot, some, or very little?
(11)

Code 11 should not be used either when a question which has already been asked is repeated or when a question which should be omitted is asked; there are separate codes for these behaviors (see 32 and 27).

12

12: Asks question with slight change which does not alter frame of reference, and the question choices are read exactly as printed on the questionnaire.

If the reading of the printed question is modified, but still essentially correct, with only *unimportant* or *repetitious* words dropped, then the reading should be coded 12. However, if *key words* or concepts which may affect the meaning of the question are either added, omitted, or changed, code 12 should not be used. Meaningless space-fillers such as, "Now I'd like to ask you . . ." or "The next question is . . ." which neither change the meaning nor clarify a question should be coded 12.

MANUAL FOR USING THE BEHAVIOR CODE

Example:

Question as printed
on questionnaire

Question as read
by interviewer

Have you gone to school in the past year?

I: "The next question is," have you gone to school in the past year? (12)

Unimportant words may be omitted.

Example:

Is there anything which you have cut down on or do not do because you think that doing it would be bad for your health?

I: Is there anything which you have cut down on or do not do because you think doing it would be bad for your health? (12)

Unimportant words may be added.

Example:

How satisfied are you with the moral standards in your community; the way in which people behave?

I: How satisfied are you with the moral standards in your community, "that is," the way in which people behave. (12)

If the introduction to a set of questions is modified, each question in that set should be coded 12 because the introduction relates to and influences each question in the set.

Example:

Here are several different things people say they have done to call attention to a problem or get something done.

I: Here are things people say they have done to call attention to a problem or to get something done.

(a) **Have you ever gone on a march?**

(a) Have you ever gone on a march? (12)

(b) **Signed a petition about some issue?**

R: No

I: Signed a petition about some issue? (12)

(c) **Picketed an agency or organization?**

R: No

I: Picketed an agency or organization? (12)

MANUAL FOR USING THE BEHAVIOR CODE

Category 20—Question Asked Incorrectly

The code categories in the 20's cover those situations in which the interviewer asks the question incorrectly.

Code

- 21 *21: Asks stem of question as printed but does not ask choices as printed.*

Example:

Question as printed
on questionnaire

Now let's talk about things that may give a person a feeling of satisfaction. Would you tell me if you are very satisfied, satisfied, dissatisfied or very dissatisfied with the kind of neighborhood you live in?

How much did all your utilities such as heat and electricity cost you last year; was it less than \$100, \$100-200, \$200-300, \$300-400, or what?

Question as read by
by interviewer

I: Now let's talk about things that may give a person a feeling of satisfaction. Would you tell me if you are "satisfied or dissatisfied" with the kind of neighborhood you live in? (21)

I: How much did all your utilities such as heat and electricity cost you last year; was it less than \$100, \$100-200, or what? (21)

- 22 *22: Asks question incorrectly in a significantly altered manner.*

Code 22 should be used for any alteration which changes the meaning of the question, or if only part of the question is asked.

Example:

Question as printed
on questionnaire

What (is/was) your main occupation; that is, what sort of work do you do?

Compared with five years ago, are you and your family able to buy more and better things than you did then, are you having to cut back on what you buy, or are you living the same as you did then?

Question as read
by interviewer

I: What is your main occupation? (22)

I: Compared with five years ago, are you and your family able to buy more and better things than you did then, or are you having to cut back on what you buy? (22)

MANUAL FOR USING THE BEHAVIOR CODE

Code 22 should be used if a key word or concept is either added, omitted, or changed, even if this does not alter the frame of reference. Code 22 should also be used if key words are added.

Example:

How much do you earn?	I: <i>"About"</i> how much do you earn? (22)
------------------------------	----------------------------------------------

Code 22 is used if a key word is omitted.

Example:

Did you or anyone else here attend any parent-teacher meetings in the last year?	I: Did you or anyone else here attend parent-teacher meetings in the last year? (22)
-----------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------

Have you had a cold or the flu in the past month?	I: Have you had a cold in the past month? (22)
----------------------------------------------------------	------------------------------------------------

Code 22 is used if a key word is changed.

Example:

Should parents organize public marches?	I: Should parents organize public demonstrations? (22)
------------------------------------------------	--------------------------------------------------------

Are there jobs around here that just aren't worth taking?	I: Are there jobs around here that just aren't worth it? (22)
------------------------------------------------------------------	---------------------------------------------------------------

Code 22 should be used if enough insignificant changes have been made to confuse the meaning.

Example:

For a person like yourself, what are some of the advantages of the small foreign cars over the new small American cars?	I: For a person like you, what are some advantages of a small foreign car over a new small American car? (22)
--------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------

Code 22 should be used when the respondent interrupts the interviewer by responding to a question before the interviewer has completed it, and the interviewer does not then complete the question. If the interviewer does complete the question, exactly as it is written, despite the interruption, the reading should be coded 11.

MANUAL FOR USING THE BEHAVIOR CODE

If the introduction to a set of questions is read incorrectly, each question in that set should be coded 22.

Example:

Here are several steps that some people feel could help solve the problem of race tensions. Would you favor:

- (a) Investigating to see if there is racism in the local schools?
- (b) Government job training programs for blacks?

I: Here are several steps that could help solve the problem of race tensions: Would you favor investigating to see if there is racism in the local schools? (22)

R: Yes

I: Government job training programs for blacks? (22)

R: Yes

If any or all of the question is read incorrectly and the interviewer immediately corrects himself with no interruption or intervening behavior (by either interviewer or respondent) the first incorrect question should be ignored, and the reading should be coded 11 or 12, whichever is appropriate.

Example:

When was your last visit to a doctor?

I: When is your, excuse me, when was your last visit to a doctor? (11)

- 23 23: *Does not ask question as printed, but assumes answer to a question by making a statement.*

Example:

Question as printed
on questionnaire

Question as read
by interviewer

Do you own this (home/apartment), pay rent, or what?

I: And you rent this apartment. (23)

Code 23 should be used only if some verbal statement replaces a printed question; if there is no verbal behavior, code 71 or 72 should be used, or when appropriate, code 73 (see 70's).

MANUAL FOR USING THE BEHAVIOR CODE

27 27: Asks question which should have been skipped.

Example:

Question as printed on questionnaire	Question as read by interviewer
2. Are you over 17 years old?	I: Are you over 17 years old? (11)
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ➤ Go to Q4	R: No
3. Are you registered to vote?	I: Are you registered to vote? (27)
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	R: No

The second two sets of codes cover general probing behavior. In the two-digit system, these are codes in the 30's and 40's. The behaviors which these categories include are those queries, statements, and confirmations made by interviewers which are designed to encourage the respondent either to respond or to enlarge upon or clarify what he has already said.

Category 30—Correct Probe Used

The codes in the 30's are for non-directive probes. To be non-directive, a probe must effect no limitation or change in the frame of reference of the question; the frame of reference of the response should not be limited or changed either.

Code

31 31: Makes up non-directive probe.

Example:

I: Anything else?	}	→
What do you mean?		
What particularly?		
What was that?		
Would you tell me more about that?		
Why do you say that?		
Pardon me?		
Could you repeat that?	(31)	

MANUAL FOR USING THE BEHAVIOR CODE

32 *32: Repeats question or part of question correctly.*

Example:

Question as printed on questionnaire	Question as read by interviewer
If you were to get enough money to live as comfortably as you'd like for the rest of your life, would you continue to work?	I: (Reads Q. OK) (11)
	R: I love my work.
What do you see as the most important problems we have in this country?	I: (Reads entire Q again) (32)
	I: What do you see as the most important problems we have in this country? (11)
	R: There are so many . . . uh . . .
	I: Well, what comes to mind when I say the most important problems? (32)

Code 32 should be used if the question is repeated correctly, even if it was asked incorrectly the first time.

Example:

Is there public transportation within walking distance of here?	I: Is there public transportation here? (22)
	R: Well, there's the bus . . .
	I: Is that within walking distance of here? (32)

If a question has a wide range of response categories and a respondent's previous answer implies a particular area of the categories available, then the interviewer may repeat only those categories in that general area and still be coded 32.

Example:

Would you tell me if you are very satisfied, satisfied, dissatisfied, or very dissatisfied with your present housing?	I: Would you tell me if you are very satisfied, satisfied, dissatisfied, or very dissatisfied with your present housing? (11)
-----------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------

MANUAL FOR USING THE BEHAVIOR CODE

R: Oh, I'm satisfied.

I: Would you say very satisfied or satisfied? (32)

34 34: Repeats the respondent's response, or part of it, correctly.

Example:

R: I think things have changed for the worse.

I: For the worse. (34)

Code 34 should be used for a correct summary of the respondent's response.

Example:

Question as printed
on questionnaire

Question as read
by interviewer

Would you say it's very true, somewhat true, or not at all true that the police don't treat people with respect?

I: Would you say it's very true, somewhat true, or not at all true that the police don't treat people with respect? (11)

R: Oh, I think they always treat people with respect.

I: So that's not true. (34)

Code 34 should be used if the interviewer repeats part of the question or response in order to choose a correct response category.

Example:

Compared with last year, are you able to buy more and better things now, are you having to cut back on what you buy, or are you living the same as you did then?

I: (Reads Q. OK) (11)

R: No, I think the first one.

I: Buying more. (34)

R: Umm-hmm.

Buying more

Cutting back

Living the same

DK

In these cases, code 34 should be used rather than code 32.

MANUAL FOR USING THE BEHAVIOR CODE

35 *35: Confirms a frame of reference for respondent.*

Example:

R: Did you say 'freedom'?

I: Yes. (35)

R: Does the money I make
as a cab driver count?

I: Yes (35)

Code 35 should be used if the interviewer provides a correct clarification in response to a request for one.

Example:

R: What do you mean by
neighborhood?

I: Whatever 'neighborhood'
means to you. (35)

Code 35 should be used if the respondent requests a clarification and the interviewer reads an adequate part of the question in response. If the interviewer reads the entire question after a request, code 32 should be used rather than code 35.

Example:

Question as printed
on questionnaire

Question as read
by interviewer

As to the economic policy of
the government—I mean steps
taken to fight inflation or unem-
ployment—would you say that
government is doing a good job,
only fair, or a poor job?

I: As to the economic policy
of the government—I mean
steps taken to fight inflation
or unemployment—would you
say the government is doing
a good job, only fair, or a
poor job? (11)

R: You mean like the wage
price freeze?

I: I mean steps taken to fight
inflation or unemployment.
(35)

MANUAL FOR USING THE BEHAVIOR CODE

Example:

How much are you *personally* affected by air pollution—very much, a little, or not at all?

I: How much are you personally affected by air pollution—very much, a little, or not at all? (11)

R: You mean is smog a problem?

I: I mean how much are you *personally* affected by air pollution—very much, a little, or not at all. (32)

Category 40—Inappropriate Probe Used

The codes in the 40's cover those instances in which the interviewer uses directive probes which are not printed on the questionnaire. A probe is directive if it either changes or limits the frame of reference of the question or limits the response possibilities.

Code

41 41: *Makes up probe which is directive.*

Example:

I: That's all?
Nothing else? (41)

A probe is also directive if it suggests possible answers to the respondent either directly or by providing information in addition to that which the respondent and the original question have already given.

Example:

Question as printed
on questionnaire

Question as read
by interviewer

Example:

Have you had any health problems in the last week?

I: Have you had any health problems in the last week? (11)

R: What do you mean by health problems?

I: Things like colds and flu. (41)

42 42: *Repeats question and/or choices incorrectly or gives incorrect summary or statement of respondent's response.*

MANUAL FOR USING THE BEHAVIOR CODE

Example:

<u>Question as printed on questionnaire</u>	<u>Question as read by interviewer</u>
About how much rent do you pay a month?	I: About how much rent do you pay a month? (11) R: Oh, between \$100 and \$150. I: So you'd say about \$125? (42)
How likely is it that you could find a job; is it very likely, somewhat likely, or not very likely?	I: How likely is it that you could find a job; is it very likely, somewhat likely or not very likely? (11) R: Oh, it's possible. I: Would you say it's very likely, then? (42)

If a respondent interrupts the interviewer while he is using the response choices as a probe, then code 32 should be used. If the interviewer does not offer all of the choices when no general area has been indicated by the respondent's previous answer, then code 42 should be used.

43: *Gives an introduction which is directive.*

Code 43 should be used if the interviewer rewords an introduction from the questionnaire in a directive manner.

Example:

<u>Question as printed on questionnaire</u>	<u>Question as read by interviewer</u>
I'd like to ask you some questions about health matters.	I: I'd like to ask you some questions about how you think your health is. (43)

Code 43 should be used if the interviewer makes up his own introduction to a section which is directive.

Example:

(Questions concerning employment are next.)	I: Now we'd like to know how much you like your job . . . (43)
---------------------------------------------	----------------------------------------------------------------

MANUAL FOR USING THE BEHAVIOR CODE

45 *45: Interprets question.*

Example:

Question as printed
on questionnaire

As you see it, is the idea that "We need tax reforms to make taxes fair for everyone," one which rich people support *more* than you do or do they give it less support?

Question as read
by interviewer

I: As you see it, is the idea that "we need tax reforms to make taxes fair for everyone," one which rich people support more than you do or do they give it less support? That is, do rich folks want tax reforms as much as the rest of us? (11, 45)

Code 45 should be used if the interviewer volunteers a clarification in own words, whether or not it appears to be correct.

Example:

Are you making as much money now as you were a year ago, or more, or less?

I: Are you making as much money now as you were a year ago, or more, or less; that is, has your income changed? (11, 45)

During the next year, or so, do you think the government will be successful in reducing inflation, or do you expect that there will be little or no improvement?

I: During the next year or so, do you think the government will be successful in reducing inflation, or do you expect that there will be little or no improvement, that is, that the economy will keep on expanding? (11, 45)

Code 45 should be used if the interviewer gives an incorrect clarification.

MANUAL FOR USING THE BEHAVIOR CODE

Example:

How satisfied or dissatisfied are you with this neighborhood as a place to live?

I: How satisfied or dissatisfied are you with this neighborhood as a place to live? (11)

R: What do you mean by neighborhood?

I: Oh, this square mile. (45)

Code 45 should be used if the interviewer incorrectly confirms a frame of reference.

Example:

Is your standard of living higher, the same, or lower than that of your neighbors?

I: Is your standard of living higher, the same, or lower than that of your neighbors? (11)

R: You mean is my house better?

I: Yes (45)

The next two sets of codes are intended for various behaviors which may occur during an interview, which are not directly associated either with asking questions or probing for more information, but which affect the interviewer-respondent interaction. In the two-digit system, these codes are the 50's and 60's. The behaviors which these codes represent may generally be categorized as behaviors which could in some way affect the validity of the information being gathered: remarks designed to build rapport, evaluative remarks, interruptions, incomplete or inaccurate recording of a respondent's answers, etc.

Category 50—Appropriate Behavior

The codes in the 50's represent those behaviors which conform to the present principles of interviewing technique, that is, they represent behaviors which either increase or at least do not jeopardize the validity of the information being gathered.

Code

- 51 51: Helps respondent to understand his role and what the study wants; gives task-oriented clarification about respondent's job.

MANUAL FOR USING THE BEHAVIOR CODE

Example:

I: We are interested in your opinions.
There are no right or wrong answers; we just want to know how you feel.
Please use the card in choosing your answer.
We've already touched on this subject, but let me ask you about this . . .
This survey is interested in how people all over the country feel about certain health issues. (51)

58 *58: Makes other acceptable remarks or exhibits other acceptable behavior.*

Code 58 should be used if a remark is neutral.

Example:

I: Do you want to stop to get the boys' lunch?
Maybe you could do that when we're through.
Just let me know if you want to stop for a while. (58)

Code 58 should be used for statements which reinforce current behavior.

Example:

I: It's OK if you want to take time to think about the rest of these. (58)

As a general rule, a brief "OK," "Fine," etc. is coded as feedback. Non-words such as m-m-m, or uh-h-h are not coded.

Category 60--Inappropriate or Evaluative Remarks or Behavior

The codes in the 60's cover those remarks or behaviors which are either considered inappropriate or which in some way may decrease or jeopardize the validity of the information being gathered.

MANUAL FOR USING THE BEHAVIOR CODE

Code

62 *62: Interrupts the respondent.*

Example:

Question as printed
on questionnaire

Question as read
by interviewer

**Over the next six months,
which do you think will go up
more, prices or wages?**

**I: Over the next six months,
which do you think will go
up more, prices or wages?**

(11)

**R: Gee, I don't know much
about . . . uh . . . that, I
guess I'd have to . . .**

**I: Which do you think will
go up more?**

**(62,
32)**

63 *63: Gives personal opinion or evaluation.*

Code 63 should be used for any indication of either agreement or disagreement with the respondent.

Example:

Question as printed
on questionnaire

Question as read
by interviewer

**Do you or anyone else in the
family here own a car or
truck?**

**I: Do you or anyone else in
the family here own a car
or truck?**

(11)

R: No.

**I: But I saw a car in your
garage!**

(63)

R: I think taxes are too high.

I: Boy, I'm with you!

(63)

Code 63 should be used for a personal opinion.

Example:

**I: This neighborhood is
really well kept.**

(63)

Code 63 should be used for any praise or criticism of the respondent.

MANUAL FOR USING THE BEHAVIOR CODE

Example:

I: I think it's just wonderful
the way you've overcome
this adversity and succeeded
so well. (63)

Code 63 should be used for unacceptable feedback.

Example:

I: Don't go so fast; I can't get
it all down.
But you said no a minute
ago. (63)

Code 63 should be used for expressions of surprise or displeasure.

Example:

I: You don't mind going to
the dentist! (63)

67 Optional

67: Records response either incorrectly or incompletely on questionnaire.

Code 67 should be considered a special code for separate studies or occasional use only, because it distracts the coder from the verbal behavior.

Code 67 can only be used if the coder has the questionnaire for that particular interview available as he codes.

Example:

R: I go to the grocery store once
every two weeks.
I: (records) I go to the grocery
once a week. (67)
R: Two or three times a week.
I: (records) Three times per
week. (67)

68 *68: Makes other unacceptable remarks or exhibits other unacceptable behavior.*

Code 68 should be used when the interviewer reads his own instructions aloud.

MANUAL FOR USING THE BEHAVIOR CODE

Example:

I: Now I have to go to page 10.

You're unemployed, so I don't
ask you these questions. (68)

Category 70—Non-recorded Behavior

This set of codes covers non-recorded or inaudible behavior, cases in which questions are not asked, there is no sound on the tape, etc. In the two-digit system, these codes are in the 70's.

