

## TRAINING INTERVIEWERS FOR COMPUTER-ASSISTED TELEPHONE INTERVIEWING

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Almost without exception, interviewers like computer-assisted telephone interviewing (CATI) once they overcome any initial reservations about their ability to master the techniques for routine entry and special functions. When they are comfortable with CATI and have had some experience with the ways in which CATI can enhance their ability to collect more accurate data, they quickly embrace the new technology and indeed seem to form strong preferences for it over the traditional paper-pencil data collection mode.

The heart of the difference between training interviewers in using computer-assisted methods versus recording answers on paper documents lies in the tension between their curiosity and anxiety. For the trainee with little or no previous exposure to a terminal keyboard, there is a fascination with having the next appropriate question appear on the CRT screen, or having the computer bring up a series of clarifying questions because of detected inconsistencies in the respondent's answers. Coupled with this is some trepidation about mistakenly entering something on the keyboard which will cause a disastrous blowup of the system, thereby losing the respondent and/or the interview. For interviewers who have been praised for their skill with paper-pencil forms, there may be the added threat of turning over control of the interviewing situation to "the computer". Yet once there is confidence that the new technology is manageable, offers many advantages over the chores and mishaps attendant to paper-pencil recording, and does not de-humanize the interviewing experience itself, it is clear that most interviewers welcome CATI and take pride in their newly acquired skills.

### Background:

There are a number of CATI systems developed by and for commercial, academic, and governmental data collection and processing purposes. They can differ widely in system capabilities and in implications for interviewers and coders, depending on system design decisions and the applications for which these CATI systems were tailored.(1) It should be noted (unless otherwise specified) that use of the term "CATI" or "the CATI system" in this paper refers to the Computer-Assisted Telephone Interviewing and Direct Data Entry system (version 3.0) developed by the Computer-assisted Surveys Methods (CSM) Program, Office of Computing Affairs, at the University of California at Berkeley.(2)

This paper does not attempt to address interviewer training issues such as basic interviewing techniques which are common to both traditional paper-pencil and CATI interviewing.

Under a cooperative research agreement with the USDA Statistical Reporting Service, CSM and USDA staff have been involved in a series of test and production data collection/processing activities at the first of several State test sites --

Sacramento, California -- using the Berkeley CATI system.

It should be noted that the co-authors of this paper are associated with different institutions which focus on distinctly different aspects of the data collection and processing spectrum.

CSM is engaged primarily in the research, development and dissemination of its computer-based techniques used for the collection and processing of survey data; as such, the program encourages cooperative and cost-sharing efforts between governmental, private and academic institutions to identify and incorporate those system capabilities which would be most useful to a wide variety of users. While the CSM Program does not conduct production surveys on a regular basis, surveys have been conducted to test CATI enhancements and design and survey methodology issues in a production setting before release to the Berkeley CATI user community. Observations concerning the training of CATI interviewers, therefore, are a result of a half-dozen CSM-based surveys -- primarily random-digit dial, random adult selection, general population surveys of public opinion -- where the interviewing and coding staffs were usually recruited and trained on a project basis. The CSM CATI instruments include complex contingencies, are largely attitudinal with open-ended questions, and are relatively lengthy (45 minutes to an hour). Also included is our experience with The California Disability Survey, a 30,000 household telephone study of the California population -- the first large-scale academic or governmental study to use computer-assisted telephone interviewing.(\*). Although the CDS used a modified version of the UCLA programs(#), for several current CSM staff and associates this was our first exposure to computer-assisted telephone interviewing.

The USDA CATI surveys, meanwhile, concentrate on factual, numeric data, with few or no opinion questions but with extensive on-line edit checking for inconsistencies, tailored verification questions for responses which fail edit specifications, and comparisons of current data with historic data. The typical USDA interview is brief -- oftentimes from 5 to 15 minutes. Because there are numerous recurring surveys, the interviewing staff, especially in the larger agricultural states, is oftentimes more stable than is true of many academic or private sector survey organizations.

Another important difference between CATI surveys conducted to date by CSM and USDA is that the CSM surveys using the Berkeley system have had a data collection and coding period of several months, whereas USDA surveys almost always require that data be collected within a few days, edited, cleaned, and transmitted to Washington D.C. for a centralized final edit within a day or two after the data are collected.

It is as a result of the several USDA surveys and the CSM surveys that our observations and recommendations emerge.

