Using Audio Recording to Detect Data Collection Error

M. Rita Thissen, Mai Nguyen • RTI International, Research Triangle Park, NC

Computer audio-recorded interviewing (CARI) technology offers a unique probe into the quality of interviewing and errors that may occur during data collection. Detecting error during field data collection poses challenges, but by listening to audio files recorded during an interview, a monitor can obtain an accurate sense of interviewer performance, respondent reaction and the effectiveness of questions.

Error Detection via CARI
1. **Falsification**
2. **Deviations from protocol**
3. **Response coding, data entry**
4. **Effectiveness of questions**

1. Falsification Anecdotes

CARI techniques have been used in field studies conducted at RTI since 1999,[1] and audio files were recorded for approximately 90,000 interviews. Among the many thousands of authentic interviews, a few were found to be falsified. For these, CARI files are not the sole evidence of malfeasance; evidence may include timing data, comments from co-workers or supervisors, comments from respondents on re-contact or cheating on expense reports.

No Respondent's Voice

It is grounds for suspicion when audio files have sound such as background noise or keystrokes but the voice of the respondent is absent. Similarly, if the interviewer either is silent or seems to be speaking to himself or herself, the data may be fabricated.

Inconsistent Responses

In one case, a dishonest interviewer enlisted help from a household member to pose as the subject; however the pseudo-respondent's information was inconsistent on details that should have been well-known, including the name and gender of her child.

Omission of Items or Sections

One interviewer was found to have been falsifying at the item level. The instrument had been set to record a few minutes following each of several starting points. In some of these files, key-clicks could be heard and then the first audible question was one that should have been later in the module. In other words, the interviewer fabricated answers to a few questions, asked a few, and then fabricated some more, in order to finish faster.

High Refusal Rates

One clue that falsification or short-cutting may be taking place is given by the CARI refusal rate. Average respondent-consent rates for audio recording may vary with a population or region, but within a particular survey the respondents usually consent at fairly consistent levels. When a field worker is conducting the expected number of interviews but the rate of obtaining consent for audio recording is low, it may be the case that the interviewer is incorrectly seeking consent ("I need to ask you if recording is OK but you don't really have to do it."), or it may be that the interviewer is attempting to hide fabrication.

2. Deviations from Protocol

CARI is especially helpful in detecting if field interviewers deviate from the field survey's design protocol. While most errors are minor, some are more serious. In one notable case, a field interviewer was found to be selling cosmetics during the interview sessions. ***Exhibit 1*** shows a distribution of protocol violations from a review of CARI files for a national field survey.

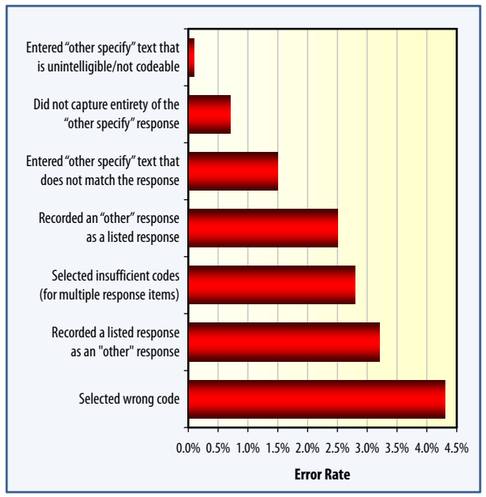
Exhibit 1. Deviations from protocol across 3716 cases

	Number of Incidents	Number of Cases	Percentage of Cases
Reading – Minor Deviation	337	232	6.24%
Reading – Major Deviation	222	153	4.12%
Unprofessional Behavior	39	34	0.91%
Inappropriate Probing	6	6	0.16%
Feedback Not Neutral	1	1	0.03%

3. Response Coding / Data Entry

Error rates as high as 10–14%[2] may occur when interviewers key a respondent's words. CARI can augment or replace keying data. In one of our field surveys, we studied coding error when recording responses to open-ended questions with pre-coded response lists.[3] Review of the data and audio files indicated that the error rates depended on the complexity of the question and response list. Simple single-response questions had low overall error and multiple-response questions with difficult response lists had more. ***Exhibit 2*** lists error rates from a review of four open-ended questions from an in-person survey.

Exhibit 2. Errors committed by field interviewers when coding open-ended responses.



4. Effectiveness of Questions

Audio recording can help in evaluating item readability, comprehension by respondents, and effectiveness of eliciting the desired information. When response frequencies show an unexpected distribution of answers or a high item-refusal rate, audio recordings of "suspect" items may identify the source of difficulty.

