

# TECHNICAL PAPERS ON HEALTH AND BEHAVIOR MEASUREMENT

## TECHNICAL PAPER 19

### **Improving Representation of Linguistic Minorities in Health Surveys: A Preliminary Test of Multilingual Audio-CASI**

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## Improving Representation of Linguistic Minorities in Health Surveys

A preliminary test of a computer-assisted self-interviewing technique.

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Approximately 32 million adults in the United States report speaking a language other than English in their home.<sup>1</sup> Information on health status and needs generated by population surveys may be less than complete if surveys fail to reach subpopulations with limited or no English language skills. Similarly, studies that rely on clinic samples may miss recent immigrants, who may be weakly connected to the health care delivery system, and the quality of self-reported data collected in these settings is a function of patients' capacity to understand survey questions and clinicians' ability to understand patients' responses.

The geographic dispersion of linguistic minorities presents significant logistic and economic barriers to their inclusion in nationally representative surveys that use field interviews. Furthermore, the myriad of foreign languages spoken in this country make it difficult, and sometimes impossible, to link professional translators to field interviewers in order to collect data from specific households. The use of

volunteer translators recruited from the household or the neighborhood raises questions concerning the quality of both the translation and the resulting data. (Consider, for example, the potential difficulties created by the use of a household or neighborhood translator to obtain data on income, alcohol consumption, or prostate disorders and other sensitive medical conditions—or in translating technical terms used to describe a medical condition.)

A recent advance in survey technology, audio computer-assisted self-interviewing (Audio-CASI), offers a way to include non-English-speaking respondents in health-related studies.

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Audio-CASI uses a laptop personal computer with a digital audio interface to administer survey questionnaires. In an Audio-CASI interview, respondents listen to digitally recorded questions through headphones connected

to a laptop computer and enter answers using the keyboard. Previous research and preliminary results from two national surveys indicate that Audio-CASI is well accepted by English-speaking survey respondents in the United States and is preferred over interviewer-administered questionnaires that include items on sensitive behaviors, such as history of same-gender sexual contacts and abortions.<sup>3-7</sup>

We report here the findings of a pilot study designed to test the feasibility of using Audio-CASI to include Hispanic respondents with limited English language skills in a brief health survey. Since Audio-CASI questionnaires can be recorded in any spoken language, this system could permit routine inclusion of other linguistic minorities in future health surveys; for this reason we refer to this procedure as multilingual Audio-CASI.

### Methods

A medical clinic serving the Latino community in Washington, D.C. identified 10 potential respondents; an additional "snowball sample" of 24 adults was identified by respondents' referrals. There were two eligibility criteria for participants in this study: (a) respondents were reported to speak little or no English, and (b) they were at least 18 years old.

Interviews were conducted from July through August 1994 by two experienced female interviewers, neither of whom spoke Spanish. Letters in Spanish explaining the study were mailed to the households of potential respondents prior to the initial contact by the interviewer. Copies of the lead letter and a brochure describing the study, also in Spanish, were available for the interviewers to use. In addition, interviewers were given a list of nine Spanish phrases to say or to point

to, including, for example, translations of "Thank you," "Goodbye," and "Do you need help?"

Field interviewers stated—in English—the purpose of the survey, then attempted to roster the household and obtain consent from the target survey respondent. If their initial efforts failed, interviewers were instructed (a) to seek the assistance of an English-speaking member of the household, and, if this were unsuccessful, (b) to contact the Spanish-speaking central office staff by cellular telephone for help in explaining the study and recruiting the respondent. If the individual consented to participate, the interviewer demonstrated the Audio-CASI equipment, and respondents listened to a short introduction in Spanish describing the purpose of the study, giving additional details on how to use the Audio-CASI equipment, and explaining how to signal for assistance from the interviewer using a "help" card.

The Audio-CASI questionnaire consisted of 42 questions taken from several major federal health surveys, including the National Health Interview Survey, the National Survey of Family Growth, and the National Health and Nutrition Examination

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Survey. The questions, which were translated into Spanish by a native Spanish speaker, asked about demographic characteristics, aspects of the respondent's health, and their use of health services. The majority of questions required yes or no responses, but several required respondents to rate themselves using various scaled measurements or to enter multidigit numbers, such as their age and telephone number. At the end of the question-

naire, subjects were asked to evaluate the Audio-CASI system. Interviewers also completed a questionnaire summarizing any problems or other pertinent events that occurred during the interview.

To assess the reliability of the data obtained in the Audio-CASI interview, follow-up telephone interviews were conducted in Spanish by a Hispanic interviewer. The follow-up interview consisted of eight questions on health behaviors repeated verbatim from the Audio-CASI interview. On average, follow-up interviews were conducted two weeks after the initial Audio-CASI interview; however, there was considerable variability in timing (range: 5 to 40 days) due to scheduling difficulties. Given this variation, our analysis allows for differential effects of time to follow-up on respondent recall and response (see Table 2).

## Results

Interviews were completed with 30 of 34 target respondents. (Two refused, one could not be located, and one did not meet the age eligibility criterion.) Respondents included 4 males and 26 females; the majority of respondents (89%) were under age 50, had a high school education or less (73%), and were not currently employed (60%).

While we tried to limit the sample to individuals with limited English language skills, only a minority of respondents reported no ability to speak (17%) or read (27%) English. Five respondents said that they spoke and read English easily. We have no way of assessing the accuracy of either of these claims; however, time to complete the survey as well as self-reported ease of completing the questionnaire and of using the computer did not differ significantly between those who claimed good English language skills and those who did not.