### Introducing the Interviewer to the Berkeley CATI Basics:

The interviewer must learn two modes with Berkeley CATI: (1) entry mode and (2) command mode. Once logged into the system, the interviewer is in entry mode and remains in entry mode as long as he or she moves normally through the interview or through non-substantive items included in the instrument by the designer. The interviewer shifts to command mode when it is necessary to do something unusual, such as enter notes for supervisors or coders, back up one or more questions, change an answer, or skip to permissible items such as a series of questions to arrange a callback appointment for an interrupted interview. An introduction to the entry mode begins the training.

Possibly the most important recommendation we could make concerning the CATI training agenda is to get the interviewers onto terminals as soon as possible so they can begin to gain confidence -- and to keep them on the terminals throughout as much of the training as possible. Other suggestions such as revising the order of topics covered, remaining flexible about revising the agenda as needed, etc., only serve to re-enforce our recommendation to incorporate terminal use into as many aspects of the training as possible.

Elaborate demonstrations and/or lengthy discussions about features of the CATI system or potential advantages of computer-assistance for data quality, case management and analysis have very little meaning in initial stages of training. In fact, they can be intimidating and undermine whatever self-assurance exists. There is too much to absorb in one sitting. During the course of training, they will discover for themselves the ways in which the new tool makes their jobs easier or more difficult or just different. A straightforward "read question - enter answer" interview demonstration without embellishment (or detailed use of commands at this stage), followed by sitting the interviewers at terminals to follow the same procedure, introduces the interviewer to the notion that CATI can be user friendly and allays anxiety about whether this technology will be totally incomprehensible to a computer novice.

On-line instruction instruments can be extremely helpful and reduce supervisory training time for the basics. Examples of initial training instruments might include items such as those in Exhibit 1.

In addition to routine entry, interviewers need to master a set of commands. If the normal "read question - enter answer" flow of the instrument is interrupted, the interviewer must be able to skip to a series of callback appointment questions if the interview cannot be completed in that session. Or if the respondent changes his mind, the interviewer must back up or jump back, review a previous answer, change that answer, return to the next appropriate unanswered question (which might not be the one the interviewer was on before), etc. -- much the same as an interviewer using a paper-pencil form may flip back pages, replace the old answer with a new one, and flip forward to find where to resume. The advantage of CATI, however, is that the system rigidly enforces the instrument logic at all times. For example, if the interviewer

attempts to jump back to a specified item and gets the message "illegal :jb, returning to last open question" this might indicate that the specified item has been deemed off-limits by the designer, that this item was not previously asked because of instrument branching due to the answer to an earlier item, or that the item is not relevant for this respondent (even if it was previously asked) because an earlier answer which was changed affected the branching. The companion commands to back-up and jump back also ensure that the interviewer does not resume the interview on the "wrong page" or with the "wrong question."

As soon as interviewers are comfortable with routine entry of the various types of response items and quickly recognize the error messages when a mistake is made, subsequent demonstrations should introduce the simplest of the interviewer commands. Ideally these demonstration sessions should be broken into as many logical but brief segments as is necessary to cover the full range of capabilities the interviewers should have for the complexity of the CATI instrument at hand -- followed immediately by hands-on trial and error. Although trainers should be ready and willing to help when an interviewer tries a command which doesn't work, we suggest that trainers avoid volunteering the correct command. By encouraging the interviewer to work through step-by-step what he/she intended to do, which command(s) will accomplish this, what was wrong with the way in which the command was issued, the interviewer begins to develop a basic understanding of the command logic. Interviewers need not develop in-depth technical understanding, but need to be able to quickly diagnose a command-error message while in the midst of an interview with the respondent on the line. Simply telling the trainee what the command should have been does not re-enforce this.

### Written CATI Training Materials

Aside from written materials on interviewing techniques, study specific question-by-question objectives, etc., we customarily issue a CATI training manual. The manual has undergone many revisions and reorganization of sections, because of what we have learned as a result of our training experiences and because of the very different nature of USDA and CSM surveys.

It is arranged so that sections pertaining to the most recent hands-on training can be distributed in loose-leaf fashion for study after the demonstration session itself -- either for study after the hands-on training or for reference during that session -- and then retained for reference.

Giving interviewers the entire manual and assigning sections to study or asking them to review sections before each new CATI session on the terminals has not been productive. Interviewers vary widely in how seriously they try to work their way through this type of written material; in any event, it is questionable how helpful the material is without being able to try the commands along with reading the instructions. A CATI trainer can become hopelessly mired in trying to fathom whether confusion results from

reading about functional commands not yet introduced, from intimidation, or from simply not studying. Planning the hands-on sessions and the reading materials in a step-by-step fashion with each session building on having mastered the previously introduced commands helps the trainer to gauge individual progress.