Code

- 71 *71: Skips question correctly.*

Code 71 should be used if a question is not read because of a skip pattern.

- 72 *72: Omits question incorrectly.*

Code 72 should be used if a question is skipped when it should have been read. If there was *any* verbal behavior, then code 23 should be used.

- 73 *73: Writes in previously obtained answer, no verbal behavior.*

Code 73 should be used when the interviewer does not ask a question because the respondent has just supplied the necessary information to answer it.

Code 73 should only be used when there is no verbal behavior on a question. If there is behavior, use code 23 or any other code which is appropriate. If there is any doubt about whether the respondent has supplied an answer to the question, use code 72 rather than 73.

- 75 **Optional**

75: Fails to probe after inadequate answer.

Code 75 is listed here as optional because of the difficulties involved in using it. The coder must have a sophisticated level of understanding of the question's objective in order to determine when an answer is inadequate. This requires extensive coder training. In addition, in order to use this code the coder must both concentrate on coding the behavior which is occurring, and remain alert for behavior omissions. This is a difficult task.

MANUAL FOR USING THE BEHAVIOR CODE

Code 75 should be used when the respondent has given a response which does not meet the objectives of the question, and the interviewer fails to probe for additional information.

Example:

Question as printed
on questionnaire

Do you remember when you were growing up whether your father was very much interested in politics, somewhat interested, or didn't he pay much attention?

Did he think of himself mostly as a *Democrat*, as a *Republican*, as an *Independent*, or what?

Question as read
by interviewer

I: Do you remember when you were growing up whether your father was very much interested in politics, somewhat interested, or didn't he pay much attention? (11)

R: Oh, he was interested in Roosevelt. (75)

I: Did he think of himself mostly as a *Democrat*, as a *Republican*, as an *Independent*, or what? (11)

R: Oh, he was a Republican.

78 78: *Missing data, unknown.*

Code 78 should be used either if there is no sound on the tape or if the sound is unintelligible.

Category 80—Pace

The next set of codes is designed to provide information about the pace at which the interview was conducted and the voice inflection which was used. In the two-digit system, these codes are in the 80's. There are no clear-cut occasions for which these codes should be assigned. It is possible either to give an overall pace code for the entire interview or to code the pace at various selected spots in the interview, e.g., at the end of sections of questions. In order to determine the speed of delivery, the coder must measure the time which the interviewer takes just to ask the question, then divide this time by the number of words in that question. It is best to obtain an average speed using several questions of different lengths.

Code

81 81: *Reads questions more slowly than two words per second.*

MANUAL FOR USING THE BEHAVIOR CODE

- 82 *82: Reads questions at about two words per second.*
- 83 *83: Reads questions more quickly than two words per second.*
- 84 *84: Pace of entire interview seemed too slow for the respondent.*

Code 84 should be used if there were long silences after the respondent had completed his response.

- 85 *85: Pace of entire interview seemed about right for the respondent.*

Code 85 should be used if the interview was neither too slow, as defined for code 84, nor too fast, as defined for code 86.

- 86 *86: Pace of entire interview seemed too fast for the respondent.*

Code 86 should be used either if the interviewer began to ask the next question while the respondent was delivering pertinent information concerning the current question without digressing, or if the interviewer did not give the respondent enough time to think about his responses.

Code 86 should be used either if the interviewer probed more than once without waiting for the respondent's reply to each probe, or if the interviewer asked questions too rapidly for the respondent to comprehend them.

Voice Inflection

- 87 *87: Questions read in a wooden, expressionless manner. Interviewer is clearly "reading" rather than speaking naturally.*
- 88 *88: Questions asked with a rising inflection at the end.*
- 89 *89: Questions asked with voice dropped, so that they sound like statements instead of questions.*

If questions with lists are included, this code may be used specifically for the list as well as for the whole question.

Codes 87 through 89 should be used only once at the end of an interview; the coder should choose the one which best describes the entire interview.

MANUAL FOR USING THE BEHAVIOR CODE

Category 90—Background

The next set of codes covers those instances in which the interviewer provides any kind of background information. In the two-digit system, these codes are in the 90's.

It is not uncommon for many of the behaviors which this set of codes covers to occur before the interviewer actually begins to tape the interview, since many interviewers set up the tape recorder only after the respondent has agreed to the interview, following an introduction by the interviewer. Nevertheless, these behaviors do sometimes occur during the taped interview, and coding categories have been defined for them.

Code

91 *91: Mentions own name.*

Example:

E

I: Hello, I'm Mary Jones from
the Survey Research Center
of the University of Michigan.
(91)

92 *92: Mentions sponsorship.*

Example:

I: This study is being sponsored
by a department of the Uni-
versity of Michigan. (92)

93 *93: Mentions anonymity.*

Example:

I: Everything you say will be
confidential

Your name and address will
never be identified in any
way with the answers you
give. (93)

94 *94: Mentions respondent selection.*

Example:

I: You were chosen quite imper-
sonally as a particular person
at this particular address.
(94)

MANUAL FOR USING THE BEHAVIOR CODE

I: When we combine interviews from people at all of these addresses, we will have a cross section of the area which we cover.

In order to keep our sample representative, I must use special procedures to select the person whom I interview. In this case, I must talk to your daughter rather than to you. (94)

95 95: *Mentions purpose of study.*

Example:

I: This study is interested in finding out how people need and use public service programs such as health care, rehabilitation, income maintenance, and so on. (95)

Additional Notes

Uncoded Behavior

There are certain interviewer behaviors which should deliberately be left uncoded. For instance, comments such as, "Here's a blue card" are not coded, because interviewers who use gestures would be penalized. Also, if an introduction to either a question or a section is optional, it should not be coded unless the content of the interviewer's statement is inappropriate. Brief introductions such as, "The next question is . . .," should not be coded. If the introduction is inappropriate or directive, it should be coded 43. Any conversation which occurs between the interviewer and a third person in the room should not be coded.

Brief repetitions should be coded only once.

Example:

R: Oh, you mean what I made if they hadn't taken my taxes out?

I: Yes, Yes.

(35) *once*

MANUAL FOR USING THE BEHAVIOR CODE

Code Summary

Code

- 11 Exact Question—no changes
- 12 Modified Question—slight changes which do not alter frame of reference
- 21 Stem Correct—errors in reading choices
- 22 Incorrect Question—reads only part of question, changes key words
- 23 Assumes Answer—does not read question, makes statement about answer
- 27 Inappropriate Question—asks question which should have been skipped
- 31 Invents Non-directive Probes—probes non-directively using own words
- 32 Repeats Question Correctly—repeats all or part of question correctly
- 34 Repeats Responses Correctly—repeats or summarizes R's response correctly
- 35 Correct Clarification—gives non-directive clarification when requested
- 41 Invents Directive Probe—probes directly using own words
- 42 Repeats Question or Response Incorrectly—repeats question or part incorrectly or R's response incorrectly
- 43 Directive Introduction—rewords an introduction in a directive manner
- 45 Interprets Question—gives incorrect clarification or interprets question
- 51 Helps R Understand Role—gives task-oriented information about R's role
- 58 Other Acceptable Remarks—makes other, more general, acceptable remarks
- 62 Interrupts Respondent—interrupts the respondent while he is talking
- 63 Personal Opinion—gives a personal opinion, agrees or disagrees
- 67 Records Incorrectly—writes down response incorrectly
- 68 Other Unacceptable Remarks—makes other inappropriate remarks
- 71 Correct Skip—skips a question correctly due to a skip pattern
- 72 Incorrect Omit—omits a question which should have been read
- 73 Previously Obtained Answer—writes in answer respondent has already given with no verbal exchange
- 75 Fails to Probe—fails to probe when answer is inadequate
- 78 Missing Data—no sound on tape
- 81 Slow Question Pace
- 82 Correct Question Pace
- 83 Fast Question Pace

MANUAL FOR USING THE BEHAVIOR CODE

- 84** **Slow Interview Pace**
- 85** **Correct Interview Pace**
- 86** **Fast Interview Pace**
- 87** **Wooden Questions**
- 88** **Inflected Questions**
- 89** **Dropped Questions**
- 91** **Mentions Name**
- 92** **Mentions Sponsorship**
- 93** **Mentions Anonymity**
- 94** **Mentions Respondent Selection**
- 95** **Mentions Study Purpose**

CHAPTER 8

SAMPLE CODED INTERVIEW

I. Sample Transcript of Tape Recorded Interview

Question as printed
on questionnaire

Actual Interview*

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Our first question is about your present health in general. Within the last month, that is, since _____, have you had any sicknesses, illnesses, or any other problems with your health?</p> | <p>I: Our first question is about your present health in general. Within the last month, that is since May 15, have you had any sicknesses, illnesses, injuries, or any other problems with your health? (11)</p> <p>R: Oh, really nothing worth, nothing worth mentioning, I guess.</p> <p>I: Nothing worth mentioning? (34)</p> <p>R: Well, I had, I had a little flu, ah, three weeks ago, that bothered me for a day or two, and, uh, what was it you wanted, sicknesses within the last month?</p> <p>I: Sicknesses, illnesses, injuries, or any other problems with your health, within the last month. (35)</p> <p>R: Well, I also hurt my arm. I was working down in the basement, lifting a box of heavy stuff, and it slipped and I strained my elbow and shoulder some.</p> <p>I: Mm-hmm. (No code-not a word)</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

* Assigned code appears in parentheses.

SAMPLE CODED INTERVIEW

R: That's all, in the last month.

(pause)

1a. Please tell me something (more) about health problems you have had during the month.

I: Could you please tell me something more about health problems you have had during the last month? (12)

R: Well, I think that covers, covers everything that, uh, what did I say? Along with the flu I did have a headache, but that's all.

2. Now we would like to ask you how you feel these days. In general, how is your health now? Would you say your health is excellent, very good, good, fair, or poor?

I: All right. (58)
Now we would like to ask you how you feel these days. In general, how is your health now? Would you say your health is excellent, very good, good, fair, or poor? (11)

R: Oh, I think it's all right, now that I'm over the flu.

I: Would you say, then, it is excellent, very good, good, or fair? (32)

R: Oh, I'd say it's excellent.

3. What kinds of problems do you have with your health? What's wrong with your health?

I: Excellent. (34)
All right. (58)
What kinds of problems do you have with your health? What's wrong with your health? (11)

R: Oh, I don't really know of anything that's uh, that's wrong. I guess, uh, I have a little arthritis once in a while, um, and the doctor told me I had a slight tendency to have high blood pressure, but that's, that's all. Besides that, I'm in fine shape.

Now we would like to know how your health compares with others.

4. What about physical fitness. Compared to (men/women) your own age, would you say you are much more physically fit, more, about

I: Okay. Fine. (58)
Now we would like to know how your health compares with others. What about physical fitness? Compared to men and women your own

SAMPLE CODED INTERVIEW

the same, less physically fit, or much less fit?

age, would you say you are much more physically fit, more, the same, less, or much less? (22)

R: Oh, I think I'm, I'm in better shape than, than uh, other men my own age.

I: Would you say much more, or more? (32)

R: Oh, I'd say more.

5. Now about *energy*. Compared to (men/women) your own age, would you say you have much more *energy*, more energy, about the same, less, or much less energy?

I: Now about energy. Compared to men your own age, would you say you have much more energy, more energy, about the same, less, or much less energy? (11)

R: Oh, I'd say about the same, I think.

6. What about *enjoying life*. Compared to (men/women) your own age, would you say you are enjoying life much more, more, about the same, less, or much less?

I: What about enjoying life? Compared to men your own age, would you say you are enjoying life much more, more, about the same, or less? (21)

R: Oh, I think about the same.

7.1. Here are some other health conditions you may have had any time *during the past year even though they may not bother you now*. Have you had any of the following conditions at any time during the last 12 months, that is, since (month) of 1972? Skin trouble?

I: Here are some other health conditions you may have had any time during the past year, even though they may not bother you now. Have you had any of the following conditions at any time during the last twelve months, that is, since June of 1972? Skin trouble? (11)

R: For how long a period did you say?

I: Any time during the past year, especially if it bothers you now. (45)

R: Past year. Uh, skin trouble, no.

7.2. Rheumatism or arthritis?

I: Rheumatism, or arthritis? (11)

R: Yes, I have a little arthritis.

SAMPLE CODED INTERVIEW

- 7.3. Bronchitis?**
I: Oh, that's right, you just mentioned that to me. (58)
Bronchitis? (11)
R: No.
- 7.4. Sinus trouble?**
I: Sinus trouble? (11)
R: Well, I have a cold once in a while. I had a cold about six months ago, and I, I don't know, whether, uh, whether that's sinus or not.
- 7.5. Trouble getting to sleep?**
I: All right. I'll make a note of that. (58)
Trouble getting to sleep? (11)
R: (laughs) No.
- 7.6. Trouble with teeth?**
I: (laughs) Okay. (58)
Trouble with teeth? (11)
R: Nope.
- 7.7. Cold or flu?**
I: Cold or, well you just mentioned you had a cold so that's yes. (23)
R: I had a cold—it was about, uh, six months ago, but I'm not sure that I really get troubled by it, uh, I mean, I'm not troubled by colds. I have a cold once in a while.
I: That's fine. (51)
The question here just asks you if you've *had* any of these conditions during the last 12 months. (35)
R: (interrupting) Oh! Oh yes, I did.
- 7.8. Heart trouble?**
I: Heart trouble? (11)
R: No.
- 7.9. Allergy?**
I: Allergy? (11)
R: Mm, no . . .

SAMPLE CODED INTERVIEW

8. Is there anything about the kind of work you do or the conditions you work in that you regard as dangerous or as bad for your health?
- I: All right. (58)
Now we have to turn to another section. (58)
The next question is: Is there anything about the kind of work you do or the conditions you work in that you regard as dangerous or bad for your health? (11)
- R: Well, there's only one, there's only one kind of a thing. See, I'm maintenance engineer in one of the buildings over here, and every once in a while we have to clean with, uh, with, uh, some chemicals, and I get a little worried about all the fumes those chemicals give off. That's about all.
- 8a. What is this (are these)?
- 8b. Would you say this is (these are) a serious or slight problem for you?
- I: (71)
Would you say that this is a serious or slight problem for you? (11)
- R: Oh, I think only a slight problem.
9. Think about the kind of activities which you usually do in your (work/housework/school work). Do you have enough strength and energy to do these things as well as you would like?
- I: Mm-hmm. (58)
Think about the kind of activities which you usually do in your work. Do you have enough strength and energy to do these things as well as you would like? (11)
- R: Enough strength and energy? . . .
- I: Yes. (35)
- R: Um, well, I suppose so.
10. What about five years in the future? Do you think you will have enough strength and energy to do your (work/housework) as well as you do it now?
- I: All right. (58)
What about five years in the future? Do you think you will have enough strength and energy to do your work as well as you do it now? (11)
- R: Oh, I think so. I expect to be as well five years from now as I am now.

SAMPLE CODED INTERVIEW

11. What about activities which you enjoy in your free time, such as the things you like to do either alone, with your family, or with friends? First, what are some of the free-time activities which you most enjoy doing?
- I: Fine. (58)
What about activities which you enjoy in your free time, such as the things you like to do either alone, with your family, or with friends? First, what are some of the free-time activities which you most enjoy doing? (11)
- R: Do you mean like sports?
- I: Any free-time activities which you enjoy doing. (45)
- R: Ah . . .
- I: Excuse me, it says the free-time activities which you *most* enjoy doing. (32)
- R: Well, I suppose in the, in the summer I like to play golf; in the winter I bowl. Those are the two things I think I enjoy most.
- I: Golf and bowling? (34)
- R: Right.
- I: Thinking about these activities which you enjoy, do you have enough strength and energy to do them as much, and as well as you would like? (11)
- R: Well, I, I never bowl as good--and I don't really play golf like I'd like either. I'd like to do, I'd like to do much better at both of those.
- I: Let me re-read the question for you. (58)
Thinking about these activities which you enjoy, do you have enough strength and energy to do them as much and as well as you would like? (32)
12. Thinking about these activities which you enjoy, do you have enough strength and energy to do them as much and as well as you would like?

SAMPLE CODED INTERVIEW

- R: Oh. Oh, yeah. The problem is not energy. I have plenty of energy, and I . . .
- I: (INTERVIEWER INTERRUPTS)
Then you would say yes to this question about having enough strength and energy? (62, 42)
- R: Well, I guess I would, now that you put it like that.
13. Do you have enough strength and energy to do these free-time activities as much and as well as you did them (five/ten) years ago?
- I: Do you have enough strength and energy to do these free-time activities as much and as well as you did them five years ago? (11)
- R: Well, I, uh, I guess, I perhaps get a little more tired going around the golf course, but, uh, not really anything to amount to much.
- I: Well, perhaps I could re-read this question, also. (58)
I'd like to have a "Yes" or "No" answer. (51)
Do you have enough strength and energy to do these free-time activities as much and as well as you did them five years ago? (32)
- R: Not quite as well.
- I: I'll make a note of that. (58)
14. Have you visited a doctor in the past month, that is, since _____?
- I: Have you visited a doctor in the last month, that is, since May 15? (12)
- R: Yes, about my shoulder. The doctor looked at it.
15. Have you been in a hospital in the last 12 months, that is, since _____?
- I: Have you been in a hospital in the last 12 months, since June 15, 1972? (12)
- R: Not, not since 5 years ago.

SAMPLE CODED INTERVIEW

- I: Not since 5 years ago? (34)
- R: Yes.
16. Are you married, separated, divorced, widowed, or have you never been married?
- I: Now, I have a few questions about you.
Are you married, separated, divorced, widowed . . . (22)
- R: (interrupting) I'm married.
17. What is the highest grade of school, or year of college you completed?
- I: You're married. (34)
All right. (58)
What is the highest grade of school or year of college you completed? (11)
- R: Oh, I got through, ah, I got through high school.
- 17a. Did you get a high school graduation diploma or pass a high school equivalency test?
- I: Did you get a high school graduation diploma, or pass a high school equivalency test? (11)
- R: Yeah, I got a diploma.
- 17b. Do you have a college degree?
- I: And, do you have a college degree? (11)
- R: No.
18. To get an accurate picture of people's financial situation, we need to know the income of all the families we interview. Would you please tell me the letter on this card that indicates how much income *you and your family* received from all sources during last year, 1972; I mean before taxes or any deductions?
- I: All right. (58)
To get an accurate picture of people's financial situation, we need to know the income of all the families we interview. Would you please tell me the letter on this card that indicates how much income you, and your family received from all sources during last year, 1972. I mean, before taxes, or any deductions. (11)
- R: Oh, that's hard. I'm not sure as I can remember that very well.
- I: Well, as best you can remember, which letter would you pick? (31)

SAMPLE CODED INTERVIEW

R: Oh, I suppose it would, it would come, ah, in, E. It was around 10,000 dollars.

