Computer survey technology: a window on sensitive issues

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Technology: Audio computer-assisted self-interviewing (audio-CASI)

Use: Computers have clearly improved our ability to collect and analyse survey data efficiently and accurately. Now, audio-CASI, an innovative computer-based technology, makes responding to survey questions easier and more private. With this technique prerecorded questions are presented through headphones and on a computer screen so that only the respondent can hear and see them. Answers are given using numbered keys on a laptop.

Evidence suggests that audio-CASI may help people open up about a range of sensitive and potentially embarrassing subjects.[1] The new technology offers complete privacy, can be conducted in the language of choice, and does not depend on the respondent's reading ability.[1,2] Imagine how it will facilitate the science of surveying. An interview with an adolescent concerning violence or abuse could be conducted in the home; a recent immigrant could be interviewed his or her first language.

History: The landmark research highlighting this technique to measure risk behaviours was published in 1998. Turner and colleagues[1] found that adolescent males were more likely to report risky behaviour when they were interviewed with audio-CASI than when traditional paper-and-pencil self-administered questionnaires were used; there were 3-fold or greater increases in the estimates of intravenous drug use, needle sharing and risky sexual behaviours. A subsequent study involving intravenous drug users[3] found that more HIV-risk behaviours and fewer protective behaviours (e.g., condom use) were reported in audio-CASIs than in personal interviews.

Promise: The audio-CASI may improve the accuracy of the data collected, particularly data relating to sensitive issues, and may increase the willingness of people to report stigmatizing behaviours that have typically been under-reported. Although research to date has focused on the audio-CASI as a survey tool, the technique may also be useful in a clinical setting. Self-administered computerized assessments (screen display only) have been used in the past to assess a range of mental health problems in adults.[4] They have been successful in obtaining information from parents about their children[5] and from adolescents directly.[6] However, the audio component of this technique may improve the effectiveness of computers in the clinical setting because it will enhance privacy and supplement the written word. Since history taking is fundamental in determining diagnosis and treatment, it will be important to evaluate whether audio-CASI improves the accuracy of historical information provided by the patient, particularly in relation to sensitive or stigmatizing issues.

Problems: Audio-CASI is not a panacea for the collection of survey data, however. It obviates the need for interviewers, but someone must show respondents how to use the system.[2] Other challenges include the programming of the computer, overcoming any intimidation associated with the "high-tech" approach and determining acceptability across various age and ethnic groups. It is encouraging, however, that Turner and colleagues[1] found little variation in effects across social and demographic subgroups.

Despite optimism that computerized surveys could reduce costs, there has been little evidence of this to date.[2] Furthermore, the accuracy of the information, whether collected in the field or the clinician's office, may still be confounded by many factors — motivation, social desirability, language interpretation and interview setting — which may not be addressed by this technique. However, if audio-CASI improves the accuracy of the information provided it will help to advance our understanding of human behaviour.

Competing interests: None declared.

References
1. Turner CF, Ku L, Rogers SM, Lindberg LD, Pleck JH, Sonenstein FL. Adolescent sexual behavior, drug use, and violence: increased reporting with computer survey technology. *Science* 1998;280:867-73.
2. Bloom DE. Technology, experimentation, and the quality of survey data. *Science* 1998;280:847-8.
3. Des Jarlais DC, Paone D, Milliken J, Turner CF, Miller H, Gribble J, et al. Audio-computer interviewing to measure risk behaviour for HIV among injecting drug users: a quasi-randomised trial. *Lancet* 1999;353:1657-61.
4. Lewis G. Assessing psychiatric disorder with a human interviewer or a computer. *J Epidemiol Community Health* 1994;48:207-10.
5. Sawyer MG, Sarris A, Baghurst P. The effect of computer-assisted interviewing on the clinical assessment of children. *Aust N Z J Psychiatry* 1992;26:223-31.
6. Paperny DM, Aono JY, Lehman RM, Hammar SL, Risser J. Computer-assisted detection and intervention in adolescent high-risk health behaviors. *J Pediatr* 1990;116:456-62.

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