Another argument for the organization and distribution of a CATI manual in this fashion is that some surveys, including those conducted by the same organization, require more complex interviewer capabilities than others. On simpler survey instruments requiring a minimum number of CATI interviewer commands, training time can be minimized; or, if the staff includes a combination of first timers and experienced interviewers, the more experienced can be brought into the training at the stage where capabilities new to them are introduced.(!)

#### Difficulties for the CATI Trainee

Typically the CATI interviewer is younger than the traditional paper-pencil interviewer, as is generally true of those being trained in other aspects of electronic automation. Although those with excessive machine fear tend to screen themselves out as candidates for CATI training, the trainer needs to be alert to some difficulties peculiar to the computing environment.

With most interviewers there will of course be some timidity in initial stages of training until they are more comfortable with response entry and commands, but there will inevitably be some trainees who, no matter how hard they try or how well they intellectually comprehend instructions, will not be able to respond quickly with the appropriate command when an unusual situation arises. Whereas one might learn to live with a certain amount of difficult to decipher handwriting or occasional sloppy recording with paper-pencil documents because an interviewer has other outstanding interviewing qualities, terminal entries and commands are exact. Putting interviewers on terminals as early in the training as possible allows the trainers to form impressions on which areas need additional work and which exercises would be most beneficial to the group, or identify those trainees who should have additional special training.

It is also necessary to identify the occasional interviewer with just enough exposure to computing to be blasé about CATI. Unfounded confidence is also irksome with trainees for paper-pencil interviewing, but can be particularly troublesome with on-line CATI commands. During the recent June Acreage survey in the Sacramento USDA office, two overly-confident, slightly bored trainees were ultimately much less well prepared than the more conscientious newcomer to computing and needed more supervisory attention throughout production interviewing.

Each group we've trained has been somewhat different, and we feel it is wise to allow some flexibility in session content to tailor terminal training to the areas causing the most difficulties for the group.

#### Mock Interviewing and Role-Playing

On-line role playing and mock interviewing with supervisors monitoring on the telephone and on screens can be especially useful, not only for training in question-by-question objectives and practice in handling ambiguous responses, but also in getting interviewers accustomed to simultaneously using the terminal while they are reading questions, answering respondent inquiries or listening to answers. Here again the difficulty of the mock interview situation should increase as training progresses, eventually simulating the real production setting as closely as possible.

With USDA surveys, role playing can be a problem: how convincing a hog farmer could you be? But the statisticians and other state office staff who deal with farmers and county commissioners can be inspired mock respondents and provide excellent experience for the interviewers. For attitudinal surveys, we enlist acquaintances and co-workers armed with an assigned roles (e.g., be a woman in her mid-20's with small kids screaming who answers "I don't know" to everything), and eventually some non-study sample strangers are usually interviewed. After training several small groups of interviewers for the USDA semi-annual Cattle and Calf Inquiry, we suffered our first drop-out at this stage of training. Although she did not seem to be having unusual difficulty, the combination of coping with CATI while simulating an interview with a stranger proved too stressful for her. It was also during on-line mock interviewing during training for the 1982 National Election Studies Method Comparison Project that we discovered that an interviewer, who was articulate and read flawlessly from paper documents, had extreme difficulty reading CRT screens.

#### Free Response Questions and Typing Speed

Pity the poor respondent who must wait while the interviewer painstakingly searches for each key. A common objection to the use of CATI for collecting free response material has been the belief that typing is slower than recording verbatim by hand. As mentioned, the USDA surveys primarily require recording of numeric data, but the instruments do include name and/or address changes, names of partners, and explanations if the numeric data are correct but inconsistent. There was no screening for typing ability and, indeed, most interviewers had very little. However, perhaps because of the brevity of the interview, we found that lack of typing speed did not seem to be an irritant to the respondent, and speed did improve as interviewers felt more comfortable with the keyboard.

At the other end of the spectrum, however, The Citizen Reasoning about Public Issues and Policy Trade-offs study conducted by CSM invested heavily in free answer responses to encourage respondents to amplify and clarify throughout the interview because of the emphasis on the "reasoning" behind respondents' answers. The interviews, which averaged 55 minutes (not including interview time for those interviews which were done in more than one session), averaged two to three full pages of single spaced machine readable text, based on respondents' combined answers

to all the open-end questions in the instrument, responses to "other specify" follow-on questions, and the spontaneous comments. The interviewing staff consisted of experienced paper-pencil interviewers; anticipating that they would find it easier to handle the open-ended material by recording it on paper as they were accustomed to doing, they were given a choice whether to use CATI for this purpose during the course of the interview or wait until the conclusion of the interview to either enter their own handwritten text or have someone else do it. Although only one of the interviewers was a trained typist, all chose to record responses directly on the CRT. "The unanimous judgment of the field staff was that recording was easier and at least as complete with answers entered directly."(3)

