

What is Computer Assisted Interviewing (CAI)?

CAI stands for Computer-Assisted-Interviewing, which refers to the way in which computers can be used in the development and administering of survey questionnaires. It has also been known as Computer-Assisted Survey Information Collection (CASIC). Rather than using a paper questionnaire, interviewers carry laptops from which questions are read out and responses to the survey questions are entered. The data is then transmitted back to the field centre via modem. CAI was first used in the UK in 1990 on the Labour Force Survey, and by 1995, all of the social surveys carried out by the Office for National Statistics used this method. It is thought to be one of the most influential developments in survey data collection. One of the most commonly used software programmes for this is Blaise, which was developed by Statistics Netherlands (although this is by no means the only one of its kind).

Different types of CAI

There are several different types of Computer-Assisted-Interviewing, each of which are used for the various modes of survey data collection. They are described in more detail below:

- **CAPI (Computer Assisted Personal Interviewing)** is used when administering a questionnaire face-to-face. The interviewer reads questions from the screen (which the respondent cannot usually see) and responses are typed in to designated fields.
- **CATI (Computer Assisted Telephone Interviewing)** is a similar setup to CAPI and is used in telephone interviews.
- **CASI (Computer Assisted Self Interviewing)** is used particularly when questions are of a sensitive nature, such as crime and offending or sexual behaviour and attitudes. Respondents are given the laptop and are able to enter their responses themselves. It is thought to increase the validity of responses, as respondents are more likely to give truthful answers (whilst the interviewer cannot see what they are doing).
- **AudioCASI**, like CASI allows respondents to enter their responses themselves, without the interviewer being able to see. Here, the respondent listens to the questions being asked through headphones, rather than reading them on screen, so nobody present in the room knows what question has been asked. This is the most "private" mode and is used in surveys that contain questions of a more sensitive nature.
- **PAPI** refers to the traditional mode of administering questionnaires – also known as Pencil and Paper Interviewing.

What are the advantages of CAI?

- Cost savings can be made:
 - There is no need for any data entry to be done at the field centre
 - Reliable results can be obtained quickly
 - Paper does not need to be printed (and thus no costs involved)
- Questionnaires can be improved:
 - More complex routing and checking is now possible
 - Data can be checked as interview proceeds, allowing inconsistencies to be detected
- Fieldwork savings can be made:
 - Data can be downloaded quickly
 - Typing in responses and coding data is much less time-consuming
- The data is ready to analyse very soon after the fieldwork is carried out (although some data cleaning is necessary)

What are the disadvantages of CAI?

- Despite there being cost savings associated with CAI, there can also be high costs involved:
 - Large numbers of interviewers, laptop computers and software can cost a lot of money, thus CAI may be too expensive for a small-scale survey carried out outside large agencies.
- Problems associated with I.T. can be encountered:
 - Computer programmers are needed who are familiar with both survey research and IT – these are not usually easy to come by
 - Time that is saved at the end of the survey process (see Fieldwork savings above) is needed at the beginning to programme and code the questions
- Interviewers can also encounter problems:
 - Respondents may be wary of a machine; this may either prevent them from taking part in the survey at all, or may affect their responses
 - There may be problems with power, for example, if the laptop's battery fails or if the laptop needs to be plugged in
 - They would need extra training in how to use the CAI software and laptops, for example, the interview may take longer if the interviewer is slow at typing. This can be time-consuming and sometimes mentally taxing.
- Problems encountered by researchers or academics
 - It can be very difficult to decipher CAI questionnaires on paper (particularly with regard to the interpretation of the Blaise codes, routing and interviewer instructions that are separate to the questions themselves).
 - This extra information means that there is a rapidly expanding volume of documentation
 - Ambiguous routing instructions on the published version means that extra care must be taken in identifying which members or subgroups of the survey's sample were asked each question.
 - Simplified versions of such questionnaires that do not include codes would prevent researchers from seeing possible routes that respondents may take through the questions.

Documentation of questionnaires

To illustrate these difficulties that researchers may encounter, several examples of questionnaires that vary in level of complexity in terms of the Blaise codes they contain are shown below.

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FRS0005A.QAccomdat
Questions about accommodation
ASK IF: HHG.F[HHSize].BenUnit = RESPONSE

Tenure
QAccomDat
SHOW CARD B
In which of these ways do you occupy this accommodation?

(1) Own it outright
(2) Buying it with the help of a mortgage or loan
(3) Pay part rent and part mortgage (shared ownership)
(4) Rent it
(5) Live here rent-free (including in a relative's/friend's property; excluding squatting)
(6) Squatting

WARN IF: HHG.F[HHSize].BenUnit = RESPONSE
Tenure = RESPONSE

This is a 'Key Question': it is VERY IMPORTANT to get an answer here if possible. If you cannot do so
(either now, or later) please make a Note about the circumstances.