I: E. (34)
Well, thank you very much. (58)

R: You're welcome.

SAMPLE CODED INTERVIEW

II. Coding Sheet from Sample Interview

Project # 01120
(cols. 1-6)

Interview # 037
(cols. 7-9)

Interviewer # 12
(cols. 10-11)

(cols. 12-15) Q#	(cols. 16-80) Behavior Code							
1.0	11	34	35					
1.1	12	58						
2.0	11	32	34, 58					
3.0	11	58						
4.0	22	32						
5.0	11							
6.0	21							
7.1	11	45						
7.2	11	58						
7.3	11							
7.4	11	58						
7.5	11	58						
7.6	11							
7.7	23	51, 35						
7.8	11							
7.9	11	58						
8.0	58, 11							
8.1	71							
8.2	11	58						
9.0	11	35	58					
10.0	11	58						
11.0	11	42	32	34				
12.0	11	58, 32	62, 42					
13.0	11	58, 51	32	58				
14.0	12							
15.0	12	34						
16.0	33, 22	34, 58						
17.0	11							
17.1	11							
17.2	11	58						
18.0	11	31	34, 58					

SAMPLE CODED INTERVIEW

III. Questionnaire Used in Sample Interview

Spring 1973

Interviewer
(Name or Label)

Susan Williams
Jackson, Michigan

Condition:



Q

Your
Interview
Number

37

Time
Interview _____ A.M.
Starts: 7:00 P.M.

INTRODUCTION

I am from the Survey Research Center, and we're doing a survey for the

The purpose of this survey is to obtain information about sicknesses and other health problems the people have now or have had in the past 12 months.

- Q1. Our first question is about your present health in general. Within the last month, that is since May 15, have you had any sicknesses, illnesses, injuries, or any other problems with your health?

Nothing - I had a little flu, 3 weeks ago (Rd) I hurt my arm, lifting a heavy box, strained my elbow & shoulder some.

- Q1a. Please tell me something (more) about health problems you have had during the last month.

I had a headache, that's all.

SAMPLE CODED INTERVIEW

- Q2. Now we would like to ask you how you feel these days. In general, how is your health now? Would you say your health is excellent, very good, good, fair, or poor?

~~EXCELLENT~~

VERY GOOD

GOOD

FAIR

POOR

- Q3. What kinds of problems do you have with your health? What's wrong with your health?

I have a little arthritis, once in a while, doctor said I have slight tendency to high blood pressure. Besides that, I'm in good shape.

Now we would like to know how your health compares with others.

- Q4. What about physical fitness. Compared to (men/women) your own age, would you say you are much more physically fit, more, about the same, less physically fit, or much less fit?

MUCH MORE

~~MORE~~

SAME

LESS

MUCH LESS

- Q5. Now about energy. Compared to (men/women) your own age, would you say you have much more energy, more energy, about the same, less, or much less energy?

MUCH MORE

MORE

~~SAME~~

LESS

MUCH LESS

- Q6. What about enjoying life. Compared to (men/women) your own age, would you say you are enjoying life much more, more, about the same, less, or much less?

MUCH MORE

MORE

~~SAME~~

LESS

MUCH LESS

SAMPLE CODED INTERVIEW

- Q7. Here are some other health conditions you may have had any time during the past year even though they may not bother you now. Have you had any of the following conditions at any time during the last 12 months, that is, since (MONTH) of 1972?

PAY ATTENTION TO YOUR VOICE INFLECTION WHILE READING THE LIST

	<u>YES</u>	<u>NO</u>	<u>DON'T KNOW</u>
7.1. Skin trouble?	_____	<u>X</u>	_____
7.2. Rheumatism or arthritis?	<u>X</u>	_____	_____
7.3. Bronchitis?	_____	<u>X</u>	_____
7.4. Sinus trouble?	_____	_____	<i>has cold, stuffy runny nose trouble</i>
7.5. Trouble getting to sleep?	_____	<u>X</u>	_____
7.6. Trouble with teeth?	_____	<u>X</u>	_____
7.7. Cold or flu?	<u>X</u>	_____	_____
7.8. Heart trouble?	_____	<u>X</u>	_____
7.9. Allergy?	_____	<u>X</u>	_____

- Q8. Is there anything about the kind of work you do or the conditions you work in that you regard as dangerous or as bad for your health?

☒ 1. YES

☐ 5. NO — GO TO Q9

Q8a: What is this (are these)? only one kind of thing (I'm a maint. eng.) have to clean with chemicals every once in a while, little worried about the fumes the chemical give off that's about all.

Q8b: Would you say this is (these are) a serious or slight problem for you?

☐ 1. SERIOUS PROBLEM

☒ 2. SLIGHT PROBLEM

SAMPLE CODED INTERVIEW

ASK EVERYONE

- Q9. Think about the kind of activities which you usually do in your (work/housework/school work). Do you have enough strength and energy to do these things as well as you would like?

1. ~~YES~~

5. NO

OTHER _____

- Q10. What about (five) years in the future? Do you think you will have enough strength and energy to do your (work/housework) as well as now?

1. ~~YES~~

5. NO

OTHER _____

- Q11. What about activities which you enjoy in your free time, such as the things you like to do either alone, with your family, or with friends? First, what are some of the free time activities which you most enjoy doing?

*in summer, like to play golf, in winter, I bowl
2 things I think I enjoy most.*

- Q12. Thinking about these activities which you enjoy, do you have enough strength and energy to do them as much and as well as you would like?

1. ~~YES~~

5. NO

OTHER _____

- Q13. Do you have enough strength and energy to do these free time activities as much and as well as you did them (five/ten) years ago?

1. YES

5. NO

Not a little more tired
OTHER *Not quite as well.*

SAMPLE CODED INTERVIEW

Q14. Have you visited a doctor in the past month, that is since May 15 ?

☒ YES

☐ NO

about shoulder

Q15. Have you been in a hospital in the last 12 months, that is, since

June 15, 1971 ?

☐ YES

☒ NO

not since 5 years ago

Q16. Are you married, separated, divorced, widowed, or have you never been married?

☒ 1. MARRIED

☐ 2. SEPARATED

☐ 3. DIVORCED

☐ 4. WIDOWED

☐ 5. NEVER MARRIED

Q17. What is the highest grade of school or year of college you completed?

☐ 00 ☐ 01 ☐ 02 ☐ 03 ☐ 04 ☐ 05 ☐ 06 ☐ 07 ☐ 08 ☐ 09 ☐ 10 ☐ 11 ☒ 12

Q17a. Did you get a high school graduation diploma or pass a high school equivalence test?

☒ 1. YES

☐ 5. NO

College:

☐ 13

☐ 14

☐ 15

☐ 16

☐ 17

Q17b. Do you have a college degree?

☐ 1. YES

☒ 5. NO

INAP

What degree is that? _____

SAMPLE CODED INTERVIEW

Q18. (CARD 3) To get an accurate picture of people's financial situation, we need to know the income of all the families we interview. Would you please tell me the letter on this card that indicates how much income you and your family received from all sources during last year, 1972; I mean before taxes or any deductions?

A. UNDER \$3,000

~~F. \$10,000 - \$12,499~~

B. \$3,000 - \$4,999

F. \$12,500 - \$14,999

C. \$5,000 - \$7,499

G. \$15,000 - \$19,999

D. \$7,500 - \$9,999

H. \$20,000 - \$24,999

I. \$25,000 AND OVER

CHAPTER 9

SAMPLE ANALYSIS OF INTERVIEWER PERFORMANCE

The data shown here represent two analyses. The first is based on 60 interviews which were conducted by the Survey Research Center national interviewing staff. These interviews do not constitute in any sense, a sample; they were merely conducted in areas in which supervisors had a tape recorder readily available at the time of the study. All of the interviews were based on the same questionnaire, and the number of interviews per interviewer ranged from one to five. This analysis follows the pattern described earlier in Chapter 5 on the feedback of information to interviewers.

The questionnaire contained both open and closed questions. Table 9-1 shows the general classes of activity, and the pattern of interviewers' behaviors. The ranges of amounts for each activity are wide. The variability among interviewers which this indicates is probably attributable both to the general tendencies of each interviewer and to adaptations which they make in their behavior to suit a particular respondent.

Table 9-2 shows the percentage of each major class of behaviors which was coded as acceptable and unacceptable. In this group of interviews, approximately three-quarters of the activity was acceptable, and a sizable 25% was judged to be unacceptable. The ranges are startling, especially in light of the fact that one interviewer asked only slightly over 10% of the questions correctly. In addition, at least one person used over one-third unacceptable probes. It can also be seen from this Table that the proportion of unacceptable behavior is larger for the "other" behaviors which are less frequent and more difficult in training than for the basic question-asking and probing.

In considering these averages, one should not automatically blame interviewers for poor performances. While poor interviewers certainly constitute a major source of problems, and while these figures may well indicate a need either for additional training, or even for the discharge of some interviewers who are at the extreme end of the range of poor behavior, there is another major source of difficulty: the questionnaire itself. Our analysis shows that the wording of some questions is so complicated or awkward, that a high proportion of the errors in question-asking occurs in conjunction with relatively few questions. In these cases, the fault does not lie entirely with the interviewers; they have been given a very difficult task. Often the wording of the question does not convey the stated objective of the question and no amount

SAMPLE ANALYSIS OF INTERVIEWER PERFORMANCE

of repetition or non-directive probing will enable the interviewer to obtain the needed information. The interviewer must then either accept a response he knows is inadequate or use a directive probe to compensate for the inadequacy of the question.* The extreme ranges shown for some of the activities suggest that, in some cases, the interviewer may have had either a particularly easy or a particularly difficult respondent, and the patterns may be a reflection of that quality rather than of the interviewer's usual behavior.

In the second stage of analysis, we coded from eight to twelve interviews for each of four interviewers who were working on a regular national sample survey in order to obtain information on the stability of activities. These four interviewers were selected simply because a tape recorder was available to them. Tables 9-3 and 9-4 show data which are comparable to those in Tables 9-1 and 9-2 for these four interviewers individually. There is considerably more stability in the averages for these interviewers, but the range for each is still rather large. This implies that one should be cautious in judging the quality of all interviewers' work on the basis of the work of one or two interviewers. A comparison of the average activities for the percent acceptable or unacceptable also shows differences between the two groups. This may reflect either differences in the type or degree of difficulty of the questionnaires which were used or differences in the interviewers' training and expertise or it may merely reflect the fact that this is a small sample which was not selected randomly.

The variability in range in activity should not be ignored, however, in evaluating interviewer performance because it may mean that an interviewer has a problem in interviewing a particular type of respondent (from a particular age, income, education, or racial group). When there are extremes, one should examine the interview situation during the poor performance and determine what might be done in order to avoid similar situations in the future.

*These findings suggest the possibility of using a behavior coding system as a basis for evaluating the questions during the pretest. The writers are at present developing such a system.

SAMPLE ANALYSIS OF INTERVIEWER PERFORMANCE

Table 9-1

Means and Ranges of Interviewer Activity (30 interviewers)

Activity	Average % for all Interviewers	Percentage Range for all Interviewers
Question asking	69.6%	47.1 - 90.2%
Probing	23.4	7.4 - 35.4
Other	8.0	0 - 14.4
	100.0%	

Table 9-2

Means and Ranges of Interviewers Acceptable and Unacceptable Activity (30 interviewers)

Activity	Average % for all Interviewers	Percentage Range for all Interviewers
Question asking		
Acceptable	78.6%	13.2 - 96.4%
Unacceptable	21.4	2.5 - 86.8
	100.0%	
Probing		
Acceptable	79.8	61.7 - 98.0%
Unacceptable	20.2	2.0 - 38.3
	100.0%	
Other		
Acceptable	53.0%	28.5 - 100%
Unacceptable	47.0	0 - 76.0
	100.0%	

Table 9-3
Average Percent of All Activity for Four Experienced Interviewers

Activity	All Interviewers' Average	Individual Interviewer's Averages			
		1	2	3	4
Question asking (Range)	78.7% (49.8-97.4)	80.7% (70.1-95.1)	86.8% (68.5-97.4)	72.2% (62.8-96.8)	75.5% (49.8-93.9)
Probing (Range)	17.9 (1.3-45.6)	14.7 (3.3-24.5)	11.3 (2.1-27.8)	25.5 (1.2-32.6)	19.5 (5.6-35.6)
Other (Range)	2.1 (0-6.6)	3.2 (1.2-5.5)	.8 (0-2.8)	1.2 (0-3.8)	3.3 (0-6.6)
Other (skips) (Range)	1.3 (0-7.2)	1.4 (0-7.2)	1.1 (0-5.9)	1.1 (0-5.9)	1.7 (0-4.9)
Total Activity	100%	100%	100%	100%	100%
No. of Interviews	35	10	9	8	8

Table 9-4

**Percentage Distribution of Acceptable and Unacceptable Activity
for Four Interviewers Based on 8-12 Interviews Each**

Activity	All Interviewers' Average	Individual Interviewer's Averages			
		1	2	3	4
Question asking					
Acceptable	95%	89%	98%	96%	94%
(Range)	(75-100)	(75-99)	(96-100)	(78-99)	(78-100)
Unacceptable	5%	11%	2%	4%	6%
(Range)	(0-24)	(5-24)	(0-4)	(0-22)	(0-21)
Total	100%	100%	100%	100%	100%
Probing					
Acceptable	89%	91%	90%	92%	88%
(Range)	(67-100)	(80-100)	(75-100)	(80-100)	(67-100)
Unacceptable	11%	9%	10%	8%	12%
(Range)	(0-34)	(0-19)	(0-25)	(0-20)	(0-34)
Total	100%	100%	100%	100%	100%
Other					
Acceptable	48%	41%	50%	57%	53%
(Range)	(0-100)	(0-80)	(0-100)	(0-100)	(0-100)
Unacceptable	52%	59%	50%	43%	47%
(Range)	(0-100)	(20-100)	(0-100)	(0-100)	(0-100)
Total	100%	100%	100%	100%	100%

CHAPTER 10

INSTRUCTIONS TO INTERVIEWERS*

PURPOSE

You have been asked to use a tape recorder in order to obtain a complete record of your interviews. The tapes of these recordings will be used in a new procedure which has been developed for coding the number and kinds of behaviors which occur during an interview. The information obtained from this coding provides a basis for training new interviewers and improving the performance of those already trained.

The following instructions have been compiled to facilitate your use of the recorder.

INTRODUCING THE RECORDER:

Simply explain to the respondent that the recorder is used in order to obtain a complete record of the interview, and that you would like to use it if that is acceptable to him. Most respondents do not have any preconceived notions about interview situations so that if the interviewer uses a tape recorder as if it were an integral part of the interview, the respondent will usually agree to its presence.

EQUIPMENT AND PLACEMENT:

Check to ensure that the machine is working properly BEFORE you leave for the interview. If you are using a cadmium battery pack (a rechargeable pack), be sure it is fully charged. If you are using flashlight batteries, be sure that they are fresh, and always carry the electric power cord for your machine "just in case. . . ."

Some interviewers prefer to carry their tape recorders in a shopping bag in order to avoid possible theft. You may carry the machine in any manner you please as long as it is protected from moisture and extreme cold.

*The material presented here is a sample of the type of instructions given to interviewers when they first begin using tape recorders.

INSTRUCTIONS TO INTERVIEWERS

LOCATION OF THE MICROPHONE:

The location of the microphone is very important. If you have a new SONY with a round microphone, set it on the plastic stand (included with it) and point the microphone to the side between you and the respondent. If you point the microphone directly at the respondent, it will not pick up your voice very well. If you have the older SONY, you will have a *square* or rectangular microphone. Set this microphone flat with the face pointing at the ceiling. If your respondent has a very soft voice you may have to move the microphone closer to him. Remember to speak loud enough so that your voice will record well too.

Do *not* put the microphone either on or right next to the recorder or it will pick up the sound of the motor. Put the microphone on a soft surface such as your scarf or a pile of paper, or bring a household sponge for this purpose, if possible.

Try to place the microphone as far as possible from other noises in the room such as TV, children, etc., but as close as possible to you and the respondent. Practice recording at home while your radio or TV is on since some homes you interview in will have these disturbances.

Use 90-minute cassette tapes. The shorter ones are not adequate for a whole interview, and longer ones tend to become tangled. These tapes are usually supplied to an interviewer upon request. If you have to buy them, they should be entered on your expense voucher so that you can be reimbursed. We prefer TDK, Maxell and BASF brand cassettes. Bargain tapes usually produce bargain quality recordings.

Since each side of the cassette records for 45 minutes, it is a good idea to write yourself a note in the questionnaire at a convenient place to turn the tape. Do not bother rewinding the tape to the beginning of side 2, but remember when you listen to the tape that there will be some blank tape at the beginning of side 2. After you turn the tape, do not turn the machine on and off during the interview unless there are lengthy interruptions.

OPERATING YOUR TAPE RECORDER:

Practice using your recorder at home and during your practice interview. Afterwards, you may record a regular interview on the tape which you used for practice.

USING THE MICROPHONE:

Your recorder will have several plug holes on the front and the microphone must be plugged into the correct ones. The holes are labeled "mic," "aux" and "ear"; plug the mike into the two holes labeled "mic." If you are not certain which are the correct holes, practice recording and listening to what you have recorded until you are.

INSTRUCTIONS TO INTERVIEWERS

TO RECORD:

On your recorder there is a button marked "Record" and a button marked "Play." Both buttons must be pushed at the same time for the machine to record. Be sure the microphone is plugged in.

REMOTE CONTROL WITH THE MICROPHONE:

The microphone has a small "ON/OFF" button. After you have set up the recorder, this button must be set to "ON." If you push it to "OFF," the machine will not record. If you wish, you can set up the recorder to record before you leave your home and use the button on the microphone to operate the recorder while you are in the respondent's home.

REVIEW:

Because of the time it takes, you should not check your questionnaires against the information on the tape recordings. You are encouraged, however, to listen to some of your tapes to review your performance. While you are listening, "observe" your own interviewing technique: Did you read all of the questions exactly as they were worded? Did you probe when necessary? Were the objectives for each question met? Did you read slowly and clearly, giving your respondent time for a considered reply? Did you approach the respondent in a professional manner, showing neither approval nor disapproval, rewarding him positively for his performance as a respondent rather than for the responses which he gave? The tape recording enables you to evaluate your own performance in a way which is impossible to manage when you are in the midst of an interview. The tape, in effect, gives you a chance to observe yourself.