Good typing skills are obviously desirable with extensive free response recording, but given the choice between interviewing skill and typing skill, we would opt for the former. The training for verbatim recording, however, must include practice with phrases to slow the respondent down while reassuring him of the importance of getting everything word for word, and practice with short cuts such as abbreviating, not bothering to capitalize or punctuate or worry about misspelling except where absolutely essential. Supervisors of paper-pencil interviewers can decipher a remarkable range of handwriting idiosyncrasies and misspellings. Similarly, with practice, CATI supervisors can and do make sense of typos, stray letters, and gibberish. A study director can also elect to authorize the post interview "editing" of text collected during the interview: (1) either by having a trained text editor edit the text file itself (as was done on the first phase of the Citizen Reasoning Project but not on the second), or (2) by encouraging the interviewer to review the text for ambiguities and adding clarifying notes (but not actually touch the text).

A word about "authorized abbreviations": To ease the recording burden, we provided a list of common abbreviations, with the original intention that interviewers be consistent in the use of the abbreviations -- until it became clear during mock interviewing and recording sessions that interviewers had to fight the impulse to back up and correct a misspelling of an "authorized" abbreviation or struggle to remember it. Thereafter, the emphasis became "suggested" abbreviations, and the interviewers were allowed to develop their own abbreviations providing only that they be understandable, which improved recording speed.

Gauging how quickly and completely interviewers are recording free answer response can be most easily reviewed after a group mock-interviewing session in which one person acts as the respondent, each interviewer takes a turn asking some of the questions, and all record the same interview in its entirety. Print-outs of the interviews or text from the session provide the trainers with a record of what was recorded by whom and who needs to be encouraged to find better or more short-cuts, while a review of trainers' notes reveal which interviewers need to work on slowing the respondent down. Recording speed does improve with practice, and perhaps scripted tapes of varying speeds might be helpful.

### Prepare Interviewers for the Negatives

Prepare interviewers in advance for the potential hazards of the computing environment such as system crashes or peculiar quirks of aging (or new) terminals or other equipment. While Berkeley CATI permits interviewers to send written messages to the supervisor's terminal during an interview or a special "help" signal, these utilities will be of no use to the interviewer if the system has crashed or the terminal is frozen.

USDA and CSM CATI surveys customarily include a sentence informing respondents that their answers are being recorded directly in the computer. This serves some useful purposes and we are not aware that respondents find this objectionable.(4) The respondent can usually hear the clicking of the keyboard anyway, and the interviewers generally feel that interest in the new method usually increases cooperation. Although it is difficult to distinguish between the farmer's reaction to the computer entry procedure or the on-line questions concerning inconsistent information, an informal evaluation questionnaire distributed to interviewers after a recent USDA survey included reactions such as: "Farmers seem to want to give better data -- they often go back and change an answer after they think it over;" and "Farmers and ranchers take the survey more seriously when they find out the answers are going directly into the computer." In the event of hardware failure, if the interviewer has already alerted the respondent to the use of a computer, a simple apology (and arrangements for callback at the respondent's convenience) suffices without the need for detailed explanation.

The time for interviewers to learn how to recognize the symptoms, what to say, who to alert, and how to handle the situation is during training, not when horrified, bewildered, or frustrated.

### CATI "Flight Tests"

"CATI flight tests", which are a series of loosely scripted scenarios where the trainer assumes the role of respondent and gives answers which force the interviewer to use one or more commands, have been tried on several complex surveys. They have been valuable in evaluating how thoroughly the interviewer understands the commands and how quickly he or she responds; the disadvantage is the supervisory time required for this exercise because of its one-on-one nature, especially with a large training group. However, on a less formal testing basis, it seems beneficial to have a series of standardized mini-flight test scenarios of increasing difficulty for trainers to administer on an as-time-available and as-needed basis.

