DISCUSSION

Stanley Presser, University of Michigan

As is not unusual in the early stages of a technological innovation, large claims have been made for Computer Assisted Telephone Interviewing (CATI). This morning's two papers about CATI assert at least eight such claims, among them that CATI improves data quality, reduces processing time, and is preferred by interviewers. Some of these assertions seem compelling, others are less persuasive.

It has been argued that CATI improves data quality through the introduction of consistency and wild code checks and the elimination of improper skip patterns. House and Morton present results from one of the first experimental tests of this proposition. They show that substantially fewer "critical edit errors" were found in the CATI version of their farm survey than in the paper and pencil version. The fact that only three interviewers interviewed in each version (and that there was no overlap between the CATI and paper and pencil interviewers) complicates interpretation of the results. But it does seem reasonable to believe that the programmed logic of the computer assisted version was responsible for a reduction in the amount of error in the data. The incorporation of consistency checks during, as opposed to after, data collection is a major CATI asset.

Although CATI undoubtedly improves data quality in some respects, it is important to realize that in other respects it can produce data problems that are unlikely to occur in paper and pencil interviewing. In part this is because it is much more difficult to "proof" a CATI questionnaire than a paper and pencil one. The number of different possible paths in a complex CATI application can be enormous. The task of checking all such paths for design errors is both tedious and very time consuming. Just the identification of all the paths -- apart from their testing -- can be a formidable matter. If this work is not carried out perfectly then one may end up with a survey in which appropriate questions are not asked of individuals who give certain response combinations. Worse still is the completely isolated question -- one that is not reachable from any other part of the questionnaire. And errors like these tend to be relatively invisible, resisting ready discovery.

Still other set-up errors may lead to the loss of data even if all questions are linked appropriately. Application programming involves the construction of a questionnaire <u>and</u> the design of a corresponding data file. Thus in creating a screen for an item, one assigns the file location to which respondent answers are to be written. In one recent CATI study, despite much careful preparation, responses to a set of questions were assigned the same location as responses to an earlier set of items, causing the earlier information to be overwritten. Nobody realized this was happening until a substantial part of the interviewing had been conducted, and expensive callbacks were necessary to fill in the missing data.

Part of the problem is that the complexity of CATI technology exceeds our present ability to check it. But part of the problem is simply the power of computer technology. The more powerful the technology the more serious the consequences of error. Typos in paper questionnaires rarely affect data quality. Logic errors in CATI applications may frequently impair data quality.

The need for careful planning, building, and testing of a CATI questionnaire has an implication for the speed with which surveys can be mounted. Preparation time is likely to be considerably longer for a CATI study than for a paper and pencil one. Building a CATI application and typing a questionnaire are simply not comparable tasks. With few exceptions, the former will take more time. In addition, inevitable hardware problems and concommitant system "downtime" will sometimes result in longer interviewing periods with CATI. These startup and interviewing time losses are unlikely to be offset by gains in the post-interviewing data preparation phase, because these tasks rarely require much time in nonCATI surveys if coding and keypunching have gone on simultaneously with interviewing. Thus, from start to finish, I believe most CATI surveys will take as long, if not longer, than comparable paper and pencil ones.

The much greater complexity of CATI technology also has implications for the kind of staff necessary to prepare a survey. Setup tasks for paper and pencil interviewing rarely require anything more than secretarial skills; set up work for CATI surveys usually demands both computer programming skills and familiarity with data analysis. Although there are major cost savings with CATI (e.g., in coding), the more highly paid staff needed for a CATI operation, combined with the investment in hardware and software, means that CATI is at present more expensive than the paper and pencil approach for most surveys.

CATI also alters the nature of an interviewer's work. Morton and House's impression is that telephone interviewers "seem to form strong preferences for [CATI] over the traditional paper-pencil data collection mode." This conclusion is apparently based in part on results from a questionnaire completed by interviewers who worked on the California Disability Survey. An overwhelming preference for CATI was expressed (Shanks, Nicholls, and Freeman, 1981). But these results may have been partly due to the fact that the Disability Survey was done entirely by CATI. Indeed, in a 1979 Michigan Survey Research Center survey that was done half on CATI, half paper and pencil, with all interviewers working in both modes, 42% said they preferred CATI, 36% professed no preference, and 22% indicated a preference for paper and pencil (Cannell, Groves, et al., 1982). A similar pattern emerged this year in a more general survey of the SRC Phone

Interviewing Staff. This more recent survey also turned up a not surprising correlate of mode preferences. Among those interviewers preferring CATI, over 80% rated their typing skills as at least "good"; among those preferring paper and pencil, the comparable figure was only 30%.

There can be little doubt that Computer Assisted Telephone Interviewing represents a major advance in the technology of survey data collection. The ability to tailor questions to individual respondents, the tremendous flexibility given to questionnaire designers, the potential for greater standardization across interviewers — these are just three of a great many CATI advantages. But it is important to realize that these things come at a price. That CATI may require more lead time and be more expensive than traditional paper and pencil interviewing. That although CATI reduces interviewer caused error it does so in exchange for the potential introduction of programmer caused error. That, in short, CATI will probably not supplant paper and pencil interviewing, but coexist with it. For some kinds of surveys, in some conditions, (e.g., unchanging, repetitive surveys like many of those carried out by the Department of Agriculture and the Census Bureau), CATI will surely be the mode of choice; for other kinds of surveys, in other conditions (e.g., nonstandard surveys where ease of last minute changes is important), paper and pencil will probably be preferred. (For still other applications it may be worth exploring the possibilities of mixed CATI-paper and pencil administrations.)

Note

My understanding of the strengths and weaknesses of CATI has benefitted from discussions with Robert Groves.

References

Cannell, Charles F., Robert M. Groves, Lou J. Magilavy, Nancy Mathiowetz, and Peter V. Miller (1982). "An Experimental Comparison of Telephone and Personal Health Surveys," Volume 2, Survey Research Center, Unpublished Report.

Shanks, J. Merrill, William Nicholls II, and Howard Freeman (1981). "The California Disability Survey: Design and Execution of a Computer Assisted Telephone Study," Sociological Methods and Research, Vol. 10:123-140.