Exhibit 3. Class-attendance question from a national survey

Multiple-Response Item — 10 Listed Responses			
Why would you have (LITTLE INTEREST/NO INTEREST) in attending these classes? (Free classes or workshops in your neighborhood that would help you [strengthen your marriage with (SPOUSE)/improve your relationship with (PARTNER)])			
NEED TO WATCH CHILDREN	1	DON'T NEED/WANT SERVICES/ RELATIONSHIP FINE	8
OTHER FAMILY RESPONSIBILITIES	2	CURRENTLY RECEIVING MARRIAGE/ RELATIONSHIP SERVICES FROM ANOTHER SOURCE	9
NO TIME	3		
LACK TRANSPORTATION	4	JUST NOT INTERESTED	10
WORK INTERFERES	5	OTHER (SPECIFY)	11
PRIVACY CONCERNS/MY OWN BUSINESS	6	DON'T KNOW	DK
SPOUSE NOT INTERESTED/ WOULD OBJECT	7	REFUSED	Ref

The question shown in ***Exhibit 3*** asked about attending classes, in the context of inquiring about activities that would help a person ensure a healthy relationship with spouse or partner.[3] Error rates for this question are shown in ***Exhibit 4***, and a few examples illustrate how those errors happened:

- Respondent said, "…I don't like nobody knowing my business," which should have been coded as 6. However, the interviewer coded the response as "*Don't need/want services/relationship fine*"
- Respondent said, "I'm not in a relationship right now, so I don't need them," which should have been coded as 8. However, the interviewer coded the response as "*Just not interested.*"
- Respondent said, "I believe people can work it out sometimes talking to each rather than going to a class," which should have been entered as an '*other specify*' response. However, the interviewer coded the response as "*Just not interested.*"
- Respondent said, "Because my husband and I have to work it out on our own" which should have been entered as an "other specify" response. However, the interviewer incorrectly coded the response as "*Don't need/want services/ relationship fine.*"

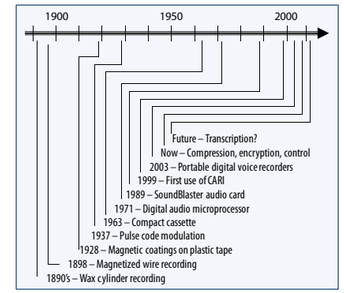
Exhibit 4. Errors made in coding freeform responses to the class-attendance question

Error Types and Rates	Percent (of 282 audio files)
No error	76.2%
Error Rate*	23.8%
Selected wrong code	6.4%
Recorded an "other" response as a listed response	6.4%
Selected insufficient codes	3.9%
Entered "other specify" text that does not match response	3.6%
Recorded a listed response as an "other" response	2.8%
Did not capture entirety of "other specify" response	1.8%
Entered "other specify" text that was unintelligible	0.4%

*Percentages total more than 23.8 because multiple codes were allowed for each item.

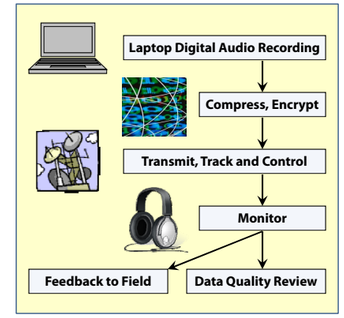
Audio Recording History

From the marketing of the Dictaphone in 1907 to the availability of miniature recorders embedded in portable electronic devices today, people take advantage of audio recording tools to capture voices for later review. The introduction of cassette tapes improved convenience for interviewing, and audio now can be recorded electronically through sound cards and software on laptops, handhelds and other portable devices, making the technology handy for use in surveys.[4]



CARI Processes

CARI processes are not complex. Recording a few selected items or time slices may be adequate for most purposes, reducing monitoring time to a few minutes per case. Laptop microphones pick up voices across conversational distances, and the survey instrument can start and stop recording at specified times during the interview. A complete installation of CARI includes using the laptop to record, compress and encrypt files. Transmission by FTP or web services brings the audio files in house. A central location tracks and controls the distribution of case data and audio files, routing them to appropriate reviewers.



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Acknowledgements

CARI technology and methodology has been developed by many members of the Statistics, Survey and Computing Sciences Divisions of RTI International. We especially note the contributions of Susan Mitchell, Matt Strobl, Kristine Fahrney, Barbara Bibb, Sridevi Sattaluri, Carl Fisher, Emily McFarlane, Lilia Filippenko, Joe Nofziger, Gil Rodriguez, Michael Witt, Paul Biemer, and R. Suresh.

Contact Information

M. Rita Thissen
Manager, Data Acquisition Department
rthissen@rti.org
919-485-7728

Mai Nguyen
Research Programmer Analyst
mnguyen@rti.org
919-541-8757

Research Computing Division, RTI International
PO Box 12194
Research Triangle Park, NC 27709
www.rti.org