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An Evaluation Study of the Event History Calendar

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An Evaluation Study of the Event History Calendar

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Introduction

To obtain valid and reliable data in survey interviews, it is generally acknowledged that the interviewer's behavior should be standardized in order to provide each respondent with the same stimulus and prevent the interviewer affecting the answers of the respondent (Fowler & Mangione, 1990). Conducting an interview using an event history calendar (EHC), however, usually requires the interviewer to be much more flexible. Although completely structured interviews with an EHC have been done (Furstenberg, Brooks-Gunn, & Morgan, 1987), the more common approach is to use a semistructured format with an initial prescribed question for each (sub)domain (Freedman, Thornton, Camburn, Alwin, & Young-DeMarco, 1988). In such an approach, the interviewer is required to react to the respondent's answers, which in turn may produce unwanted interviewer variance and thus may endanger the quality of the data. Thus, interviewers on the one hand have to pose the questions as worded in the questionnaire, but on the other hand have to probe, for example asking whether a particular situation has changed, using their own words and based on their own judgment given the answers of the respondent. The flexible approach is especially expected to improve data quality with regard to resolving inconsistencies and checking the respondent's memory (Belli, Shay, & Stafford, 2001). However, such freedom may cause the interviewer also to perform nonstandardized behavior in cases where standardized behavior may have been more appropriate (e.g., using suggestive probes; see Smit, Dijkstra, & Van der Zouwen, 1997). Moreover, administering an EHC is quite a complex task. Interviewers have to grasp the essential ideas underlying the EHC method and apply techniques like parallel probing in an adequate way, whereas filling in the calendar itself is much less straightforward than filling in a usual questionnaire from a survey interview.

In this chapter we present two studies in the context of a large tobacco epidemiology study evaluating interviewer performance in administering an EHC. The first study concerns a paper-and-pencil version of the EHC; the second one a computer-assisted version. First we describe the underlying principles of the EHC and the task of the interviewer in more detail.

The Event History Calendar

EHC PRINCIPLES

The EHC is an extremely useful tool for collecting retrospective data on life events with respect

to different life domains like residence change, marriage, occupation, medical history, and the like. The occurrence of simultaneous transitions in different domains is an important feature of the EHC. Transitions in one domain serve as cues that help the respondent (1) to remember transitions in other domains and (2) to locate those transitions exactly in time. The EHC also helps the interviewer to identify potential inconsistencies.

The basic idea of the EHC is that it uses the way events are apparently organized in memory. Remembering a particular event stimulates the respondent to remember related events or situations, that is, events serve as *cues* for other events. Three different types of cueing can be distinguished: top-down, parallel, and sequential cueing (Belli, 1998).

Top-down cueing refers to relationships between the top and the bottom of a hierarchy. In the EHC this cueing is reflected by first asking about the more general events in a domain, for example a timeline with names of employers, and next a timeline with more specific information, for example one's position. *Sequential* cueing refers to the chronological order of events within the same domain; events are organized in memory on the basis of what happened earlier versus later in time. *Parallel* cueing refers to associations that exist across domains; this memory process reflects the fact that many aspects of life impinge upon individuals simultaneously or nearly so. For example, a change in employment or getting married may affect the residential situation, finishing an education may affect employment status, and so on.

The Interviewer

In addition to the structure of the EHC itself, the interviewer plays an important role in the cueing process, and interviewer behavior should reflect all three principles. For example, the interviewer may ask: "When you worked for employer X, what was your first position?" (top-down cueing). An example of sequential cueing is, "Who was your employer after X?" Maybe the most important cueing mechanism is parallel cueing. For example, the interviewer may ask, "So when you started to work for employer X, that was in 1973, the same year that you moved to Amsterdam, when you were 28 years old?" Interviewers are expected to make frequent cross-checks across domains.