ADDITIONAL NOTES AND TAPE RECORDING INFORMATION:

Microphones

There are two different types of microphones for the SONY, one *round* and the other *square*. (Also see LOCATION OF THE MICROPHONE.)

Batteries

The SONY tape recorder has a rechargeable battery pack *and* a cord for plugging the recorder into a regular wall outlet. The batteries will last all day, but they must be *recharged each night*. To recharge them, you must plug the recorder into a wall outlet in your home for 12 hours. Then the recorder will be good for the next day. Although it takes 12 hours to recharge completely used batteries, a full 12 hours of recharging will usually not be necessary. If you are interviewing in the evening and then again the next morning so that

INSTRUCTIONS TO INTERVIEWERS

you have less than 12 hours for recharging, you can check the battery condition dial to see whether the batteries are charged enough. (If you should forget to recharge your batteries, you can use a pack of flashlight batteries in your recorder. These are good for only one day (4 interviews) and then must be replaced.)

The recorders also have a cord to plug into the wall outlet. If your batteries run down unexpectedly while you are at an interview, you can use the cord to plug your recorder into an outlet in the respondent's home. This is not recommended, however, since the location of the outlet is often inconvenient.

Remote Control

Remember that your machine will not work when the microphone is plugged in *unless* the mike switch is in the "ON" position. Always check this switch before you assume either that the batteries are dead or that something else is wrong with the machine.

Volume Control

Most SONY recorders self-adjust for volume during recording. The volume control only adjusts the volume for play-back. These machines will usually pick up any noise, no matter how faint, so that it is important to place the microphone as close as possible to the respondent and yourself, and as far as possible from background noise.

Cold Weather

The tape recorder should be protected from extreme temperatures. Cold will not harm the tape recorder permanently, but a cold machine will work slowly and produce poor quality tapes. If your machine has been out in the cold for some time, it should be allowed a 15-30 minute warm-up time before you use it.

Practice Interview & Mailing Tapes

Send the practice tape and practice interview to your local coordinator or supervisor. Before you mail the tapes, write identifying information on the tape cassette itself, and also on the mailing box. Identifying information includes:

Your name

Your City and State

Your Interview Number (as it appears on the cover sheet)

(Also indicate which side is side 1 and which is side 2.)

Do *not* include any respondent identification

INSTRUCTIONS TO INTERVIEWERS

When you get home, plug your tape recorder in and "rewind" your completed tapes. If you have a recording machine which cannot be plugged into regular house current electricity, do not bother to rewind the tapes.

If you used only one side of the tape, *rewind* it to the beginning. If you used both sides of the tape, run the second side *forward* as far as it will go.

Place the tape cassette in the box in which it came. Send it with the completed interview to your supervisor. In order to avoid tearing the mailing envelope, send only 3 tapes per regular mailing envelope.

IMPORTANT: Place the tape boxes **BETWEEN** the completed interviews (sandwich-style) in the mailing envelope.

POINTS TO REMEMBER

Be sure recorder is running and set to *record* when you begin.

Do not set microphone on the recorder.

Place the microphone as close to both of you as possible.

Set microphone where it will not be bumped during recording, preferably on a soft surface.

Put your name, city, state and interview number on each tape cassette when it is completed (and indicate which is side 1 and which is side 2). Also put identification information on the tape box.

Remember to recharge your recorder at night.

IMPORTANT: Poor quality tape recordings increase study costs. A recording which contains excessive background noise (e.g., the TV set) or fails to pick up the respondent's voice clearly causes great problems for the listener.

Please do everything you can to get good quality tape recordings.

CHAPTER 11

PROGRAM DOCUMENTATION*

*TIMBO DISTRIBUTION TAPE***

The TIMBO distribution tape contains load modules for the programs TIMBO and NKTIMBO in the form of an OS unloaded partitioned dataset. The tape is 9-track, 800 bpi density, and has IBM standard labels. The volume serial number is TIMBO, and the modules are in the first and only dataset. The dataset carries the name TIMLIB, the same name as the library to be created. The control cards indicated below make use of the IBM utility IEHMOVE to create a partitioned dataset TIMLIB and load the two programs into it. The device types DISK, TAPE and 3101 may have to be changed at other installations, as well as the disk volume serial number ISRB, which is specific to the Institute for Social Research.

```
// EXEC PGM=IEHMOVE
//SYSPRINT DD SYSOUT=A
//SYSUTI DD UNIT=SYSDA,SPACE=(TRK,(100,10))
//DISK DD UNIT=DISK,VOL=SER=ISRB,DISP=OLD
//TAPE DD UNIT=TAPE,VOL=SER=TIMBO,DISP=OLD
//SYSIN DD *
  COPY DSN=TIMLIB,FROM=TAPE=TIMBO,TO=3101=ISRB,
  FROMDD=TAPE
/*
```

I. TIMBO

TIMBO is a program which prepares standard OSIRIS files of frequencies and transition frequencies for behavior codes, plus associated descriptor data. It can perform filtering, bracketing, and aggregating in the process. TIMBO is written in FORTRAN, and has several OSIRIS subroutines in both FORTRAN and IBM Assembly language for use under OS and OS/VS. The program requires 110 K of core.

*Peter Solenberger was the sole author of all materials presented in this chapter.

**The distribution tape can be obtained from the authors for approximately \$7.50 (processing fee) plus the cost of a 9-track tape (if not provided by the purchaser).

PROGRAM DOCUMENTATION

A. Input

1. Data prepared by the program NKTIMBO (see Section II of this Chapter) and sorted into the desired sequence on either tape or disk. (See the note on sorting input data at the end of this section.)
2. Control cards.

B. Output

1. *Dictionary and data files* (up to 4) on either tape or disk. Variables for the output files consist of descriptor variables selected by user from the input descriptor variables, plus frequencies and transition frequencies for behavior codes selected by user. Transition frequency is the frequency with which code A follows code B within the specified portion of the interview. Behavior codes may be either bracketed or excluded before frequencies are measured.
2. *Printout*
 - a. All control cards are printed. If an error is detected, processing terminates and an error message is printed. One of the following numbers is printed to indicate that the corresponding error has been discovered.
 - 1 Wrong keyword or format in global or local parameter card.
 - 2 Error either in reading first record of input data file or in writing output dictionary.
 - 3 No identification variables or identification variable number out of range (identification variable numbers can range from 1 to the number of descriptor variables in the input data file).
 - 4 Information variable number out of range (information variable numbers also can range from 1 to the number of descriptor variables in the input data file).
 - 5 Filter variable number out of range (filter variable numbers range from 1 to the number of descriptor variables in the input data file, the same as identification and information variables).
 - 6 Error in local parameters; either no output file name given or "continuous-type" aggregation level break higher than "summation-type" aggregation level break.
 - 7 Error in behavior code list (card column of error also printed).
 - 9 Error in naming descriptor variables for output file.
 - 10 Error in naming behavior codes for output file.

PROGRAM DOCUMENTATION

- b. During processing, two kinds of errors might occur: sequence errors and I/O errors. In either case, the program terminates with an error message indicating the case number in which the error occurred.
- c. If the program goes to successful completion, the number of records which were input and output for each file is printed.

C. Setup

1. For users of OSIRIS:

```
// EXEC OSIRIS, LIB =(catalogued library containing TIMBO),  
LIB1 =(catalogued library containing OSIRIS)  
  
//DATAx DD parameters for input data file  
          (See note on data flow from NKTIMBO to TIMBO at  
          the end of this section)  
  
//DICTy DD parameters for output dictionary file } up to 4  
//DATAy DD parameters for output data file      } output files  
  
//SETUP DD *
```

\$RUN TIMBO

- 1. Global filter card (optional).
- 2. Global label card.
- 3. Global parameter card.
- 4. Local filter card (optional).
- 5. Local label card.
- 6. Local parameter card.
- 7. Local behavior code list.
- 8. Names for variables (optional).

} up to 4 sets for
4 output files.

2. For users not using OSIRIS:

```
// EXEC PGM=TIMBO  
//STEPLIB DD parameters for library containing TIMBO  
//DATAx DD parameters for sorted input data file  
//DICTy DD parameters for output dictionary file } up to 4  
//DATAy DD parameters for output data file      } output  
//FTO1FOO1 DD *
```

- 1. Global filter card (optional).
- 2. Global label card.
- 3. Global parameter card.

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- | | |
|------------------------------------|---------------------------------------|
| 4. Local filter card (optional). | } up to 4 sets for
4 output files. |
| 5. Local label card. | |
| 6. Local parameter card. | |
| 7. Local behavior code list. | |
| 8. Names for variables (optional). | |

/*

D. Control Cards

1. Global filter card (optional): See OSIRIS Appendix C*
2. Global label card: 1-80 columns, punched free-form
3. Global parameter card: Keywords (defaults underlined) are separated by commas or blanks; list is terminated by an asterisk.

INFILE=IN/xxxx Allow user to specify a 1 to 4 character input ddname suffix

ID=(variable list) Specifies descriptor variables used to identify records; data must be sorted in same order as ID variable list; ID variables are numbered according to their positions in descriptor segment of input data record (see note on sorting input data).

IF=(variable list) Optional parameter; allows inclusion of descriptor variables not to be checked for sequence but only to be used as information; IF variables are also numbered according to their positions in descriptor segment of input data record.

4. Local filter card (optional): See OSIRIS Appendix C*
5. Local label card: 1-80 columns, punched free-form
6. Local parameter card: Keywords (defaults underlined) are separated by commas or blanks; list is terminated by asterisk.

OUTFILE=xxxx Specifies 1 to 4 character output file ddname suffix for this analysis packet (no default; ddname suffix *must* be supplied).

PRINT=DICTIONARY/NODICTIONARY Allows user to specify whether output dictionary for this file is to be printed.

* There is a section describing the use of filters in the Appendix of the OSIRIS III User's Manual, Volume 1.

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AGGREG=(m,n) Specifies descriptor variables which are to signal level breaks for "continuous-type" and "summation-type" aggregating. All records occurring between changes in the value of variable *m* are to be treated as a *continuous* sequence of behaviors. Frequencies for all continuous sequences of behaviors from records occurring between changes in the value of *n* are to be summed to give aggregated frequencies. Variable *n* must occur later than variable *m* in identifier variable list and must be more minor in the sort sequence (no defaults; both *m* and *n* *must* be supplied).

OPT=TWO/ONE Specifies frequency table option; ONE indicates *only* frequencies for specified behavior codes; TWO indicates *both* individual code frequencies and transition code frequencies.

7. *Local behavior code list:* User must supply a list of valid behavior codes. Codes may be combined and renumbered while being listed. Codes not included in list will be skipped over when they occur in input records. Codes may be listed either individually or in ranges. Codes surrounded by brackets are to be renumbered according to rule: <old codes> = new code. List must be in ascending order of *output* code, and must be terminated by an asterisk.

Example: <1-5,9, 20-29,31>=99*

Eight output codes will be produced: 1,2,3,4,5,8,9,99. All input codes will be disregarded, except the following: 1,2,3,4,5,8,9,20, 21,22,23,24,25,26,27,28,29,31.

Note: One output file will be produced for each set of the local control cards. After the first packet, subsequent packets may omit the PRINT, AGGR, and OPT parameters (but *not* the OUTF parameter). This will cause the program to use the options selected for the previous packet. Also, after the first packet, subsequent packets may omit the behavior code list, supplying an asterisk in its place. This will cause the program to use the behavior codes selected for the preceding packet. Up to four packets may be included.

8. *Names for variables.* If default names are unsatisfactory, user may provide names for descriptor variables and behavior-code frequency variables, but not for transition frequencies. Descriptor variables must be named first, then behavior code frequencies. The following three types of cards are needed:

PROGRAM DOCUMENTATION

- a. **NAME** Word 'name' in Col. 1-4 signifies that user-supplied variable names are to follow.
- b. **DC=var,N='name'*** Gives descriptor variable number (must be in the range 1-100 and, if it is to be used, must be included in either the ID or IF list) and name to be used.
- c. **BV=code,N='name'*** Gives output behavior code number (must be in the range 0-999 and, if it is to be used, must be a valid output code for at least one of the packets) and name to be used.

Ascending order must be maintained both within descriptor variables and within behavior-code frequency variables, although either group of names may be omitted. Variable names are provided *once* for each run. They apply to all files in which the variable occurs.

Behavior-code frequency variables will be given new variable numbers in the range 1000-1999 to preserve ascending variable numbers for dictionary. Each output behavior code will have 1000 added to it. First behavior at question level and last behavior will be given code of 1000 and variable number of 2000. Transition frequencies will be given variable numbers beginning with number 2001. Transition frequencies will be put out *by rows* (i.e., all "to" codes will be listed before "from" code changes).

The default variable names are as follows:

- (1) Descriptor variables:

'DESCRIPTOR VAR. nnnn'

where nnnn is the original descriptor variable number in the range 1-1000.

- (2) Behavior-code frequency variables:

'FREQ: BEHAVIOR CODE nnnn'

where nnnn is the output code in the range 0-1000.

- (3) Transition frequency variables:

'FREQ: CODE mmmm to nnnn'

where mmmm is the 'from' code and 'nnnn' is the 'to' code, both in the range 0-1000.

Note on sorting input data: Before TIMBO is run, the input data must be sorted in ascending order of the identifying variables. The first identifying variable begins in column 9 of the input data

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record. Each variable has a field-width of 4. For instance, the following SORT control card would be needed for an identifying variable list, ID=(V4,V3,V2,V1):

SORT FIELDS=(21,4,A,17,4,A,13,4,A,9,4,A),FORMAT=FI

Note that the first eight bytes of the record are taken up by system and program record descriptor words, and that the records have a fixed-length format, length 4.

The following JCL is needed to chain the sort with NKTIMBO and TIMBO under OSIRIS:

```
//SORTIN DD VOL=REF=*.FTO4FOO1,DSN=*.FTO4FOO1,  
// DCB=(RECFM=VSB,BLKSIZE=2004,LRECL=  
4404)  
//SORTOUT DD VOL=REF=*.FTO4FOO1,DSN=*.FTO4FOO1,  
// DCB=(RECFM=VSB,BLKSIZE=2004,LRECL=  
4404)  
//DATAIN DD VOL=REF=*.FTO4FOO1,DSN=*.FTO4FOO1
```

The backward references in SORTOUT and DATAIN can be changed to create a permanent file.

II. NKTIMBO

NKTIMBO is the variable-length-record "card-to-tape" and edit program. It reads, edits, converts to binary, and writes variable length records, such as those from interview behavior data. The program is written in IBM assembly language for use under OS and OS/VS. The program requires 40 K of core.

A. Input

1. *Behavior and descriptor data* on cards, tape, or disk.
 - a. *Ganged descriptor records.* Records are marked by a "?" in column 1 and may be continued from one physical record to the next by omission of a "?" in column 1 of succeeding records (or an "*" indicating behavior data records. See below.). They contain descriptor information to be ganged into subsequent behavior data records until next ganged descriptor record is reached.
 - b. *Behavior data record.* Records are marked by an "*" in column 1 and may be continued from one physical record to the next by omission of a "?" or an "*" in column 1 of succeeding records. They contain descriptor and behavior information for each output record.

2. Control Cards

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B. Output

1. *Valid behavior data* on tape or disk containing the following information in four-byte, fixed-point binary words:
 - a. The (fixed) number of descriptor variables in the record. One word.
 - b. The descriptor variables, including ganged variables, in the record. From one to 100 words.
 - c. The (variable) number of behavior codes in the record. One word.
 - d. The behavior codes in the record. From one to 1000 words.
2. *Error records* on card, tape, or disk. All physical records affected by an error in any one physical record are output to this file and are not output to the valid behavior data file. An error in a ganged descriptor record affects all subsequent behavior data records until next ganged descriptor record is reached. An error in any one physical record affects all other physical records logically associated with it.
3. *Printout*
 - a. All control cards are printed. When an error is detected, one of the following numbers is printed on the line following the card in error to indicate that the corresponding error has occurred.

Number	Error
0	Excessive <i>physical</i> record length on input data file (max. 256 bytes per <i>physical</i> record).
1	Control statement too long (control statements may span cards but may not have more than 800 bytes, <i>excluding</i> blanks).
2.	Continuation portion of excessively long control statement.
3	Premature end-of-file; no behavior fields described.
4	Unrecognizable control card.
5	Excessive number of descriptor variables (max. 100, including ganged descriptor variables).
7	Control card number field too long; max field lengths: variable field origin -5 variable field length -5 variable valid constant length—field length plus 1
8	Zero field length.

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- 9 Wrong delimiter for variable field origin.
 - 10 Non-positive variable field origin.
 - 11 Wrong delimiter for variable field length.
 - 12 Non-positive variable field length.
 - 13 Excessive variable field length (max. 10 digits) in data record.
 - 14 Variable field extending beyond maximum permissible length of data record (1600 bytes).
 - 15 Behavior code fields overlap with descriptor variable fields.
 - 16 Wrong delimiter for constants.
 - 17 High end of range not greater than low end of range.
 - 18 High end of range or single value not greater than previous high end of range or single value.
 - 19 Length of constant table exceeded.
- b. Error data records are printed with a number to left of physical record image indicating sequence number (from beginning of file) of physical record, and a number to right of physical record image indicating column of *logical* record in which error occurred.
- c. A summary is printed of number of physical input records, number of valid-logical output records, and number of physical error output records.