WARN IF: HHG.F[HHSize].BenUnit = RESPONSE
Tenure <> RentFree

PLEASE CHECK THEIR RENT/MORTGAGE IS NOT PAID BY BENEFITS. ONLY
ACCOMMODATION PROVIDED BY SOMEONE ELSE (EMPLOYER, RELATIVE, ETC) IS RENT-
FREE.

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Fig. 1: Extract from Family Resources Survey questionnaire (2000/01)

This is an extract from the questionnaire of the Family Resources Survey (2000/01). It appears to be fairly easy to digest, with questions rather obviously located. Only a small amount of code is visible that may seem nonsensical to the lay reader.

<pre> If respondent prefers to give distance of walk (FarWalk = 997) THEN DistWalk ^LDMIntName ENTER DISTANCE WALKED TO NEAREST MILE" </pre>	<pre> BCycle Questions asked of: Each individual household member aged 5 and over in turn </pre>
<pre> IF age is 1 or over (DVAge > 1) and respondent goes out on foot (NOT(Footout = No)) AND respondent walks for more than 20 minutes at least once a year Walk IN [Wkly3..Yearly1] THEN TrWalk ^LDMIntName Did you have to travel to get to the start of the walk? ADD IF NECESSARY: By means other than walking" 1. "Yes" 2. "No" </pre>	<pre> IF age is greater than 4 (DVAge > 4) THEN GenCycle ^LDMIntName (The next few questions are about cycling.) Excluding exercise bikes, do you... READ OUT..." 1. "...own a bicycle yourself," 2. "have regular use of a bicycle owned by someone else," 3. "or have no regular use of a bicycle?" </pre>
<pre> IF respondent travelled to get to start of walk (TrWalk = Yes) THEN HtrWalk ^LDMIntName How did you travel there? CODE METHOD USED FOR LONGEST DISTANCE" 1. "Underground, metro, light rail, tram" 2. "Train" </pre>	<pre> IF age is greater than 4 (DVAge > 4) AND respondent regularly uses bicycle owned by someone else (GenCycle = UseElse) THEN CycElse ^LDMIntName Is that bicycle owned by someone in your household or someone outside the household?" 1. "Someone in the household" 2. "Someone outside the household" </pre>

Fig. 2: Extract From National Travel Survey questionnaire (2003)

This shows an extract taken from the 2003 questionnaire of the National Travel Survey; this is less clear. Questions are 'embedded' within the Blaise codes; it is not immediately obvious where questions start and pieces of code end.

Useful References:

Couper, M. P., Baker, R.P. et al (eds) (1998) *Computer Assisted Survey Information Collection*. New York: Wiley.

DeVaus, D. (2002) *Surveys in Social Research*. London: Routledge.

Manners, T. (2003) *The Impact of Computer-Assisted Interviewing (CAI) on the Survey Process for Social Surveys in the Office for National Statistics (ONS)*, in Banks, R. et al. (eds) (2003) *Survey and Statistical Computing IV. The Impact of Technology on the Survey Process*. Association for Survey Computing. Available online: <http://www.statistics.gov.uk/downloads/horizons/Horizons25.pdf> (scroll to page 15)

Sainsbury, R., Ditch, J. & Hutton, S. (1993) *Computer Assisted Personal Interviewing*. Social Research Update, Issue 3.

Thomas, R., Bulmer, M. & Donagher, P. (1998) *Survey documentation: the representation of CASIC questionnaires*. In *New Methods for Survey Research* eds. A. Westlake, et al. Association for Survey Computing.

Links

International Blaise User Group: <http://www.blaiseusers.org/index>

The International Blaise Users Conference (IBUC) is an international event focused on the use of Blaise and associated software. The conference will include 3 days of presentations with emphasis on the implementation and application of Blaise in a computer assisted interviewing (CAI) environment. Papers from previous conferences are available on this site.

Association of Survey Computing: <http://www.asc.org.uk/>

The Association for Survey Computing (ASC), originally known as the Study Group on Computers in Survey Analysis (SGCSA), was formed in 1971 in order to improve knowledge of good practice in survey computing and to disseminate information on techniques and survey software.

Tim Macer (Meaning Ltd): <http://www.meaning.uk.com/rscentral/rscentral.html>

A searchable database of over 250 commercially available CAPI products for market research, regularly updated. Very useful for those wanting to find a CAPI system to use for their own research.