In administering the EHC, the interviewer has considerable freedom. Most interviewer behavior includes many kinds of probes, like probing for changes, and providing the respondent with cues. Such behavior is too complex to be strictly standardized as it depends to a large degree on the reports of the respondent. The interviewer is allowed to go back and forth between domains, as is sometimes necessary in order to cross-check whether particular changes in one domain coincide with changes in other domains. Thus, the EHC is much more flexible than a

standardized survey interview that essentially consists only of scripted questions that should be read exactly as worded in a prescribed order, albeit with skip patterns. Moreover, the topics covered in an EHC usually mean that the interviewer is often provided with many details about the personal life of the respondent. In effect, administering an EHC is much more like a real conversation between an interviewer and a respondent. Although it has been shown that a conversational style of interviewing may improve data quality (Conrad & Schober, 2000), and an experimental comparison of EHC interviewing and strictly standardized conventional interviewing showed no evidence of a difference in interviewer variation in data quality (Belli, Lee, Stafford, & Chou, 2004), this flexibility nevertheless enhances the risk of inadequate interviewer performance. When using a flexible rather than a standardized approach, interviewers may be more likely to skip questions, probe insufficiently or suggestively, define key concepts in idiosyncratic ways, fail to read introductory texts or questions as worded, or enter data incorrectly.

Hence, the quality of the data obtained using the EHC procedure depends strongly on the performance of the interviewers. The present research is directed primarily toward checking the performance of the interviewer. Because this performance depends partly on the particular EHC instrument, our evaluation will also concern questionnaire design and EHC procedures. Our research questions are as follows:

- Do interviewers stick to rules of standardization, for example with respect to the wording of prescribed questions?
- Do interviewers grasp the concept of the EHC method and do they apply EHC techniques like parallel probing in an adequate way?
- Do interviewers enter data from the EHC correctly?
- To what extent is the EHC design responsible for interviewer errors?
- How do the paper-and-pencil and computer-assisted versions of the EHC compare?
- How should interviewers be trained to administer an EHC adequately?

Study 1: Paper-and-Pencil EHC

METHOD

The EHC

The paper-and-pencil (PAPI) EHC that was used in our first evaluation study was quite complex and covered a large number of domains and timelines. For example, the residence domain consisted of addresses, setting (was the residence in a rural or urban setting), and the type of fuel used for heating and cooking. In total there were 35 timelines nested in eight domains:

Residence (4 timelines), Life events (marriage, marriage events, and 4 other timelines), Education (2 timelines), Occupation (6 timelines), Tobacco history (5 timelines), Diet, alcohol, and weight (6 timelines in total), Medical history (5 timelines), and Life changes (1 timeline). The EHC covered the respondent's entire life (from birth until present), and the time unit was one year (Freedman et al., 1988). It will be clear that this EHC was a very complex one, requiring considerable interviewing skill.

Prior to administering the EHC itself, some introductory questions were posed (e.g., age, present residence). Next a cognitive test was administered, the SMMSE (Standardized Mini Mental State Examination) (Folstein, Folstein, & McHugh, 1975), and a criterion of performance on the SMMSE was set to determine whether respondents had the ability to complete an EHC. The EHC consisted of a large sheet of paper of about 80 by 30 centimeters (about 30.5 in X 11.8 in). In addition to the EHC, a paper-and-pencil questionnaire was available, including the introductory questions, the SMMSE, the introductory instructions and the prescribed initial questions for each domain and timeline of the EHC, and finally conventional (non-EHC) questions asking for information on socioeconomic status. This questionnaire also contained suggestions for probing behavior and cross-checking for each timeline. A booklet with response alternatives was available to the respondent throughout the questionnaire.

Interviewers and Training

Six experienced interviewers from a large research bureau in the Netherlands participated in the study. None of the interviewers had any prior experience with the EHC as an interviewing method. They all read an interviewer manual with background information about the EHC and how to administer the present EHC. The manual included detailed information about all domains and timelines. After reading the manual, the interviewers were instructed on the use of the EHC procedure during one day. The instruction was provided by an instructor from the research bureau. In order to check the adequacy of the instruction, we attended the instruction session as passive observers. Although the instructor was not acquainted with the EHC method and got most of his information from the interviewer manual, we were impressed with his performance. It was also clear that the interviewers did read the manual before the instruction session, and that they did grasp the essentials of administering the EHC. But we also felt that the interviewers lacked actual practice. Understanding the EHC concepts is a necessary but not sufficient condition for administering the EHC adequately.