**Table 1. Respondents' subjective assessments of the ease of use of the Audio-CASI computer and their understanding of Audio-CASI questions**

Responses	Number	Percent
<b>Ease of Use: How comfortable did you feel typing into the computer?</b>		
Very comfortable .....	26	87
Somewhat comfortable .....	3	10
Uncomfortable .....	1	3
Very uncomfortable .....	0	0
<b>Understanding of Questions: How easy or difficult was it for you to understand the questions being asked in the tape recording?</b>		
Very easy .....	21	70
Somewhat or very easy .....	6	20
Somewhat difficult .....	2	7
Very difficult .....	1	3

NOTE: Tabulated from responses to taped questions asked in Spanish.

In the majority of the 30 cases (80%), interviewers reported no problem in obtaining the initial Audio-CASI interview other than the problems commonly encountered in conducting surveys, such as difficulties in finding respondents at home or in gaining access to locked apartment buildings. Interviewers reported that they frequently used the Spanish introductory letter and brochure to provide details about the study procedures. In addition, gestures were often effective in instructing the respondent in how to use the computer and in concluding the interview. Accessibility by cellular phone to Spanish-speaking control office staff was critical in obtaining some interviews; in five cases, the Spanish-speaking interviewer described the purpose of the visit and in three cases she was able to convince the respondent to participate.

The final section of the Audio-CASI instrument asked respondents how well they understood the Audio-CASI questions and how comfortable they were with the equipment. Table 1 summarizes respondents' reactions. The majority of respondents (70%) indicated that it was very easy to understand the questions asked in the Audio-CASI interview. Only three respondents reported problems understanding questions, one of whom also reported difficulty using the equipment. Nonetheless, even this respondent successfully completed the Audio-CASI interview. Eighty-seven percent indicated that they were "very comfortable" using the Audio-CASI equipment. Time to complete the Audio-CASI interview ranged from 8 to 30 minutes; the median time was 18 minutes. Respondents over 40 years of age tended to take longer to complete the interview than younger respondents (19.8 versus 16.4 minutes,  $P < 0.10$ ).

Twenty-six of the original 30 respondents (87%) were successfully

Virtually none of the respondents reported difficulty in using the technology.

reinterviewed in Spanish by our Hispanic telephone interviewer. (One respondent refused to be reinterviewed; two were unavailable when recontact was attempted; and one respondent could not be located.) Responses obtained during the telephone follow-up interview were consistent with those elicited during the

initial Audio-CASI interview. (See table 2.) The most notable exception involved a National Health and Nutrition Examination Survey question concerning health care: "Is there a particular clinic, health center, doctor's office, or other place that you usually visit or go to if you are sick, need advice about your health, or for routine care?" This question is ambiguous, requiring respondents to decide if their pattern of health care utilization constituted "usually going to" a particular provider. Furthermore, respondents may have used different providers for different types of health care.

There was no difference in the consistency of responses between respondents who claimed "good" English language skills and those who did not. However, we found that respondents were more likely to give consistent responses when the interval between interview and follow-up was two weeks or less (see column 2 of table 2).

**Table 2. Percent agreement in responses obtained from Audio-CASI interview and follow-up telephone interview conducted by Hispanic interviewer**

Measure	Percent consistent	
	All respondents who had follow-up interviews <sup>a</sup>	Respondents who had follow-up interviews within two weeks <sup>b</sup>
	Smokes cigarettes now . . . . .	100
Attended high school . . . . .	92	100
Wears eyeglasses or contacts . . . . .	92	92
Number of children <sup>c</sup> . . . . .	88	92
Ever worked for pay for 1+ months . . . . .	85	92
Ever had a cholesterol test . . . . .	84	85
Visited a dentist in past year . . . . .	81	92
Use a particular medical clinic, doctor, or health center <sup>d</sup> . . . . .	61	58

<sup>a</sup>Thirty Spanish-speaking adults were included in the pilot study. Due to failure to obtain follow-up interviews with four respondents and a lack of response to certain items, the number of individuals whose responses were compared for consistency varied between 25 and 26, except as noted.

<sup>b</sup>Except as noted,  $N = 13$  for those receiving follow-up interviews within two weeks.

<sup>c</sup>At follow-up, 96% of all respondents reported a number of children that was the same as or one more than the number reported in the Audio-CASI interview.

<sup>d</sup> $N = 23$  (all who had follow-up) and  $N = 12$  (follow-up within 2 weeks) due to nonresponse.

## Conclusion

These results suggest that English-speaking interviewers can successfully administer a health survey using multilingual Audio-CASI and that Audio-CASI can be used successfully by respondents with limited English language skills. The availability of a small cadre of bilingual central office staff accessible by cellular phone seems to provide adequate backup to assist field interviewers in communicating with households that lack a bilingual member to serve as an intermediary. Few problems were noted in comprehension of questions or use of the computer; virtually none of the respondents reported difficulty in using the technology. Pilot research using multilingual Audio-CASI technology with elderly Korean immigrants suggests that reactions to the technology do not vary markedly across immigrant groups—although hearing loss may pose more problems when interviewing elderly respondents.<sup>8</sup> The reliability of the multilingual Audio-CASI measurements was generally acceptable; responses given in the Audio-Casi interviews were highly consistent with responses given during follow-up interviews—particularly when reinterviews were conducted within two weeks. The promising findings of this small feasibility study suggest that further examination is warranted of the role of multilingual Audio-CASI in improving coverage of linguistic minorities whose numbers are small enough or whose geographic distribution wide enough to preclude the use of bilingual interviewers.

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