### Interviewer Acceptance of CATI

Our impression that most interviewers enjoy CATI and generally prefer it over traditional methods comes primarily from our informal discussions with interviewers. However, the results of the post-questionnaire submitted by the field staff provide some insight. "When asked to choose between opposing views of CATI, 86% of the field staff agreed that 'CATI helps interviewers

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do their work better' and only 4% felt that 'CATI makes it hard for good interviewers to do their work.... The field staff also ended the study with a preference for future CATI compared with regular assignments.... When the options were narrowed to a CATI or paper-and-pencil telephone survey, 86% said they definitely preferred CATI, 80% somewhat preferred it, and 6% said the form of interviewing made no difference. No interviewers expressed a preference for paper-and-pencil interviewing."(4)

Responses to the CATI Evaluation questionnaire distributed to the six interviewers following the January 1983 Cattle and Calf Inquiry conducted from the Sacramento USDA office also indicate an over-all preference for CATI and the greater accuracy of the data collected. Negative comments about CATI versus paper-pencil centered around the fact that the CATI version took longer because of the on-line verification questions with the respondent and thus fewer calls could be made within the same time period. As mentioned earlier, because of the extremely short data collection period, interviewers are quite conscious of how many respondents they are able to contact. Other comments regarding the CATI experience focused on the headsets, suggested revisions in the CATI instrument itself, noisy quarters, and the "slowness" of the system. We knew in advance that we would have less than an ideal computing environment. CATI is normally executed at 9600 baud, but access to the CATI programs were via 1200 baud dial-up lines to a Berkeley computer with other users on the Berkeley computer restricted from certain types of activities during interviewing to maintain the optimum response time. We too scheduled our cpu-intensive computing activities in Sacramento around CATI interviewing hours. But when faced with a daily deadline to transmit cleaned data from Sacramento to Washington and only a few remaining interviews to be conducted, we asked the interviewers to do the remaining interviews on paper-pencil (which they were accustomed to doing) so we could dedicate available computing resources to our activities. What followed were persistent, good-natured pleas to let them do the interviews on CATI. They won, and we missed lunch.

FOOTNOTES

(\*) Conducted by the University of California's Survey Research Center (Berkeley) and Institute for Social Science Research (Los Angeles) for the California Department of Rehabilitation.

(#) CATI, UCLA Center for Computer Based Behavioral Sciences

(!) The Berkeley CATI system has 21 executor (or interviewer) commands, some of which require arguments. As few as 10 and as many as 15 have been taught to interviewers on various surveys, but our experience to date does not include training in the commands associated with rostered or hierarchical CATI instruments.

- (1) Freeman, Howard E. and Shanks, J. Merrill, Eds. "The Emergence of Computer-Assisted Survey Research", a Special Issue of Sociological Methods and Research, forthcoming.
- (2) Shanks, J. Merrill, George Lavender, and William Nicholls, (1980) "Continuity and Change in Computer-Assisted Surveys: The Development of Berkeley SRC CATI", Proceedings of the American Statistical Association Section on Survey Research Methods, 507-512.
- (3) Shanks, J. Merrill, Wm. Michael Denney, J. Stephen Hendricks, and Richard A. Brody, "Citizen Reasoning About Public Issues and Policy Trade-offs: A Progress Report on Computer-Assisted Political Surveys", submitted to the Russell Sage Foundation, October, 1981.
- (4) Shanks, J. Merrill, Howard E. Freeman, and William L. Nicholls II, "The California Disability Survey: Design and Execution of a Computer-Assisted Telephone Study", Sociological Methods and Research, (November 1981): 123-140.

EXHIBIT 1

>1< How happy are you these days: very happy, somewhat happy, or not happy at all?

```
*****
* This is an example of a "precoded response" item. *
* The only acceptable answers appear on the screen *
* between the "<" and ">" symbols. Type "1", "3", *
* "5", or "8", as appropriate, then depress the *
* RETURN key to record the answer. If you accident- *
* tally type anything else, you will get a "try again" *
* message after you depress RETURN. If so, simply *
* enter the correct number, depress RETURN, and CATI *
* will take you to the next question to be answered. *
*****
```

- <1> Very happy
- <3> Somewhat happy
- <5> Not happy at all
  
- <8> Don't know, can't say

==>

>2< How many are MILK COWS, whether dry or in milk?  
(Include milk heifers that have calved.)

```
*****
* This item includes examples of a "precoded range" *
* and an "other specify". You may enter any number *
* from "0" to "999999". If your answer is not numeric *
* enter "n" and CATI will prompt you with "specify", *
* after which you may enter a note of any length *
* explaining the situation. If the comment takes more *
* than one line, press RETURN at the end of each line *
* and keep going. When you are through, type three *
* slashes ("///"). *
*****
```

- <0> None
- <1-999999> cows milked yesterday
- <n> No answer

==>

>4< What is your street address?

```
*****
* This is an example of a "fixed text length" item. *
* You may enter up to 24 upper- or lower-case letters *
* or numbers including spaces. If you enter more than *
* 24 characters, you will get a "try again" message. *
* (The dashes are to assist you in staying within the *
* in the 24 character limitation.) Depress RETURN *
* when you have finished entering. *
*****
```

(24 characters)

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==>