Interviews

To evaluate the EHC procedure, 30 EHCs were administered to respondents aged 60 years or older. Respondents were interviewed at their home. All interviews were fully tape-recorded and

transcribed. A 40-page checklist was constructed, covering all kinds of aspects of how the EHC was to be administered. Coders filled out this checklist for each interview, on the basis of the completed EHC and the transcribed interview.

Focus Group

After the interviews were conducted, a focus group meeting was held with the six interviewers, guided by the same staff member of the research bureau who gave the instruction. The session was fully recorded on videotape to enable us to study the session in more detail.

RESULTS

Focus Group

The focus group yielded a wealth of information, summarized below. Please note that these results are all based on self-observations by the interviewers.

Although the interviewers were very experienced, most of them felt quite uneasy with the EHC. It was felt necessary to have completed at least two interviews to become acquainted with the whole procedure and to feel comfortable with the EHC. They also sometimes felt uneasy when emotional life events came up (the death of partner, a divorce, etc.), especially if they observed resistance on the part of the respondent to report about these events. Nevertheless, they felt they could handle the situation, probably due to their prior interviewing experience.

Despite this uneasiness, the interviewers were very positive about the interview. They called the interview a "conversation," not an interview. They sometimes became so involved in the conversation that they forgot to turn the audiotape over to the next side. They were unanimously against the idea of splitting interviews into two parts if they took too long or the task became too burdensome for the respondent. During the interview, interviewers and respondents build up a personal relationship in the course of reviewing the respondent's life. Splitting the interview into two parts would adversely impact this relationship, and cross-checking across domains would be much less effective if the interview were split. Such remarks also showed that the interviewers were very well aware of the essential concepts underlying EHC interviewing.

Interviewers reported that respondents also liked the interview, looking back at their lives, remembering events that were nearly forgotten. Respondents did not complain about anonymity, privacy issues, or tape-recording the interview. Instead, they were very willing to provide all kinds of information, including irrelevant information, like describing their houses at previous addresses, troubles with a previous boss, and so on. Structuring the interview is

necessary for purposes of efficiency; the interviewer should lead the discussion. All interviewers felt they were able to do so. Respondents often insisted that the interviewer enter *all* information: addresses where the respondent lived for only 2 months, jobs for one month, and the like. Respondents thought it important that all details they remembered with more or less effort should be recorded, and they were surprised, if not embarrassed, if the interviewer failed to record all that was reported (the EHC sheet simply did not allow for such detail). Interviews took about 1.5 hours, but were never experienced as too long or too burdensome by the respondents.

Interviewers found the EHC sheet too large; a lot of room on the table was needed in order to use the EHC together with all the other material (tape recorder, instructions, booklet with response alternatives). Most of the interviewers had trouble handling this large amount of materials. Some interviewers “solved” the lack of space by neglecting some of the materials, for example the questionnaire with prescribed introductions and questions. Instead, the domains and the timelines on the EHC sheet served as a guideline for the interview and they defined key concepts themselves. Other interviewers did not use the booklet with response alternatives at all, but used the questionnaire instead (the questionnaire also contained the response alternatives).

Despite its size, there was often not enough space on the EHC sheet to enter all information (e.g., if the respondent moved frequently in a short period of time, there was not enough room to enter all the addresses). Interviewers also reported that they sometimes found where and how to enter data difficult. For example, if a respondent married and divorced in the same year, how should this be entered into one and the same cell? They sometimes lost track of the correct column (the year) and suggested adding a row with year and age at the bottom of the EHC.

Interviewers reported that they used cross-checking heavily. They also reported that in many cases this led to corrections of earlier timelines. In general, the most problematic was not in remembering the events themselves, but remembering the years in which they occurred. Parallel probing was found very useful (e.g., reminding the respondent of the birth of a child in a particular year, etc.) to determine the year.