C. Setup

For users of OSIRIS:

JOB card

```
// EXEC OSIRIS, LIB=(catalogued library containing NKTIMBO),  
LIB1=(catalogued library containing OSIRIS)  
//FTO3FOO1 DD *,DCB=(RECFM=FB,LRECL=80,BLKSIZE=80,  
BUFNO=2)
```

input data cards

/*

```
//FTO8FOO1 DD parameters for error output file; either  
SYSOUT=B, DUMMY, or a disk or tape file for  
later use (include DCB)
```


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```
//FTO4FOO1 DD parameters for valid record output file on tape
                or disk (exclude DCB)
//SETUP DD *
$RUN NKTIMBO
.
.
input control cards
.
.
/*
```

For users not using OSIRIS:

```
// EXEC PGM = NKTIMBO
//STEPLIB DD parameters for library containing NKTIMBO
//FTO1FOO1 DD *
.
.
input control cards
.
.
/*
//FTO3FOO1 DD parameters for input file (may be "*" if input
                data cards follow)
//FTO4FOO1 DD parameters for valid record output file on
                tape or disk (exclude DCB)
//FTO6FOO1 DD SYSOUT=A
//FTO8FOO1 DD parameters for error output file,
                either SYSOUT=B, DUMMY or a disk or
                tape file for later use (include DCB)
```

D. Control Cards

Control cards are of three types:

1. DC=(origin, length, [constant list]). This control card specifies the field origin and field length for a descriptor variable. The descriptor variables may be either right- or left-justified in the field, but they may not be all-blank. An optional constant list of ranges and single values can be included for wild code checking.

Example: DC=(10,4,1000-1020,1030,1050-1060,1090)

2. DC=SET. This control card indicates (a) that the set of descriptor control cards processed *before* it is to be considered a complete description of *ganged* records for the run such as demographic information, and (b) that the descriptor control cards processed *after* it refer to the descriptor variables which are attached to each behavior record, such as question number.

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3. BV=(origin, length, [constant list]). This control card specifies the field origin of the *first* behavior code and the field length for *all* behavior codes. A behavior code may be either right-or left-justified in the field. A blank field indicates end-of-behavior for the question. Subsequent behavior codes are assumed to follow immediately after the first one. An optional constant list of ranges and single values can be included for wild-code checking.

Example: BV=(15,2,0-20,99)

III. SOURCE PROGRAM TIMBO

SYMBOL	TYPE	ID	ADDR	LENGTH	LD	ID
TIMBO	SD	01	000C00	CC4888		

EXTERNAL SYMBOL DICTIONARY

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
				1	PRINT NOGEN
000000				2	TIMRD START 0
000000	47FF 000C		0000C	3	B 12(15)
000004	07			4	DC X'07'
000005	C502E3C9D4C2D6			5	DC C'NKTINBO'
00000C	90EC 000C		0000C	6	STM 14,12,12(13)
000010	18BF			7	LR 11,15
000000				8	USING TIMBO,11
000012	184D			9	LR 4,13
000014	4100 89B8		009B8	10	LA 13,SAVE
000018	504D 0004		00004	11	ST 4,4(13)
00001C	50D4 0008		0C008	12	ST 13,8(14)
				13 *	
000020	9204 8C08		00C08	14	MVI TAB,X'04'
000024	D2FE 8C09	BC08	00CC9	15	MVC TAB+1(255),TAB
00002A	9203 BC65		00C65	16	MVI TAB+93,X'03'
00002E	9202 8C68		00C68	17	MVI TAB+96,X'02'
000032	9201 8C73		00C73	18	MVI TAB+107,X'01'
000036	0709 8CF8	8CF8	00CF8	19	XC TAB+240(10),TAB+240
				20 *	
				21	OPEN (CARDIN,(INPUT),PRINT,(OUTPUT),INTAPE,(INPUT))
00004E	D24D 8A87	880E	00A89	31	MVC PRAREA(78),HEAD
000054	D22A 8AD7	8AD6	00A87	32	MVC PRAREA+78(43),PRAREA+77
				33	PUT PRINT,PRAREA
000068	D206 8A89	880E	00A89	38	MVC PRAREA(7),=C'-- CARD '
00006E	D27D 8A90	8A8F	00A8F	39	MVC PRAREA+7(126),PRAREA+6
000074	4140 8A91		00A91	40	LA 4,INAREA
000078	4120 000A		0000A	41	LA 2,10
00007C	4130 8AE0		00AE0	42	LA 3,INAREA+79
000080	D209 4000	8888	00000	43	MVC 0(10,4),=C'1234567890'
000086	8742 8080		00080	44	BXLE 4,2,=-6
				45	PUT PRINT,PRAREA
000098	92FD 8A89		00A89	50	MVI PRAREA,X'FO'
00009C	4110 0100		00100	51	LA 1,256
0000A0	4860 8AF6		008E6	52	LH 6,INTAPE+82
0000A4	1916			53	CR 1,6
0000A6	4780 80BE		000BE	54	RNL COLENGK
0000AA	1811			55	SR 1,1
0000AC	4210 816D		0016D	56	STC 1,CDERR-1
				57	CLOSE INTAPE
0000BA	47FD 815C		0015C	63	B CDECF
0000BE	1800			64	COLENGK SR 0,0
0000C0	5810 8A0C		00A0C	65	L 1,COLIM
0000C4	1006			66	DR 0,6
0000C6	5010 8A19		00A10	67	ST 1,CDMAXNO
0000CA	4111 0001		00001	68	LA 1,1(1)
0000CE	5010 8A14		00A14	69	ST 1,CDMAXNCP
0000D2	5860 8A64		00A64	70	L 6,CNVEC
				71 *	
0000D6	FA30 8A80	8BE5	00A80	72	CDSTART AP COUNT,=P'1'
0000DC	F333 8A88	8A80	00A80	73	UNPK PRAREA+2(4),COUNT
0000E2	96F0 8A8E		00A8E	74	OT PRAREA+5,X'FO'
0000E6	4120 0001		00001	75	LA 2,1
0000EA	4130 8AE0		00AE0	76	LA 3,INAREA+79
0000EE	5870 8A74		00A74	77	L 7,STWNT

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT	FO1MAY72	7/27/74
0000F2	4180 0001		00001	78	LA 8,1		
0000F4	4197 063F		0063F	79	LA 9,1599(7)		
				80	COREAD GET CARDIN,INAREA		
				85	PUT PRINT,PRAREA		
000116	9240 RAR9	00A89		90	MVI PRAREA,X'40'		
				91	*		
00011A	4110 BA91		00A91	92	LA 1,INAREA		
00011E	9540 1000	00C00		93	CLI 0(1),X'40'		
000122	4780 R14C		0014C	94	BE CDCROSS		
000126	0200 7000	1003 00C00	00000	95	MVC 0(1,7),0(1)		
00012C	9550 1000	00000		96	CLI 0(1),C'T'		
000130	4780 R1FE		001FE	97	BE CDPROC		
000134	95E3 1000	00000		98	CLI 0(1),C'T'		
000138	4780 R1FE		001FE	99	BE CDPROC		
00013C	8778 R14C		0014C	100	BXLE 7,8,CDCROSS		
000140	92FF BA85	00A85		101	MVI LENSX,X'FF'		
000144	41F0 0001		00001	102	LA 15,1		
000148	47F0 R16E		0016E	103	B CDERR		
00014C	8712 R11E		0011E	104	BXLE 1,2,CDLOOP		
000150	0204 BA8A	BA89 00A8A	00A89	105	MVC PRAREA+1(5),PRAREA		
000156	47F0 B0FA		000FA	106	B COREAD		
				107	*		
				108	CDEOF CLOSE CARDIN		
000166	940F R1A3	001A3		114	NI BRERR+1,X'OF'		
00016A	41F0 0003		00C03	115	LA 15,3		
00016E	0200 BA99	BR92 00A89	00892	116	CDERR MVC PRAREA(14),=CL14'0 **** ERROR		
000174	0249 BA97	BA96 00A97	00A96	117	MVC PRAREA+14(74),PRAREA+13		
00017A	4EF0 RA00		00A00	118	CVD 15,DBLWORD		
00017E	F327 BA98	BA00 00A58	00A00	119	UNPK PRAREA+15(3),DBLWORD		
000184	96F0 RA9A		00A9A	120	DI PRAREA+17,X'FO'		
				121	PUT PRINT,PRAREA		
000196	92FF RA84	00A84		126	MVI ERRSW,X'FF'		
00019A	95FF BA86	00A86		127	CLI BVSW,X'FF'		
00019E	4780 R1A8		001A8	128	BE RETURN		
0001A2	47F0 B0D6		000D6	129	BRERR B COSTART		
				130	*		
				131	RETURN CLOSE PRINT		
0001B2	58DD 0004		00004	137	L 13,4(13)		
0001B6	98EC D00C		0000C	138	LM 14,12,12(13)		
0001BA	07FE			139	BR 14		
				140	*		
0001BC	1831			141	CDTRANS LR 3,1		
0001BE	4420 B1F2		001F2	142	EX 2,TRT		
0001C2	41F0 0007		000C7	143	LA 15,7		
0001C6	4780 R16E		0016E	144	BC 8,CDERR		
0001CA	41F0 0004		00004	145	LA 15,4		
0001CE	19F2			146	CR 15,2		
0001D0	41F0 0006		00006	147	LA 15,6		
0001D4	47D0 R16E		0016E	148	BMM CDERR		
0001D8	1813			149	SR 1,3		
0001DA	41F0 0008		00008	150	LA 15,8		
0001DE	4780 R16E		0016E	151	BZ CDERR		
0001E2	0613			152	BCTR 1,0		
0001E4	4410 B1F8		001F8	153	EX 1,PACK		
0001E8	4F00 BA00		00A00	154	CVR 0,DBLWORD		

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT
0001EC	4111 3002		00002	155	LA	1,2(1,3)
0001FO	07FE			156	RR	14
0001F2	0000 3000 RC08	00000	00008	157	TRT	0(1,3),TAB
0001F8	F270 BA00 300J	00A00	00000	158	PACK	PACK OBLWORD,0(1,3)
				159	*	
0001FE	95FF BA85	00A85		160	CDPROC	CLI LENSX,X'FF'
000202	9200 BA85	00A85		161	MVI	LENSX,X'00'
000206	41F0 0002		00002	162	LA	15,2
00020A	4780 B16E		0016E	163	BE	CDERR
00020E	5810 BA74		00A74	164	L	1,STMNT
000212	0505 1000 8BA0	00000	00BA0	165	CLC	0(6,1),=C'DC=SET'
00021A	4780 B2A8		002A8	166	BE	DCGANG
00021C	4111 0004		00004	167	LA	1,4(1)
000220	4120 0004		00004	168	LA	2,4
000224	45E0 B18C		0018C	169	BAL	14,CDTRANS
000228	41F0 0009		00009	170	LA	15,9
00022C	4620 B16E		0016E	171	BCY	2,CDERR
000230	1200			172	LTR	0,0
000232	41F0 000A		0000A	173	LA	15,10
000236	4700 B16E		0016E	174	BNP	CDERR
00023A	1840			175	LR	4,0
00023C	4120 3004		00004	176	LA	2,4
000240	45E0 B18C		0018C	177	BAL	14,CDTRANS
000244	8C20 0001		00001	178	SRDL	2,1
000248	1233			179	LTR	3,3
00024A	41F0 0008		00008	180	LA	15,11
00024E	4780 B16E		0016E	181	BNM	CDERR
000252	1200			182	LTR	0,0
000254	41F0 000C		0000C	183	LA	15,12
000258	4700 B16E		0016E	184	BNP	CDERR
00025C	4900 BBA6		00BA6	185	CH	0,=H'10'
000260	41F0 000D		0000D	186	LA	15,13
000264	4720 B16E		0016E	187	BH	CDERR
000268	0600			188	BCTR	0,0
00026A	1834			189	LR	3,4
00026C	1A30			190	AR	3,0
00026E	5930 BA0C		00A0C	191	C	3,CDLIN
000272	41F0 000E		0000E	192	LA	15,14
000276	4720 B16E		0016E	193	BH	CDERR
00027A	5850 BA74		00A74	194	L	5,STMNT
00027E	D503 5000 8A80	00000	00R80	195	CLC	0(4,5),=C'8V=1'
000284	4770 B2DE		002DE	196	BNE	DCCO
000288	92FF BA86	00A86		197	8VCD	MVI 8VSW,X'FF'
00028C	5940 BA08		00A08	198	C	4,CDMAX
000290	41F0 000F		0000F	199	LA	15,15
000294	4700 B16E		0016E	200	BNH	CDERR
000298	4930 BBE6		00B66	201	CH	3,INTAPE+82
00029C	4720 B16E		0016E	202	BH	CDERR
0002A0	4150 BA48		00A48	203	LA	5,BVLOC
0002A4	47F0 B31C		0031C	204	B	CDSTOR
0002A8	5850 BA24		00A24	205	L	5,DCLOC+12
0002AC	5050 BA34		00A34	206	ST	5,DCSET+12
0002B0	4155 000C		0000C	207	LA	5,12(5)
0002B4	5050 BA1C		00A1C	208	ST	5,DCLOC+4
0002B8	5850 BA40		00A40	209	L	5,DCNO

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
00028C	8950 0002		00002	210	SLL 5,2
0002C0	5A50 BA18		00A18	211	A 5,DCLOC
0002C4	5050 BA18		00A18	212	ST 5,DCLOC
0002C8	5A50 BA08		00AC8	213	L 5,CDMAX
0002CC	5050 BA38		00A38	214	ST 5,DCSET+16
0002D0	1855			215	SR 5,5
0002D2	5050 BA08		00A08	216	ST 5,CDMAX
0002D6	92FF BA87	00A87		217	MVI GANGSW,X'FF'
0002CA	47F0 B0D6		0CCD6	218	B CDSTART
0002DE	0503 5000	BB84 00000	00B84	219	CLC 014,51,=C'DC=1'
0002E4	41F0 00D4		00004	220	LA 15,4
0002E8	477J B16E		0016E	221	BNE CDERR
0002EC	5930 BA08		00AC8	222	C 3,CDMAX
0002F0	47D0 B2F8		002F8	223	ANH *+8
0002F4	5033 BA08		00A08	224	ST 3,CDMAX
0002F8	5830 BA40		00A40	225	L 3,OCNO
0002FC	5930 BA44		00A44	226	C 3,CDMAX
000300	41F0 00D5		00005	227	LA 15,5
000304	4780 B16E		0016E	228	RE CDERR
000308	4133 0001		00001	229	LA 3,1(3)
00030C	5030 BA40		00A40	230	ST 3,OCNO
000310	5850 BA24		00A24	231	L 5,DCLOC+12
000314	4155 000C		0000C	232	LA 5,12(5)
000318	5050 BA24		00A24	233	ST 5,DCLOC+12
00031C	5A40 BA78		00A78	234	A 4,LREC
000320	0640			235	BCTR 4,0
000322	5045 0000		00000	236	ST 4,0(5)
000326	5005 0004		00004	237	ST 0,4(5)
00032A	1222			238	LTR 2,2
00032C	4780 B342		00342	239	BZ CDCCN
000330	1822			240	SR 2,2
000332	5025 0008		00008	241	ST 2,8(5)
000336	9500 BA86	00A86		242	CLI BVSW,X'00'
00033A	4780 B0D6		000D6	243	RE CDSTART
00033E	47F0 B3C4		003C4	244	B CEND
				245	*
000342	5065 0008		00008	246	CDCCN ST 6,8(5)
000346	0620			247	BCTR 2,0
000348	5026 0000		00000	248	ST 2,0(6)
00034C	1840			249	LR 4,0
00034E	4144 0001		00001	250	LA 4,1(4)
000352	1824			251	LR 2,4
000354	45E0 B18C		0018C	252	BAL 14,CDTRANS
000358	50C6 0004		00004	253	ST 0,4(6)
00035C	8C20 0001		00001	254	SRDL 2,1
000360	1233			255	LTR 3,3
000362	4740 B386		003E6	256	RM HIGHCN
000366	1824			257	LR 2,4
000368	45E0 B18C		0018C	258	BAL 14,CDTRANS
00036C	8C20 0001		00001	259	SRDL 2,1
000370	1233			260	LTR 3,3
000372	41F0 0010		00010	261	LA 15,16
000376	4780 B16E		0016E	262	ANH CDERR
00037A	5906 0004		00004	263	C 0,4(6)
00037E	41F0 0011		00011	264	LA 15,17

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT
0003R2	4743	R16E	0016E	265	BL	CDERR
0003R6	5606	0000	C0000	266	HIGHCN	C 0,0(6)
0003R8	41F0	0012	C0012	267	LA	15,18
0003R8E	4700	R16E	0016E	268	BNH	CDERR
000392	5006	0008	C0008	269	ST	0,8(6)
000396	4166	0008	C0008	270	LA	6,8(6)
00039A	4106	000C	C000C	271	LA	0,12(6)
00039E	5900	BA78	0CA78	272	C	0,LREC
0003A2	41F0	0013	00013	273	LA	15,19
0003A6	4720	R16E	0016E	274	BN	CDERR
0003AA	1222			275	LTR	2,2
0003AC	4780	B352	00352	276	BZ	CNLOOP
0003B0	5825	000R	C0008	277	L	2,8(5)
0003B4	5062	0000	C0000	278	ST	6,0(2)
0003B8	4166	0004	C00C4	279	LA	6,4(6)
0003RC	9500	BA86	000D6	280	CLI	RVSW,X'00'
0003C0	4780	R006	000D6	281	BE	COSTART
				282 *		
				283	CDFND	CLOSE CARDIN
0003CE	9500	BA84	00A84	289	CLI	ERRSW,X'00'
0003D2	4770	B1A8	001A8	290	BNE	RETURN
0003D6	5810	BA40	00A40	291	L	1,DCNO
0003DA	5820	BA7C	00A7C	292	L	2,XREC
0003DE	5012	0000	00000	293	ST	1,0(2)
0003E2	8910	0002	00002	294	SLL	1,2
0003E6	4101	2004	00004	295	LA	0,4(1,2)
0003EA	5000	BA60	00A60	296	ST	C,BVLOC+24
0003EE	5810	BA48	00A48	297	L	1,BVLOC
0003F2	5010	BA54	00A54	298	ST	1,BVLOC+12
0003F6	5810	BA4C	00A4C	299	L	1,BVLOC+4
0003FA	4111	0001	00001	300	LA	1,1(1)
0003FE	5010	BA58	00A58	301	ST	1,BVLOC+16
0C0402	5810	BA78	00A78	302	L	1,LREC
000406	4A10	B8E6	008E6	303	AH	1,INTAPE+82
00040A	5810	BA58	00A58	304	S	1,BVLOC+16
00040E	5010	BA5C	00A5C	305	ST	1,BVLOC+20
000412	D21A	BA89	B8E6 00A89	306	MVC	PTAREA(27),=CL27*1FILE-BUILDER ERROR REPORT *
000418	D234	BA44	BA43 00A44	307	MVC	PTAREA+27(53),PTAREA+26
				308	PUT	PRINT,PTAREA
00042C	E207	BA89	B860 00A89	313	MVC	PTAREA(8),=C*-CARD
000432	4140	BA91	00A91	314	LA	4,INAREA
000436	4120	000A	0C00A	315	LA	2,10
00043A	4130	BAF4	00AF4	316	LA	3,INAREA+99
00043F	D209	4000	B888 C0000	317	MVC	0(10,4),=C*123+567890'
000444	8742	BA3E	0043E	318	BKLE	4,2,*-6
000448	C204	BAF7	BC01 00AF7	319	MVC	PTAREA+110(5),=CL7*ERRR