From information gained from the focus group we concluded that interviewers should practice EHC procedures during training. Just instruction is clearly not enough. A computerized EHC version may solve a number of data entry and “administrative” problems (i.e., the large amount of materials and the size of the EHC sheet).

The Interviews

Administering the EHC proper, excluding the introductory questions, the SMMSE, and the final questions, took between 45 minutes and 3 hours; on average about 1.5 hours. Although interviews with older respondents took somewhat longer than interviews with (relatively) younger respondents, the correlation between length and respondent age was not significant ($r = 0.20$). We also expected that the first interviews that were conducted by the interviewers would take more time than later interviews because of their becoming acquainted with EHC procedures. However, there appeared to be no correlation at all ($r = 0.02$) between length of interview and the order number of the interview.

The major instrument used to evaluate the EHC was a checklist that was filled out by coders based on the transcribed interviews and the completed EHC. The checklist was intended to compare the transcripts (what the respondent said) with the data entered in the EHC sheet to obtain information about EHC-related interviewer behaviors like cross-checking and probing, and to find causes of errors and poor interviewer performance.

The results of these checklists can partly be summarized by one of our coders who filled out the checklist. She wrote: "All questions were posed, the respondent gave sufficient information, but the EHC was incorrectly filled out, and doesn't represent the actual life course of the respondent."

We indeed were astonished by the large number of errors made by interviewers. A first type of error concerns incorrect data entry. For example, in some timelines the interviewers had to enter an X in the cell (e.g., to signify a marriage in a particular year). In other cases, the interviewer had to enter a number (e.g., to indicate the level of education). Interviewers entered X's where they should have entered numbers, and, more surprisingly entered numbers where they should have entered X's. Interviewers also entered information in wrong timelines, for example "births" on the "partner" timeline. Or they entered the same events in two adjacent cells to account for the respondent saying "maybe in 1996 or 1997."

Other errors concern entering information different from what the respondent said: wrong amounts, wrong years, wrong characters (e.g., "S" for separation instead of "D" for divorce on the marriage events timeline). Or they did not enter information at all; this error was usually caused by lack of space on the EHC timeline. For example, interviewers deliberately skipped addresses if there were a number of residential moves in a few years.

A second type of error concerns behavior that is not specific to the present EHC procedure, but reflects more general poor interviewer behavior, most notably unwarranted inferences (e.g.,

filling in complete timelines without even asking the respondent), and suggestive behavior (e.g., suggesting a year in which something could have happened, instead of stimulating the respondent to think of the year). Sometimes the booklet with response alternatives was not used at all; the interviewer just selected a response alternative based on an inference about the respondent's answer.

This list is far from exhaustive. Fortunately there is also good news. From the transcripts it was clear that the interviewers did grasp the essential idea of the EHC. They did make quite a lot of cross-references. Quite interestingly, it appeared that respondents often referred to events that were not part of one of the domains, especially World War II and the deaths of relatives and friends. Interviewers soon learned that such cues helped the respondent and crosschecked deliberately with such landmarks, like, "That was when your father died," or probed with, "Did that change during the war?"

CONCLUSIONS FROM STUDY 1

Data quality is hampered by numerous kinds of interviewer errors. A main cause of errors is insufficient interviewer training. The interviewers clearly had insufficient knowledge of all instructions and rules on how to fill in the EHC. It is of utmost importance that interviewers have the opportunity to practice with the EHC. Just instruction and an interviewer manual is not enough. It may be noted here that the research bureau was absolutely convinced that a single day of instruction would be sufficient.

In addition, interviewers should be trained in general interviewer skills. The flexible, conversational nature of the EHC interview indeed enhances the risk of poor interviewer behavior, for example, suggestive probing. Interviewers should be carefully trained to probe in a neutral way.

A more positive conclusion is that interviewers understood the essential idea of the EHC and acted accordingly. Cueing seems to improve the memory of the respondent. Moreover, the EHC was not too burdensome for the respondents, despite its length and the respondents' age.

Recommendations: Interviewer Training

An adequate interviewer training should contain the following elements:

Exercises. Scripts or scenarios describing in detail the life of a fictitious respondent are used by interviewers to fill out (parts of) the EHC.

Role-plays. Interviewers will interview each other about particular domains in role-

plays. Special attention will be paid to probing techniques, parallel probing, and preventing suggestive behavior like leading questions. Use can be made of videotaping and later playing back parts of the interviews.

Practice interview. Interviewers should practice with a real respondent during training. The interview may be videotaped and should be discussed extensively.

Monitoring interviews. During the fieldwork, interviewer performance should be monitored. Parts of the interviews may be audiorecorded and subjected to a simple checklist. Intermediate data files can be checked for inconsistencies, interviewer variance, and the like.

Recommendations: EHC Design

For cueing purposes, we recommend adding a general timeline with landmarks to the EHC. Respondents often related the timing of events to such general events, most notably World War II, but other events were also mentioned, like the attacks on New York City and Washington, D.C., on September 11, 2001.

Private events were also mentioned, especially the death of a parent, but also retirement and severe illness. Adding a timeline for such private high-impact events is strongly recommended.

Data entry errors can be partly prevented if it is clearer to the interviewer what should be entered where. We recommend that *within* each timeline, in a light gray font, some essential reminders are entered, like “Life events: enter ‘S’ for separation and ‘D’ for divorce”; or “Birth: enter ‘X’ in the year of a birth”

Recommendations: A Computer-Assisted EHC

A better way to prevent data entry errors is a computer-assisted version of the EHC. For example, such a computer program might prevent the interviewer from entering an X if a number should be entered. It can also check for any unallowed gaps in a timeline; for example, the timeline designed to collect residential history should have no gaps. Introductory scripts can be adjusted depending on whether the respondent is male or female, or has a spouse or not, and so on, thus preventing complex sentences that include multiple possibilities like “he or she” or “If the respondent has a spouse then ask ...; if not, then ask ...” Questions or timelines can be skipped if not applicable; for example, if the respondent does not have any children, the birth timeline can be skipped to prevent information from being incorrectly entered in it.

A computer-assisted version can also contain the introductory scripts, the response

alternatives, suggested probes and cross-checks, and a help function where the interviewer can easily find information about how to handle difficult situations.

We decided to apply the recommendations above and to conduct another evaluation study, this time with a computer-assisted interviewing EHC.

Study 2: Computer-Assisted EHC

METHOD

The Computer-Assisted EHC

An advantage of the PAPI version of the EHC is that the life course of the respondent is constantly depicted on the EHC sheet, and thus visible to the respondent. This may stimulate the memory of the respondent and makes links between life events from different timelines and domains, as well as between subsequent events on the same timeline, directly visible, thus indirectly providing parallel and sequential cues to the respondent. A drawback of a computer-assisted (CAI) version, where the EHC is depicted on a laptop, might be the absence of such a visual aid for the respondent. Hence it was decided to use two laptops: one for the interviewer to enter data, and one laptop to serve as a visual aid for the respondent. As soon as the interviewer enters data, these data appear in the CAI-EHC, on both the interviewer's and the respondent's screens. When response options were available, these would be shown on the respondent's screen, while the interviewer poses the question. On request, the interviewer could also show the text of the questions (in case of hearing disabilities) and could adjust the font size (in case of visual problems).

The CAI device was developed by a software firm in close interaction with the researchers. The researchers continuously evaluated the device, for example, with respect to programming flaws (bugs), user friendliness, and appropriateness in view of the goal of the instrument. A small feasibility study was conducted with four respondents and research assistants as interviewers to test the ease of entering data in practice and the reactions of respondents to the respondent's screen. Figure 15.1 shows an example of the CAI-EHC.

It was also decided to record the interviews digitally (on the laptop itself to obtain high-quality recordings and to avoid an extra tape recorder) for purposes of monitoring interviewer performance during fieldwork. The programming work started about September 2004 and by about March 2005 the CAI version reached a final stage and was ready for the second evaluation study.