				320	PUT	PRINT,PTAREA
00045C	52F0	BA89	00A89	325	MVI	PTAREA,X'F0'
000460	9240	BA91	00A91	326	MVI	INAREA,X'40'
000464	D269	BA92	BA91 00A92	327	MVC	INAREA+1(106),INAREA
00046A	9204	BC65	00C65	328	MVI	TAB+93,X'04'
00046E	9204	BC68	00C68	329	MVI	TAB+96,X'04'
000472	9204	BC73	00C73	330	MVI	TAB+107,X'04'
000476	4800	B8E6	008E6	331	LM	0,INTAPE+82
00047A	0600			332	BCTR	0,0

PROGRAM DOCUMENTATION

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
00047C	4200 B4C0		004C0	333	STC 0,TPMOVE+1
000480	4110 0063		00C63	334	LA 1,99
000484	1901			335	CR 0,1
000486	4700 B48C		0C48C	336	BNH **6
00048A	1801			337	LR 0,1
00048C	4200 R573		00573	338	STC 0,ERRMOVE+1
				339	OPEN (GOTAPE,(OUTPUT),ERRTAPE,(OUTPUT))
00049E	5R30 BA78		00A78	347	L 3,LREC
0004A2	58C0 RA10		00A10	348	L 12,CDMAXND
0004A6	1803			349	LR 0,3
				350	GET INTAPE
0004B2	1801			354	LR 0,1
0004B4	4A00 RRE6		0C8E6	355	AH 0,INTAPE+82
0004B8	47F0 R40C		004DC	356	R TPREAD
				357 *	
0004BC	95FF BA88	00A88		358	TPSTART CLI EOFSW,X'FF'
0004C0	47A0 B730		00730	359	BE CLOSECUT
0004C4	5830 RA78		00A78	360	L 3,LREC
0004C8	5820 BA3C		00A3C	361	L 2,NEXTP
0004CC	0200 3000	2000 00000	000C0	362	TPMOVE MVC 0(1,3),0(2)
0004D2	58C0 RA10		00A10	363	L 12,CDMAXND
0004D6	1803			364	LR 0,3
0004D8	4A00 B8E6		0C8E6	365	AH 0,INTAPE+82
				366	TPREAD GET INTAPE
0004E6	5820 BA68		00A68	370	L 2,PRECNC
0004EA	4122 0001		00001	371	LA 2,1(2)
0004EE	5020 BA68		00A68	372	SY 2,PRECNC
0004F2	18C1			373	LR 0,1
0004F4	4A00 B8E6		0C8E6	374	AH 0,INTAPE+82
0004F8	955C 1000	00000		375	CLI 0(1),C'*'
0004FC	4780 P63A		0063A	376	BE TPROC
000500	956F 1000	00000		377	CLI 0(1),C'?'
000504	4780 P63A		0063A	378	BE TPROC
000508	9540 1000	00000		379	CLI 0(1),X'40'
00050C	4790 R518		0C518	380	BE **12
000510	95F0 1000	00000		381	CLI 0(1),X'F0'
000514	4740 B524		00524	382	BL TPERR
000518	46C0 B40C		004DC	383	BCT 12,TPREAD
00051C	58C0 RA10		00A10	384	L 12,CDMAXND
000520	92FF BA85	00A85		385	MVI LENSX,X'FF'
				386 *	
000524	5800 BA68		00A68	387	TPERR L 0,PRECNC
000528	180C			388	SR 0,12
00052A	4F00 BA00		0CA00	389	CVD 0,DBLWORD
00052E	F817 BA80	BA00 00A80	00A00	390	ZAP CCUNT,DBLWORD
000534	92F0 BA89	00A89		391	MVI PRAREA,X'F0'
000538	5R30 BA78		00A78	392	S 3,LREC
00053C	4133 0G01		00001	393	LA 3,1(3)
000540	4E30 BA00		00A00	394	CVD 3,DBLWORD
000544	F337 BA8F	BA00 00A8F	00A00	395	UNPK PRAREA+111(4),DBLWORD
00054A	96F0 RA8F	00A8F		396	OT PRAREA+114,X'F0'
00054E	5800 BA78		00A78	397	L 0,LREC
				398	ERRWRT PUT ERRTAPE
00055C	1821			402	LR 2,1
00055F	4A20 RRE6		0C8E6	403	AH 2,INTAPE+82

PROGRAM DOCUMENTATION

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT
000562	FA30 BA80 BBE5	00A80	00BE5	404	AP	CCOUNT,=P*1'
000568	F343 BABA BA80	00A8A	00A80	405	UNPK	PRTAREA+1(5),COUNT
00056E	96F0 BA8E	00A8E		406	OI	PRTAREA+5,X'FO'
000572	0200 BA91 1000	00A91	000C0	407	ERRMOVE	INAREA(1),0(1)
				408	PUT	PRINT,PRTAREA
000586	9240 BA89	00A89		413	MVI	PRTAREA,X'40'
00058A	D203 BAF3	00AF3	00BA8	414	MVC	PRTAREA+11(14),=CL10'
000590	1802			415	LR	C,2
000592	5820 BA6C	00A6C		416	L	2,BRECNO
000596	4122 0001	00001		417	LA	2,1(2)
00059A	5020 BA6C	00A6C		418	ST	2,BRECNO
00059E	46C0 B552	00552		419	BCI	12,ERRWRT
0005A2	47F0 B48C	0048C		420	B	TPSTART
				421	*	
0005A6	9540 3000	00000		422	TPTRANS	CLI 0(3),X'40'
0005AA	4770 B5D2	005D2		423	BNE	LJUST
0005AE	4440 B634	00634		424	EX	4,CLC
0005B2	4770 B5BE	005BE		425	BNE	RJUST
0005B6	4140 0001	00001		426	NJUST	LA 10,1
0005BA	11AA			427	LNK	10,10
0005BC	07FE			428	BR	14
0005BE	9200 RC48	00C48		429	RJUST	MVI TAB+64,X'00'
0005C2	4113 4000	00000		430	LA	1,0(3,4)
0005C6	91F0 1000	00000		431	TM	0(1),X'FO'
0005CA	4710 B5D4	005D4		432	BC	1,=12
0005CE	47F0 B524	00524		433	B	TPERR
0005D2	9201 RC48	00C48		434	LJUST	MVI TAB+64,X'01'
0005D6	4440 B1F2	001F2		435	EX	4,TRT
0005DA	4773 B5EA	005EA		436	BKZ	**16
0005DE	4440 B1F8	001F8		437	EX	4,PACK
0005E2	4FA0 BA00	00A00		438	CVB	10,DBLWORD
0005E6	47F0 B604	00604		439	B	CHKTEST
0005EA	4620 B524	00524		440	BCI	2,TPERR
0005EE	1813			441	SR	1,3
0005F0	4720 B5FA	005FA		442	BP	**10
0005F4	1AA4			443	SR	10,10
0005F6	47F0 B604	00604		444	B	CHKTEST
0005FA	C610			445	BCI	1,0
0005FC	4410 B1F8	001F8		446	EX	1,PACK
000600	4FA0 BA00	00A00		447	CVB	10,DBLWORD
000604	1225			448	CHKTEST	LTR 2,5
000606	4780 BA2A	0062A		449	BZ	TPSTOR
00060A	4100 0008	00008		450	LA	0,8
00060E	5812 0000	00000		451	L	1,0(2)
000612	59A2 0004	00004		452	TPCHK	C 10,4(2)
000616	4740 B524	00524		453	BL	TPERR
00061A	59A2 0008	00008		454	C	10,8(2)
00061E	47C0 B624	00624		455	BKZ	TPSTOR
000622	8720 B612	00612		456	BKLE	2,0,TPCHK
000626	47F0 B524	00524		457	B	TPERR
00062A	50A6 0000	00000		458	TPSTOR	ST 10,0(6)
00062F	4166 0004	00004		459	LA	6,4(6)
000632	C7FE			460	BR	14
000636	C500 3000	00000	00BA8	461	CLC	CLC 0(1,3),=CL10'
				462	*	

PROGRAM DOCUMENTATION

PROGRAM DOCUMENTATION

LNC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT	FOIMAY72	7/27/74
00063A	11CC			463	TPROC	LNR 12,12		
00063C	5AC0 BA14		00A14	464		A 12,CDMAXNOP		
000640	9500 BA85	00A85		465	CLT	LENSW,X'00'		
000644	9200 BA85	00A85		466	MVI	LENSW,X'00'		
000648	4770 B524		00524	467	BNE	TPERR		
00064C	5010 BA3C		00A3C	468	ST	1,NEXTP		
000650	956F 3000	00000		469	CLT	0(3),C'?'		
000654	4780 B6EA		006EA	470	BE	DCGP		
000658	955C 3000	00000		471	CLT	0(3),C'?'		
00065C	4770 B524		00524	472	BNE	TPERR		
000660	9500 BA87	00A87		473	CLT	GANGSW,X'00'		
000664	4770 B524		00524	474	BNE	TPERR		
000668	5810 BA4C		00A4C	475	S	1,BVLOC+4		
00066C	5910 BA48		00A48	476	C	1,BVLOC		
000670	4740 B524		00524	477	BL	TPERR		
000674	9869 BA18		00A18	478	LM	6,9,DCLECC		
000678	9835 7000		00000	479	DCSCAN	LM 3,5,0(17)		
00067C	45E0 B5A6		0C5A6	480	BAL	14,TPTRANS		
000680	12AA			481	LTR	10,10		
000682	4740 B524		00524	482	BM	TPERR		
000686	2778 B578		0C678	483	BXLE	7,8,DCSCAN		
00068A	9A35 BA48		00A48	484	LM	3,5,BVLOC		
00068E	4166 0004		00004	485	LA	6,4(6)		
000692	9879 BA54		00A54	486	LM	7,9,BVLOC+12		
000696	18FC			487	LR	15,12		
000698	1837			488	BVSCAN	LR 3,7		
00069A	45E0 B5A6		0C5A6	489	BAL	14,TPTRANS		
00069E	12AA			490	LTR	10,10		
0006A0	4740 B684		0C684	491	BM	RVEND		
0006A4	8738 B69A		0C69A	492	BXLE	3,8,BVSCAN+2		
0006A8	4A70 BBE6		0C8E6	493	AH	7,INTAPE+82		
0006AC	4A90 BBE6		0C8E6	494	AH	9,INTAPE+82		
0006B0	46F0 B698		0C698	495	BCY	15,BVSCAN		
0006B4	1816			496	BVEND	LR 1,6		
0006B6	5820 BA60		00A60	497	L	2,BVLOC+24		
0006BA	1812			498	SR	1,2		
0006BC	8810 0002		00002	499	SRL	1,2		
0006C0	0610			500	BCTR	1,0		
0006C2	5012 0000		0000C	501	ST	1,0(2)		
0006C6	5A00 BA7C		0CA7C	502	L	0,XREC		
0006CA	1860			503	SR	6,0		
0006CC	4060 B94E		0C94E	504	STH	6,GOTAPE+90		
				505	PUT	GOTAPE		
0006DA	5820 BA70		00A70	509	L	2,LRECNO		
0006DE	4122 0001		00001	510	LA	2,1(2)		
0006E2	5020 BA70		0CA70	511	ST	2,LRECN		
0006E6	47F0 B48C		0048C	512	B	TPSTART		
				513	*			
0006EA	5810 BA38		00A38	514	DCGP	S 1,DCSET+16		
0006EE	47D0 B524		00524	515	RMH	TPERR		
0006F2	9869 BA28		00A28	516	LM	6,9,DCSET		
0006F6	1299			517	LTR	9,9		
0006F8	4780 B524		00524	518	BZ	TPERR		
0006FC	92FF BA87	00A87		519	MVI	GANGSW,X'FF'		
000700	9835 7000		00000	520	GPSCAN	LM 3,5,0(17)		

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT	FOIMAY72	7/27/74
000704	45E0 B5A6		005A6	521	BAL	14,TPTRANS		
000708	12AA			522	LTR	10,10		
00070A	4740 B524		00524	523	BN	TPERR		
00070E	8778 B700		00700	524	SKLE	7,8,GPSCAN		
000712	9200 BA87	00A87		525	MVI	GANGSW,X'00'		
000716	47F0 B4BC		004BC	526	B	TPSTART		
00071A	5810 BA14		00A14	527	L	1,COMAXNOP		
00071E	1B1C			528	SR	1,12		
000720	4C10 B8E6		008E6	529	MH	1,INTAPE+82		
000724	5A10 BA78		00A78	530	A	1,LREC		
000728	92FF BA88	00A88		531	MVI	ECFSW,X'FF'		
00072C	47F0 B63A		0063A	532	B	TPROC		
				533	CLOSEOUT	CLOSE (INTAPE,,GOTAPE,,ERRTAPE)		
000742	D217 BA89	BB68	00A89	543	MVC	PTAREA(24),=CL24*1TAPE READING COMPLETED		
000748	D260 FAA1	BAA0	00AA1	544	MVC	PTAREA+24(97),PTAREA+23		
				545	PUT	PRINT,PTAREA		
00075C	D21D BA89	BB82	00A89	550	MVC	PTAREA(30),=CL30*-- PHYSICAL INPUT RECORDS*		
000762	5800 BA68		00A68	551	L	0,PRECNO		
000766	4E03 BA00		00A00	552	CVD	0,DBLWORD		
00076A	F377 BAAC	BA00	00AAC	553	UNPK	PTAREA+35(8),DBLWORD		
000770	96F0 BA83		00A83	554	DI	PTAREA+42,X'F0'		
				555	PUT	PRINT,PTAREA		
000782	D20D BA91	BB00	00A91	560	MVC	PTAREA+8(14),=CL14*LOGICAL OUTPUT*		
000788	5800 BA70		00A7C	561	L	0,LRECNC		
00078C	4E03 BA00		00A00	562	CVD	0,DBLWORD		
000790	F377 BAAC	BA00	00AAC	563	UNPK	PTAREA+35(8),DBLWORD		
000796	96F0 BA83		00A83	564	DI	PTAREA+42,X'F0'		
				565	PUT	PRINT,PTAREA		
0007A8	D206 BA91	BC01	00A91	570	MVC	PTAREA+8(7),=CL7*ERROR		
0007AE	5800 PA6C		00A6C	571	L	0,BRECNO		
0007B2	4E03 BA00		00A00	572	CVD	0,DBLWORD		
0007B6	F377 BAAC	BA00	00AAC	573	UNPK	PTAREA+35(8),DBLWORD		
0007BC	96F0 BA83		00A83	574	DI	PTAREA+42,X'F0'		
				575	PUT	PRINT,PTAREA		
0007CE	47F0 B1A8		001A8	580	R	RETURN		
				581	*			
				582	CARDIN	DCB DDNAME=FT01F001,DSORG=PS,MACRF=GM,EOOAD=CDEOF		
				636	PRINT	DCB DDNAME=FT06F001,DSORG=PS,MACRF=PM,RECFM=FA,BLKSIZE=133, X LRECL=133		
				690	INTAPE	DCB DDNAME=FT03F001,DSORG=PS,MACRF=GM,EOOAD=TPEOF		
				744	GOTAPE	DCB DDNAME=FT04F001,DSORG=PS,MACRF=PD,RECFM=VSB, X BLKSIZE=2004,LRECL=4400		
				798	ERRTAPE	DCB DDNAME=FT08F001,DSORG=PS,MACRF=PM		
				852	*			
0009B8				853	SAVE	DS 90		
000A00				854	DBLWORD	DS 0		
000A08	00000000			855	CDMAX	DC F'0'		
000A0C	00000640			856	CDLIM	DC F'1600'		
000A10				857	COMAXNO	DS F		
000A14				858	COMAXNOP	DS F		
000A18	0000378C			859	DCLOC	DC A(WORK4+4)		
000A1C	00000D09			860		DC A(WORK1)		
000A20	0000000C			861		DC F'12'		
000A24	00000CFC			862		DC A(WORK1-12)		
000A28	0000378C			863	DCSET	DC A(WORK4+4)		

PROGRAM DOCUMENTATION

LDC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE	STATEMENT
000A2C	00000008			864	DC	A(WORK1)
000A30	0000000C			865	DC	F'12'
000A34	00000000			866	DC	F'0'
000A38				867	DS	F
000A3C				868	DS	NEXTP
000A40	00000000			869	DC	DCNO
000A44	00000064			870	DC	DCMAX
000A48				871	DS	BVLOC
000A64	00001188			872	DC	CNVEC
000A68	00000001			873	DC	PRECNO
000A6C	00000000			874	DC	BRECNO
000A70	00000000			875	DC	LRECNO
000A74	000030F8			876	DC	STMT
000A78	000030F8			877	DC	LREC
000A7C	00003788			878	DC	XREC
000A80	0000000C			879	DC	COLMT
000A84	00			880	DC	ERRSW
000A88	00			881	DC	LENSW
000A8C	00			882	DC	BVSW
000A90	00			883	DC	GANGSW
000A94	00			884	DC	EDFSW
000A98				885	DS	PRTAREA
000A9C				886	DS	INAREA
000B00	F1C9D5E3C509E5C9			887	DC	HEAD
000B04	40400502E3C9D4C2			888	DC	
000B08				889	DS	LTORG
000B0C	60C3C1D9C4404040			890		
000B10	F1E3C1D7C540D9C5			891		
000B14	C2E57E4D			892		
000B18	C4C37E4D			893		
000B1C	F1F2F3F4F5F6F7F8			894		
000B20	F0405C5C5C5C4040			895		
000B24	C4C37EE2C5E3			896		
000B28	000A			897		
000B2C	4040404040404040			898		
000B30	6040404040404040			899		
000B34	E3D6C7C9C3C1D340			900		
000B38	6040C3C109C440			901		
000B3C	1C			902		
000B40	F1C6C9D3C560C2E4			903		
000C01	C5D9D9D9D94040			904		
000C08				905	DS	TAB
				906		
000D0A				907	DS	WORK1
001188				908	DS	WORK2
0030F8				909	DS	WORK3
003788				910	DS	WORK4
000000				911	END	TIM80

CL45'INTERVIEW BEHAVIOR FILE-BUILDING PROGRAM ONE'

CL33' (NKTIM80) -- SEPTEMBER 15, 1973 '

"C"-CARD

"CL24"TAPE READING COMPLETED "

"C"BV="("

"C"DC="("

"C1234567890"

"CL14"0 **** ERROR "

"C"DC="SET"

"H"10"

"CL10" "

"CL30"-- PHYSICAL INPUT RECORDS'

"CL14"LOGICAL OUTPUT'

"C"- CARD "

"P"1"

"CL27"IFILE-BUILDER ERROR REPORT "

"CL7"ERROR "

CL256

PROGRAM DOCUMENTATION

RELOCATION DICTIONARY

PAGE 1

POS.ID	REL.ID	FLAGS	ADDRESS
01	01	C8	000041
01	01	08	000045
01	01	C8	000049
01	01	08	000085
01	01	08	000161
01	01	08	00C1A0
01	01	08	0003C9
01	01	08	000495
01	01	C8	00C499
01	01	08	000735
01	01	08	00C739
01	01	08	000730
01	01	08	00C7F5
01	01	08	00C285
01	01	0C	000A18
01	01	0C	000A1C
01	01	0C	000A24
01	01	0C	000A28
01	01	0C	000A2C
01	01	0C	000A64
01	01	0C	000A74
01	01	0C	00CA78
01	01	0C	00CA7C

7/27/74

PROGRAM DOCUMENTATION

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SYMBOL	LEK	VALUE	DEFN	REFERENCES																
BRECNO	00004	000A6C	0CE74	0416	0418	0571														
BRERR	00004	0001A2	0G129	0114																
BVCD	00004	000288	00157																	
BVEND	00002	000684	00456	0491																
BVLDC	00004	000A48	0C871	0203	0296	0297	0298	0299	0301	0304	0305	0475	0476	0484	0486	0497				
BVSCAN	00002	000698	00488	0492	0495															
BVSW	00001	000A86	0C882	0127	0197	0242	0280													
CARDIN	00004	0007D4	005F6	0C25	0081	0112	0287													
CDCON	00004	000342	00246	0239																
CDCROSS	00004	00014C	001C4	0054	0100															
CDEND	00004	0003C4	002E5	0244																
CDEOF	00004	00015C	00110	0063	0604															
CDERR	00006	00016E	00116	0056	0103	0144	0148	0151	0163	0171	0174	0181	0184	0187	0193	0200	0202	0221		
				0228	0262	0265	0268	0274												
CLENOK	00002	00008E	00064	0C54																
COLIM	00004	000A0C	00856	0C65	0191															
CDLOOP	00004	00011E	00C93	0104																
CDMAX	00004	000A08	00855	0158	0213	0216	0222	0224												
CDMAXNO	00004	000A10	00857	0067	0348	0363	0384													
CDMAXNOP	00004	000A14	0C858	0C69	0464	0527														
CDPROC	00004	0001FE	00160	0057	0099															