Interviewers and Training

Unlike the first study, which was conducted by a large research bureau, we conducted the present study. The main reasons were that we wanted to have first-hand experience with flaws in the training procedures and that the kind of training is very specialized (we probably would have had to train trainers from a research bureau before allowing them to train interviewers).

Figure 15.1 Example of EHC Screen

The screenshot displays the 'C-FOR Questionnaire v1.0' interface. At the top, there is a menu bar with 'New', 'Open', 'Write CD', 'Record', and 'Help'. Below this is a 'Calendar Questions' window with a 'Collapse' button. The main area is a calendar grid with columns for years (59-86) and rows for ages (11-38). The data is organized into several sections:

- Residence:** Includes address (e.g., Rotterdam, NL; Bergen op Zoom, NL; Marz; Kerperstraat, Utrecht, NL; Blaakstra), address (Fran; Kink; Hilversumseweg, Amerfoort, NL), setting (Town or small city; Big City; Country Village), and population (Intermediate Area; Densely p; Intermediate Area).
- Life Events:** Includes marriage (Piet), partners (Henk; Piet), children (Esth; Ton; Fran), and deaths (Jan).
- Education:** Includes schools (for primary ec; schooling type; country; fill; low), degree (Low), and main employer (HEMA; Bjenkorf).
- Occupation:** Includes industry type and work (Others smoking; D. daily).
- Tobacco History:** Includes smoking profile (Non-smoking; Smoking (100 or more cigarettes per year); Non-smoking; Smoking (100 or more cigarettes per year)), cigarette brand A (SPECIAL MADE MENTHOL F.B.K.S.; BELINDA MEN SKINGS F.S.100.25; CAMEL F.S.K.S.), amount - packs (0.2, Day; 1, Day; 1.5, 3, Week; 1, Week; 3, Month), amount - cigarettes (4, Day; 20, Day; 30, 160, Week; 25, Week; 75, Month), and cigarette brand B.

At the bottom, there is an 'Options' section with 'Show tooltips on client' (unchecked), 'Zoom factor' (100%), and 'Refresh Client' (button). A 'Continue' button is also present. The status bar at the very bottom shows: Respondent ID: 19732806, DOB: 3-1948, Start Date: 25/03/2005, Start Time: 05:53, Interviewer ID: 19750002, and Recording: Off.

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The interviews were administered by six interviewers. Three of them were very experienced interviewers who belonged to a regular pool of interviewers from a Free University project for large-scale surveys, and in particular had experience with interviewing older respondents. The three other interviewers were relatively inexperienced. They were graduate social science students and were hired because they got an introduction to the EHC method in one of their university courses. We wanted to have a mix of experienced and inexperienced interviewers to assess whether there would be any differences in performance associated with interviewer experience. All interviewers were female. The three experienced interviewers were aged between 58 and 59 years, the three relatively inexperienced interviewers between 22 and 27. All interviewers had computer experience.

A training manual was developed, describing general interviewing issues, a discussion of response effects (especially over- and underreporting and retrieval problems), and the respective roles of interviewer and respondent (i.e., interviewer tasks like question reading, showing interest, listening to the respondent, and judging the adequacy of answers). In addition, interviewing skills specific to administering the EHC, including theoretical backgrounds and the principles of cueing and probing techniques, were discussed. A separate computer manual describing the features of the computer program was developed by the programming team.

A training program was developed, consisting of 3 days of two sessions each. The training consisted of presentations by a trainer, highlighting and explaining particular issues, exercises, role-playing, and a practice interview with a “real” respondent. Exercises concerned written scenarios with detailed life stories, enabling the trainees to record responses in the EHC. The primary purpose of the exercises was to become acquainted with the computer program. Role-playing is done with descriptions of life events of respondents. In a simulated interview, two trainees play the roles of interviewer and respondent. Role-playing interviews are videotaped for later discussion. Role-playing scripts consisted of descriptions of fictitious situations for the “respondent.”