CDREAD	00004	0000FA	00C81	01C6																
CDSTART	00006	0000D6	00C72	0129	0218	0243	0281													
CDSTOR	00004	00031C	00234	02C4																
CDTRANS	00002	00018C	00141	0169	0177	0252	0258													
CHKTEST	00002	000604	00448	0439	0444															
CLC	00006	000634	00461	0424																
CLOSEOUT	00004	000730	00535	0359																
CNLOOP	00002	000352	00251	0276																
CNVEC	00004	000A64	00E72	0C70																
COUNT	00004	000A80	0C879	0072	0073	0390	0404	0405												
DBLWORD	00008	000A00	00854	0118	0119	0154	0158	0389	0390	0394	0395	0438	0447	0552	0553	0562	0563	0572		
				0573																
DCCD	00006	0002DE	00219	0196																
DCGANG	00004	0002A8	002C5	0166																
DCGP	00004	0006EA	00514	0470																
DCLOC	00004	000A18	0C859	0205	0208	0211	0212	0231	0233	0478										
DCMAX	00004	000A44	00870	0226																
DCNO	00004	000A40	0C869	0209	0225	0230	0291													
DCSCAN	00004	000678	0C479	0483																
DCSET	00004	000A28	0C863	02C6	0214	0514	0516													
EDFSW	00001	000A88	0C884	0358	0531															
ERRMOVE	00006	000572	004C7	0238																
ERRSW	00001	000A84	0C880	0126	0289															
ERRTAPE	00004	000954	0C802	0345	0399	0541														
ERRWRT	00004	000552	00399	0419																
GANGSW	00001	000A87	0C883	0217	0473	0519	0525													
GOTAPE	00004	0008F4	0C748	0343	0504	0506	0539													
GPSCAN	00004	000700	00520	0524																
HEAD	00045	000B0E	0C887	0031																
HIGHCM	00004	000386	0C266	0256																
INAREA	00125	000A91	0C886	0040	0042	0076	0082	0092	0314	0316	0326	0327	0327	0407						
INTAPE	00004	00C894	00694	0C29	0052	0061	0201	0303	0331	0351	0355	0365	0367	0374	0403	0493	0494	0529		
				0537																
LENSW	00001	000A85	0C881	0101	0160	0161	0385	0465	0466											

PROGRAM DOCUMENTATION

CROSS-REFERENCE

PAGE 2

7/27/74

SYMBOL	LEN	VALUE	DEFN	REFERENCES
IJUST	00004	000502	00434	0423
LREC	00004	00CA78	0C877	0234 0272 0302 0347 0360 0392 0397 0530
LRECNO	00004	000A70	00E75	0509 0511 0561
NEXTP	00004	000A3C	0C868	0361 0468
NJUST	00004	000586	00426	
PACK	00006	0001F8	00158	0153 0437 0446
PRECNO	00004	000A68	00873	0370 0372 0387 0551
PRINT	00004	000834	00640	0027 0034 0046 0086 0122 0135 0309 0321 0409 0546 0556 0566 0576
PRTAREA	00008	000A89	00885	0031 0032 0032 0035 0038 0039 0039 0047 0050 0073 0074 0087 0090 0105 0105
				0395 0396 0405 0406 0410 0413 0414 0543 0544 0544 0547 0550 0553 0554 0557
				0560 0563 0564 0567 0570 0573 0574 0577
RETURN	00004	0001A8	00133	0128 0290 0580
RJUST	00004	00058E	00429	0425
SAVE	00008	000988	00853	0010
STMNT	00004	000A74	0C876	0077 0164 0154
TAB	00256	000C08	00905	0014 0015 0015 0016 0017 0018 0019 0019 0157 0328 0329 0330 0429 0434
TIMBO	00001	000000	00002	0008 0911
TPCHK	00004	000612	00452	0456
TPEOF	00004	00071A	00527	0712
TPERR	00004	000524	00387	0382 0433 0440 0453 0457 0467 0472 0474 0477 0482 0515 0518 0523
TPMOVE	00006	0004CC	00362	0333
TPREAD	00004	0004DC	00367	0356 0383
TPROC	00002	00063A	00463	0376 0378 0532
TPSTART	00004	00048C	00358	0420 0512 0526
TPSTOR	00004	00062A	00458	0449 0455
TPTRANS	00004	0005A6	00422	0480 0489 0521
TRY	00006	0001F2	00157	0142 0435
WORK1	00004	000DC8	009C7	0860 0862 0864
WORK2	00004	001188	009C8	0872
WORK3	00004	0030F8	009C9	0876 0877
WORK4	00004	003788	00910	0859 0863 0878
XREF	00004	000A7C	0C878	0292 0502

PROGRAM DOCUMENTATION

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

STATISTICS SOURCE RECORDS (SYSIN) = 528 SOURCE RECORDS (SYSLIB) = 2803
 OPTIONS IN EFFECT LIST, DECK, NOLOAD, NORENT, XREF, NOTEST, ALGN, OS, NOTERM, LINECNT = 55
 688 PRINTED LINES

IV. SOURCE PROGRAM NKTIMBO

F0RTRAN,IV G LEVEL 21

MAIN

DATE = 74208

15/31/11

PAGE 0001

0001
0002
0003
0004
0005

COMMON /PARM/ INPUT,IPRTR
CALL SETUP
CALL EXEC
RETURN
END

PROGRAM DOCUMENTATION

		COMMON BLOCK /PARM		/MAP SIZE					
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
INPUT	0	IPRTR	4						
		SUBPROGRAMS CALLED							
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
SETUP	94	EXEC	98	IBCDM	9C				

OPTIONS IN EFFECT NOID,ERCOIC,SOURCE,NOLIST,NODECK,LOAD,MAP
 OPTIONS IN EFFECT NAME = MAIN , LINECT = 50
 STATISTICS SOURCE STATEMENTS = 5,PROGRAM SIZE = 282
 STATISTICS NO DIAGNOSTICS GENERATED

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0001      SUBROUTINE SETUP
0002      IMPLICIT INTEGER (A-Z)
0003      DIMENSION KEYS(43),KLOC(5),KVAL(20),IDENT(18),DATAIN(2),
        X DCTOUT(2),DTAOUT(2),CARD(20),FILTER(500),OUTF(4),A(1000),
        X NAME(4),V(1100),TITLE(20)
0004      INTEGER*2 PRNT(4),AGGC(4),AGGR(4),OPT(4),D(4),LOC(5),CHAR(5),
        X IO(100),IF(100),DI(1000),LIST(100),S(4),VN,MR
0005      COMMON /PARM/ INPUT,IPRTR,DATAIN,NC,MC,Z,V,OUTF,PRNT,AGGC,AGGR,
        X OPT,FILTER,ND,ID,NF,IF,A,NF,DIM,LOC
0006      DATA KEYS/ 1,'OUTF',4, 3,'PRIN',2,'DICT',1,'NODI',0,
        X 4,'AGGR',2,0, 3,'OPT',2,'TWO',1,'ONE',0, 1,'INFI',4,
        X 4,'ID',100,0, 4,'IF',100,0, 4,'DC',1,99999, 4,'BV',1,99999,
        X 1,'N',24 /
0007      DATA IN,OUT,INCL,EXCL,NAM /'IN ', 'OUT ', 'INCL', 'EXCL', 'NAME'/
0008      DATA DATA/'DATA'/',DTAOUT'/'DATA '"/,DCTOUT/'DICT '/'

*****011 IEY0381 SIZE WRN,*****021 IEYC381 SIZE WRN,*****
0009      DATA IDENT/'DESCRIPTOR VAR. 000CFREQ: BEHAVIOR CODE 000CFREQ:
        XCODE OCCC TO 0000 '/
        $
*****011 IEY0381 SIZE WRN,*****
0010      DATA CHAR/'<->*VR = '/
        $
*****011 IEY0381 SIZE WRN,*****

C
C      INITIALIZE FOR GLOBAL PARAMETERS
C
0011      INPUT=1
0012      IPRTR=6
0013      WRITE (IPRTR,1000)
0014      1000 FORMAT ('1INTERVIEW BEHAVIOR FILE-BUILDING PROGRAM TWO',
        X ' (TIM80) -- SEPTEMBER 15, 1973'/'-GLCBAL PARAMETERS')
0015      CALL SETKEY(KEYS(22),KLOC,3,0)
0016      LOC(1)=0
0017      F=0
0018      DO 90 I=1,100
0019      90 LIST(I)=I

C
C      CONTROL LOOP FOR GLOBAL AND LOCAL PARAMETERS
C
C      TAKE FILTER AND TITLE FIRST
C
0020      100 READ (INPUT,1050,END=370) CARD,TITLE
0021      1050 FORMAT (20A4,T1,20A4)
0022      I=LYS08(CARD,1,80)
0023      IF (CARD(1).EQ.NAM) GO TO 380
0024      IF (F.GT.0) WRITE (IPRTR,1100) F
0025      1100 FORMAT ('LOCAL PARAMETERS FOR FILE #',I4)
0026      L=100*F

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0027     FILTER(L+1)=0
0028     IF (CARD(1).NE.INCL.AND.CARD(1).NE.EXCL) GO TO 110
0029     WRITE (IPRTR,1150) TITLE
0030     1150 FORMAT ('-FILTER:/'0',20A4)
0031     CALL INTERP(FILTER(L+1),'I',CARD,1)
0032     READ (INPUT,1050,END=700) TITLE
0033     110 WRITE (IPRTR,1200) TITLE
0034     1200 FORMAT ('-TITLE:/'0',20A4)
C
C     GET PARAMETERS (FOLLOWS DIFFERENT SETKEY FOR GLOBAL AND LOCAL)
C
0035     IERR=1
0036     WRITE (IPRTR,1225)
0037     1225 FORMAT ('-PARAMETERS:')
0038     CALL GETKEY(KVAL,J,6700,6700)
0039     IF (J.GT.0) GO TO 150
C
C     GLOBAL: RESET KEYS AND READ TAPE TO LEARN GEOGRAPHY OF RECORDS
C
0040     CATAIN(1)=DATA
0041     DATAIN(2)=IN
0042     IF (KVAL(1).GT.0) DATAIN(2)=J
0043     CALL SETKEY(KEYS,KLOC,4,0)
0044     IERR=2
0045     CALL ROPEIN(DATAIN,I,J,K,M,1)
0046     IF (I.NE.0) GO TO 700
0047     CALL RGET(CATAIN,I,2)
0048     IF (I.NE.0) GO TO 700
0049     NC=V(1)
0050     NC=V(NC+2)
C
C     COUNT AND CHECK IDENTIFYING AND INFORMATION VARIABLES
C
0051     IERR=3
0052     K=0
0053     120 K=K+1
0054     IF (KVAL(K+1) 700,122,121)
0055     121 IF (KVAL(K+1).GT.NC) GO TO 700
0056     ID(K)=KVAL(K+1)
0057     IF (K.LT.100) GO TO 120
0058     K=101
0059     122 ND=K-1
0060     IF (ND.EQ.0.) GO TO 700
0061     WRITE (IPRTR,1250) (ID(I),I=1,ND)
0062     1250 FORMAT ('-IDENTIFYING VARIABLES:/'0',20I6/(1X,20I6))
C
0063     IERR=4
0064     K=0

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0065      130 K=K+1
0066          IF (KVAL(K+101)) 700,132,131
0067      131 IF (KVAL(K+101).GT.NC) GO TO 700
0068          IF(K)=KVAL(K+101)
0069          IF (K+ND-LT.100) GO TO 130
0070          IF (KVAL(K+102).NE.0) GO TO 700
0071          K=K+1
0072      132 NF=K-1
0073          IF (NF.GT.0) WRITE (1PRTR,1300) (1F(I),I=1,NF)
0074      1300 FORMAT ('-INFORMATION VARIABLES:','0',2016/1X,2016))
C
C      ZERO OUT CODE CONTROL ARRAY
C
0075          DO 140 I=1,1000
0076      140 A(I)=0
0077          CC=C
C
C      CHECK AND SET FILTER
C
0078      150 IERR=5
0079          DO 160 I=1,15
0080          IF (FILTER(L+I).GT.NC) GO TO 700
0081          IF (FILTER(L+I)) 700,162,160
0082      160 CONTINUE
0083      162 IF (I.GT.1) CALL SETADD(FILTER(L+1),V(2),LIST,NC)
0084          IF (F.GT.0) GO TO 165
0085          F=F+1
0086          GO TO 100
C
C      SET LOCAL PARAMETERS
C
0087      165 IERR=6
0088          IF (KVAL(1).EQ.0) GO TO 700
0089          KVAL(1)=0
0090          AGGC(F)=0
0091          AGGR(F)=0
0092          DO 170 I=1,ND
0093          IF (ID(I).EQ.KVAL(3)) AGGC(F)=I
0094          IF (ID(I).EQ.KVAL(4)) AGGR(F)=I
0095      170 CONTINUE
0096          IF (AGGC(F).EQ.0.OR.AGGR(F).EQ.0) GO TO 700
0097          IF (AGGC(F).LT.AGGR(F)) GO TO 700
0098          OUTF(F)=J
0099          PRNT(F)=KVAL(2)
0100          OPT(F)=KVAL(5)
0101          NCIM=250
0102          IF (KVAL(5).EQ.1) NOIM=40

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      C   GET CODE LIST BY FILE
      C
0103      IERR=7
0104      ISW=0
0105      K=0
0106      J=1
0107      C=1
0108      WRITE (IPRTR,135C)
0109      1350 FORMAT ('-BEHAVIOR CODES: '//)
      C
      C   READ OF SYNTAX LOOP
      C
0110      200 IF (J.LE.K) GO TO 210
0111      READ (INPUT,1050,END=700) CARD
0112      WRITE (IPRTR,1400) CARD
0113      1400, FORMAT (' ',20A4)
0114      J=1
0115      K=LYSOB(CARD,1,80)
0116      210 I=CHSCAN(CHAR,7,CARD,J,K,L)
0117      IF (I.GT.7) GO TO 700
      C
      C   OBTAIN NUMBER (IF ANY)
      C
0118      ISW=IAND(ISW,221)
0119      L=L-J
0120      IF (L.EQ.0) GO TO 220
0121      N=JCONV(CARD,J,L,P)
0122      IF (P.NE.0) GO TO 700
0123      IF (N.LT.0.OR.N.GT.999) GO TO 700
0124      ISW=IOR(ISW,221)
0125      220 J=J+1
0126      GO TO (270,230,240,250,260,210,210),I
      C
      C   HYPHEN
      C
0127      230 IF (IAND(ISW,10).NE.0.OR.IAND(ISW,32).EQ.0) GO TO 700
0128      ISW=IOR(ISW,8)
0129      M=N
0130      GO TO 200
      C
      C   LEFT BRACKET
      C
0131      240 IF (IAND(ISW,46).NE.0) GO TO 700
0132      ISW=IOR(ISW,4)
0133      GO TO 200
      C
      C   RIGHT BRACKET
      C

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0134      250 IF (IAND(ISW,2).NE.0.OR.IAND(ISW,4).EQ.0) GO TO 700
0135          ISW=IOR(ISW,2)
0136          GO TO 27C
      C
      C      ASTERISK
      C
0137      260 IF (IAND(ISW,4).NE.0) GO TO 700
0138          ISW=IOR(ISW,1)
0139          IF (IAND(ISW,32).NE.0) GO TO 270
0140          IF (IAND(ISW,14)) 700,330,700
      C
      C      CCMMA (ALL NUMBERS END UP HERE TOO)
      C
0141      270 IF (IAND(ISW,32).EQ.0) GO TO 700
0142          ISW=IAND(ISW,15)
0143          IF (IAND(ISW,6).NE.6.AND.IAND(ISW,2).NE.0) GO TO 290
0144          IF (IAND(ISW,8).EQ.0) GO TO 300
      C
      C      RANGE
      C
0145          IF (N.LT.M) GO TO 700
0146          IF (IAND(ISW,4).EQ.4.OR.C.EQ.1) GO TO 275
0147          IF (M.LE.D(CC+C-1)) GO TO 700
0148      275 I=M*4+F
0149          DO 280 L=M,N
0150              CALL IBYTE(A,I,C)
0151              IF (IAND(ISW,4).EQ.4) GO TO 280
0152              IF (C.GT.NDIM) GO TO 700
0153              C(CC+C)=L
0154              C=C+1
0155      280 I=I+4
0156          ISW=IAND(ISW,247)
0157          GO TO 310
      C
      C      LABEL BRACKETS
      C
0158      290 IF (C.GT.NDIM) GO TO 700
0159          IF (C.EQ.1) GO TO 295
0160          IF (N.LE.D(CC+C-1)) GO TO 700
0161      295 C(CC+C)=N
0162          C=C+1
0163          ISW=IAND(ISW,253)
0164          GO TO 320
      C
      C      SINGLE VALUE
      C
0165      300 I=M*4+F
0166          CALL IBYTE(A,I,C)

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0167       IF (IAND(ISW,4).EQ.4) GO TO 310
0169       IF (C.GT.NDIM) GO TO 700
0169       IF (C.EQ.1) GO TO 305
0170       IF (N.LE.C(CC+C-1)) GO TO 700
0171       305 C(CC+C)=N
0172       C=C+1

C
C   CLOSE BRACKETS
C
0173       310 IF (IAND(ISW,6).NE.6) GO TO 320
0174       IF (CMSCAN(CHAR(5),1,CARD,J).EQ.2) GO TO 700
0175       J=J+1
0176       ISW=IAND(ISW,251)
0177       320 IF (IAND(ISW,1).EQ.0) GO TO 200

C
C   COMPLETE CODES.
C
0178       330 D(CC+C)=1000
0179       IF (C.GT.1) GO TO 345
0180       IF (F.EQ.1) GO TO 700
0181       K=DIM(F-1)
0182       DIM(F)=K
0183       I=CC-K
0184       DO 335 C=1,K
0185       I=I+1
0186       335 D(CC+C)=D(I)
0187       DO 340 J=F,4000.4
0188       I=BYTE(A,J-1)
0189       340 IF (I.NE.0) CALL IBYTE(A,J,I)
0190       345 DIM(F)=C
0191       CC=CC+C

C
C   COMPLETE HOUSEKEEPING FOR FILE
C
0192       LOC(F+1)=LOC(F)+(OPT(F)*DIM(F)+1)*DIM(F)+AC+NF
0193       OCTOUT(2)=OUT(F)
0194       IERR=2
0195       CALL ROPEN(OCTOUT,1,RC,1600,0,0)
0196       F=F+1
0197       IF (I).100,100,700

C
C   SET UP NAME SECTION
C
0198       370 KVAL(201)=55999
0199       KVAL(202)=55999
0200       GO TO 385
0201       380 KVAL(201)=C
0202       WRITE (IPRTR,1425)

```



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0203      1425 FORMAT ('NAME PARAMETERS')
0204      385 NTF=F-1
0205      IF (NTF.LT.1) GO TO 700
0206      DO 390 K=1,ND
0207      KVAL(K+100)=K
0208      390 KVAL(K)=ID(K)
0209      IF (INF.EQ.0) GO TO 392
0210      DO 391 I=1,NF
0211      K=K+1
0212      KVAL(K+100)=K
0213      391 KVAL(K)=IF(I)
0214      392 NDF=ND+NF
0215      CALL RADIX(KVAL,NDF,4,1,4,1,KVAL(101),4)
0216      CALL BUILD(CARD,3,1,110C,1)
0217      IFRR=2
0218      DO 395 F=1,NTF
0219      OCTOUT(2)=OUTF(F)
0220      CALL RPUT(OCTOUT,1,CARD)
0221      IF (1.NE.0) GO TO 700
0222      395 S(F)=0
0223      NCX=5599599
0224      TYPE=2
0225      MR=1
0226      PND=535

C
C      NAME THE DESCRIPTOR VARIABLES
C
0227      KD=C
0228      400 KD=KD+1
0229      VN=KVAL(KD)
0230      IERR=9
0231      405 IF (VN-KVAL(201)) 420,425,410
0232      410 CALL SETKEY(KEYS(33),KLOC,3,0)
0233      CALL GETKEY(KVAL(201),TITLE,6700,6415)
0234      GO TO 405
0235      415 KVAL(202)=10C000
0236      420 CALL MOVE(1CENT,1,24,NAME,1,24)
0237      N=VN
0238      N=BNBCDS(N)
0239      CALL MOVE(N,1,4,NAME,21,4)
0240      GC TO 430
0241      425 CALL MOVE(TITLE,1,24,NAME,1,24)
0242      430 TLOC=4+KVAL(KD+100)-3
0243      IF (TYPE3(CARD,VN,NAME,TYPE,TLOC,4,0,NCX,MDX,0,MR,PND).NE.0)
      X GO TO 700
0244      IFRR=2
0245      DO 440 F=1,NTF
0246      OCTOUT(2)=OUTF(F)

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```

0247      CALL RPUT(DCTOUT,I,CARD)
0248      IF (I.NE.0) GO TO 700
0249      440 CONTINUE
0250      IF (KO.LT.NCF) GO TO 400

C
C      NAME THE ONE-WAY BEHAVIOR CODES
C
0251      IF (KVAL(202).GT.99999) GO TO 450
0252      KVAL(202)=-1
0253      450 IND=C
0254      CC=1
0255      DO 460 F=1,NTF
0256      460 IF (S(F).GE.DIM(F)) GO TO 485
0257      DCTOUT(2)=OUTF(F)
0258      IERR=10
0259      VN=(CC+S(F))
0260      IF (VN-KVAL(202)) 470,475,490
0261      470 CALL MOVE(IDENT,25,24,NAME,1,24)
0262      N=VN
0263      N=8NBCOS(N)
0264      CALL MOVE(N,1,4,NAME,21,4)
0265      GO TO 480
0266      475 CALL MOVE(TITLE,1,24,NAME,1,24)
0267      480 S(F)=S(F)+1
0268      VN=VN+1000
0269      TLOC=(S(F)+NDF)*4-3
0270      IF (TYPE3(CARD,VN,NAME,TYPE,TLOC,4,0,NDX,NDX,0,MR,PNO).NE.0)
0271      X GO TO 700
0271      IERR=2
0272      CALL RPUT(DCTOUT,I,CARD)
0273      IF (I) 700,460,700
0274      485 IND=IND+1
0275      CC=CC+DIM(F)
0276      IF (IND.EQ.NTF) GO TO 500
0277      IERR=10
0278      CALL SETKEY(KEYS(37),KLOC,2,0)
0279      CALL GETKEY(KVAL(202),TITLE,6700,6450)
0280      GO TO 450

C
C      NAME THE TWO-WAY BEHAVIOR CODES AND LIST DICTIONARY
C
0281      500 CC=C
0282      CALL MOVE(IDENT,49,24,NAME,1,24)
0283      DO 540 F=1,NTF
0284      N=DIM(F)
0285      DCTOUT(2)=OUTF(F)
0286      IF (OPT(F).EQ.0) GO TO 515
0287      VN=2000

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```

0288      TL0C=(M+NDF)*4+1
0289      GO 510 J=1,M
0290      N=C(CC+J)
0291      N=BNRCOS(N)
0292      CALL MOVE(N,1,4,NAME,12,4)
0293      GO 510 K=1,M
0294      N=C(CC+K)
0295      N=BNRCOS(N)
0296      CALL MOVE(N,1,4,NAME,20,4)
0297      IERR=11
0298      VN=VN+1
0299      IF (TYPE3(CARD,VN,NAME,TYPE,TL0C,4,0,MDX,MDX,0,NR,PNO).NE.0)
        X GO TO 700
0300      IERR=2
0301      CALL RPUTIOCTOUT,I,CARDI
0302      IF (I.NE.0) GO TO 700
0303      510 CONTINUE
0304      515 IF (PRNT(F).EQ.0) GO TO 535
0305      CALL LISTH
0306      CALL RCLOSE(OCOUT,I)
0307      IF (I.NE.0) GO TO 700
0308      CALL ROPEN(OCOUT,I,J,K,L,1)
0309      IF (I.NE.0) GO TO 700
0310      520 CALL RGET(OCOUT,I,CARD)
0311      IF (I-1) 525,700,530
0312      525 CALL LISTD(CARD)
0313      GO TO 520
0314      530 WRITE (IPRTR,1450) F
0315      1450 FORMAT ('***** THE ABOVE DICTIONARY IS FOR FILE #',I3)
0316      535 CALL RCLOSE(OCOUT,I)
0317      IF (I.NE.0) GO TO 700
0318      540 CC=CC+M
0319      RETURN

C
C   ERROR MESSAGES
C
0320      700 WRITE (IPRTR,1500) IERR
0321      1500 FORMAT ('*** ERROR NUMBER',I5)
0322      IF (IERR.EQ.7) WRITE (IPRTR,1550) J
0323      1550 FORMAT ('0   CARD COLUMN',I6)
0324      STOP 16
0325      END

```

COMMON BLOCK /PARM / MAP SIZE 2A9A									
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
INPUT	0	IPRTR	4	DATIN	8	NC	10	MC	14
Z	18	V	1C	OUTF	114C	PRNT	115C	AGGC	116A
AGGR	116C	CPT	117A	FILTER	117C	NC	194C	ID	1950
NF	1A18	IF	1A1C	A	1AE4	NTF	2A84	DTM	2A88
LOC	2A90								

SUPPROGRAMS CALLED									
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
IBCOM#	3C0	SETKEY	3C0	LYS08	3C4	INTERP	3C8	GETKEY	3CC
RCPEN	3C0	RGET	3D4	SETADD	3D8	CHSCAN	3D0	IAND	3E0
JCONV	3F4	IQR	3F8	IBYTE	3EC	CMST	3FC	RADIX	3FA
BUILD	3F8	RPUT	3FC	MOVE	400	8ABCDS	404	TYPE3	408
L1STH	40C	RCLOSE	410	L1ST03	414				

SCALAR MAP							
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
IN	R34	OUT	R38	INCL	R3C	EXCL	R4D
DATA	R4R	F	R4C	I	R5D	L	R54
J	R5C	K	R6D	M	R64	CC	R6B
ISW	R7D	C	R74	N	R7B	P	R7C
MDX	R84	TYPE	R8R	PNO	R8C	KD	R9D
IND	R8B	MR	R9C	VN	R9E	TLOC	R94

ARRAY MAP									
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
KEYS	8A0	KLOC	94C	KVAL	960	IDENT	C8C	DCTOUT	CD4
DTAOUT	CCC	CARD	CE4	NAME	D34	TITLE	D4C	CHAR	D9C
D	DA6	LIST	1576	S	163E				

FORMAT STATEMENT MAP									
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
1000	1649	1050	1680	1100	168C	1150	16DE	1200	16F2
1225	1705	1250	1715	1300	1742	1350	176F	1400	1784
1425	178D	1450	17A2	1500	17D1	1550	17E8		

```
*OPTIONS IN EFFECT* NOID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,*AP
*OPTIONS IN EFFECT* NAME = SETUP , LINECT = 50
*STATISTICS* SOURCE STATEMENTS = 325,PROGRAM SIZE = 12166
*STATISTICS* 004 DIAGNOSTICS GENERATED, HIGHEST SEVERITY CODE IS 4
```

```

0001      SUBROUTINE EXEC
0002      IMPLICIT INTEGER (A-Z)
0003      DIMENSION DATAIN(2),DTAOUT(2),FILTER(500),OUTF(4),A(1000),V(1100),
          X R(4),S(100),T(12000),XREC(4)
0004      INTEGER*2 PRNT(4),AGGC(4),AGGR(4),OPT(4),DIM(4),LOC(5),
          X IO(100),IF(100)
0005      COMMON /PARAM/ INPUT,IPTR,DATAIN,NC,MC,Z,V,OUTF,PRNT,AGGC,AGGR,
          X OPT,FILTER,ND,IO,NF,IF,A,NTF,DIM,LOC
0006      DATA DTAOUT /'DATA' /
          $

```

```

*****01) IEYD3RI SIZE WRN.*****

```

```

C
C      INITIALIZATION
C
0007      IREC=1
0008      DO 100 F=1,NTF
0009      XREC(F)=0
0010      DTAOUT(2)=OUTF(F)
0011      LREC=(LOC(F+1)-LOC(F))*4
0012      LBLK=LREC
0013      IF (LBLK.LE.1000) LBLK=2000/LBLK*LRLK
0014      CALL ROPEN(DTAOUT,I,LREC,LBLK,0,0)
0015      IF (I.NE.0) GO TO 700
0016      R(F)=0/(N(F))
0017      100 CONTINUE
0018      DO 105 I=1,ND
0019      105 S(I)=V(ID(I)+1)
0020      NS=ND+1
0021      J=LOC(NTF+1)
0022      DO 110 I=1,J
0023      110 T(I)=0
0024      GO TO 150
C
C      READ OF FILE-READ LOOP
C      CHECK GLOBAL FILTER AND SEQUENCE BREAK
C
0025      120 CALL RGET(DATAIN,I,Z)
0026      IF (I-1) 125,700,240
0027      125 I=1
0028      IF (FILTER(I).NE.0) I=SIEVE(FILTER)
0029      IF (I.NE.1) GO TO 120
0030      IREC=IREC+1
0031      MC=V(INC+2)
0032      DO 130 J=1,ND
0033      IF (V(ID(J)+1)-S(J)) 600,130,140
0034      130 CONTINUE
0035      NS=ND+1
0036      GO TO 150

```

```

0037      140 NS=J
          C
          C CHECK FILTERING AND LEVEL BREAK FOR ALL FILES
          C
0038      150 DO 220 F=1,NTF
0039          L=F*100+1
0040          I=1
0041          IF (FILTER(L),NE.0) I=SIEVE(FILTER(L))
0042          IF (I,NE.1) GO TO 220
0043          C=LOC(F)+ND+NF
0044          IF (NS.GT.AGGC(F)) GO TO 210
0045          IF (OPT(F).EQ.0) GO TO 160
0046          J=C+(R(F)+1)*DIM(F)
0047          T(J)=T(J)+1
0048          R(F)=DIM(F)
0049      160 IF (NS.GT.AGGR(F)) GO TO 210
          C
          C OUTPUT FILES
          C
0050          J=LOC(F)
0051          DO 170 I=1,ND
0052      170 T(I+J)=S(I)
0053          J=J+ND
0054          IF (NF.EQ.0) GO TO 190
0055          DO 180 I=1,NF
0056      180 T(I+J)=V(IF(I)+1)
0057      190 DTABLT(2)=OUTF(F)
0058          CALL RPUTDTABLT(I,T(LOC(F)+1))
0059          IF (I,NE.0) GO TO 700
0060          XREC(F)=XREC(F)+1
          C
          C ZERO OUT TABLES
          C
0061          J=J+NF+1
0062          K=LOC(F+1)
0063          DO 200 I=J,K
0064      200 T(I)=0
          C
          C UPDATE TABLES
          C
0065      210 I=NC+3
0066          J=I+MC-1
0067          DO 220 I=I,J
0068          K=BYTE(A(V(I)+1),F)
0069          IF (K.EQ.0) GO TO 220
0070          T(C+K)=T(C+K)+1
0071          IF (OPT(F).EQ.0) GO TO 220
0072          L=C+R(F)+DIM(F)+K

```

```

0073      T(I)=T(I)+1
0074      R(F)=K
0075      220 CONTINUE
C
C      UPDATE PREVIOUS IDENTIFYING VARIABLE ARRAY
C
0076      IF (NS.GT.ND) GO TO 120
0077      DO 230 I=NS,ND
0078      230 S(I)=V(ID(I)+1)
0079      GO TO 120
C
C      CLOSE FILES AND MAKE REPORT
C
0080      240 CALL RCLOSE(DATIN,I)
0081      IF (I.NE.0) GO TO 700
0082      WRITE (IPRTR,1000) IREC
0083      1000 FORMAT ('LRUN COMPLETE',I6,' CASES INPUT')
0084      DO 250 F=1,NF
0085      IF (OPT(F).EQ.0) GO TO 250
0086      J=LOC(F)+ND*NF+(R(F)+1)*OIM(F)
0087      T(J)=T(J)+1
0088      250 J=LOC(F)
0089      DO 260 I=1,ND
0090      260 T(I+J)=S(I)
0091      IF (NF.EQ.C) GO TO 280
0092      J=J+ND
0093      DO 270 I=1,NF
0094      270 T(I+J)=V(T(I)+1)
0095      280 DTAOUT(2)=CUT(F)
0096      CALL RPUT(DTAOUT,1,T(LOC(F)+1))
0097      IF (I.NE.0) GO TO 700
0098      XREC(F)=XREC(F)+1
0099      WRITE (IPRTR,1050) XREC(F),F
0100      1050 FORMAT ('-1,12X,I6,' CASES OUTPUT FOR FILE',I4)
0101      CALL RCLOSE(DTAOUT,1)
0102      IF (I.NE.0) GO TO 700
0103      290 CONTINUE
0104      RETURN
C
C      ERROR EXIT
C
0105      600 WRITE (IPRTR,1100) IREC
0106      1100 FORMAT ('SEQUENCE ERROR AT CASE NO.',I6)
0107      RETURN
C
0108      700 WRITE (IPRTR,1150) IREC
0109      1150 FORMAT ('FATAL INPUT/OUTPUT ERROR IN EXECUTOR; CASE NO.',I6)
0110      RETURN

```

FORTMAN IV G LEVEL 21

EXEC

DATE = 74208

15/31/11

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0111

END

PROGRAM DOCUMENTATION

		COMMON BLOCK /PARM		/ MAP SIZE 2A9A					
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
INPUT	0	IPRTR	4	DATIN	8	NC	10	NC	14
Z	18	V	1C	OUTF	114C	PRNT	115C	AGGC	1164
AGGR	116C	OPT	1174	FILTER	117C	NO	194C	ID	1950
NF	1A18	IF	1A1C	A	1AE4	NTF	2AB4	DIM	2AB8
LOC	2A90								

		SUBPROGRAMS CALLED							
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
RCPFN	190	RGET	194	SIEVE	198	RPUT	19C	BYTE	1A0
RCLOSE	1A4	IBCOM#	1AB						

		SCALAR MAP							
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
IREC	208	F	20C	LREC	210	LBLK	214	I	218
NS	21C	J	220	L	224	C	228	K	22C

		ARRAY MAP							
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
DTAOUT	230	R	238	S	248	T	308	XREC	BF58

		FORMAT STATEMENT MAP							
SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
1000	BF68	105C	BF8A	1100	BFAE	1150	BFCE		

OPTIONS IN EFFECT NOID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,MAP
 OPTIONS IN EFFECT NAME = EXEC , LINECNT = 50
 STATISTICS SOURCE STATEMENTS = 111,PROGRAM SIZE = 51708
 STATISTICS 001 DIAGNOSTICS GENERATED, HIGHEST SEVERITY CODE IS 4

STATISTICS 005 DIAGNOSTICS THIS STEP 2

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