The first two sessions are devoted primarily to exercises. The training schedule starts with easy exercises that become more difficult (i.e., more complex life events) during the course of the sessions. Role-playing is the main activity during sessions 3 to 5. Role-plays should take place in small groups (maximally four trainees), supervised by one trainer, in order for trainees to get sufficient opportunity for role-playing. The last session is devoted to interviewing a “real” respondent. Each trainee interviews the respondent with a part of the questionnaire; in this way the whole interview is administered. The interview is observed by the other trainees (“observers”). This interview is also videotaped and discussed afterward.

Interviews

Interviewing started immediately after the training. The interviews were conducted at the Free University. All respondents were 65 years or older. Each interviewer was expected to interview five respondents. We ended up with 25 interviews, however, because one respondent did not show up, and one interviewer withdrew herself after one interview. All interviews were videotaped.

Before they entered the interviewing room, respondents were informed that there were two laptops, one for the interviewer and one for the respondent, but that they were not expected to use their laptop. They were told the laptop was just for a visual display of the information they

would be providing during the interview. Respondents were also told that the interview would be videotaped, unless they objected. Not a single respondent objected.

No special technical or logistical problems were encountered. In four cases the video recordings showed that an interviewer had some computer problems, which she was able to solve on her own. In one case, the assistance of a researcher was necessary. In general, however, the program and computers worked as expected and the audio recordings were of good quality.

Immediately after all interviews were finished, a focus group of the interviewees was organized; it was supervised by one of the trainers. The focus group took about 2 hours and was videotaped in order to be able to study the comments of the interviewees in more detail.

RESULTS

The Training

During the training we made a number of observations, assisting us to improve the training further. These observations are summarized in this section.

All interviewers were expected to read the manual before the training started. As in the first validation study, it was clear that they did. Actually, because the training started with a presentation introducing the study and the EHC method, most interviewers found this introduction partly superfluous. It was clear that it is not necessary to spend much time on such introductions during the training, thus saving valuable training time. Interviewers were very positive about the manual.

The exercises (filling in the EHC using written scenarios) served their purpose less well than expected, due to the complexity of the life events described in these scenarios. Actually, the scenarios were written to serve the purpose not only of learning the computer program, but a number of EHC principles as well. This was simply too much for the trainees: Exercises should be as simple as possible and serve only the purpose of learning the computer program.

Role-playing took much more time than planned because trainees, in their role of respondents, and especially the older experienced interviewers, tended to exaggerate their roles, extending the life events from the scripted role-plays with long (fictitious) stories. Due to lack of time, the video recordings of the role-plays were used less often than planned.

It very soon became apparent that there were large differences with respect to the computer skills of the interviewers. All student interviewers had sufficient computer skills, but this was

less true for the older interviewers. Differences in computer skills also hampered the efficiency of the training: Trainees who finished their exercise just sat and waited until the other interviewers had finished their exercises.

The practice interview with the “real” respondent appeared to be an important addition to the training. After having interviewed a stranger, the interviewers felt much more comfortable and self-assured.

The Focus Group

Many of our own observations during the training were also made by the interviewers in the focus group, and we will not repeat them here. The most important goal of the focus group was to obtain information about how to improve the training.

The interviewers themselves liked the EHC interview and reported that the respondents’ attitude toward the interview was positive. According to the interviewers, respondents liked the interview and it was not too burdensome for them; they were quite motivated to provide the required information. Most respondents also liked the respondent’s screen unfolding their own life history. A few respondents did not seem to pay much attention to their screen.

The interviewers judged the manual with information about the study, general interviewing skills, and specific interviewing skills with respect to the EHC as quite adequate. Introductions at the start of the training should not be too long, since much is already covered by the manual; interviewers were eager to start with the “real” work. Sufficient attention was paid to emotional situations, although they realized that in an actual interview the impact of emotion-arousing events would be much greater than in a role-play situation. A 3-day training period was felt sufficient to train interviewers to administer the CAI-EHC. A longer training period would be less efficient because trainees (and trainers) are pretty exhausted after 3 days.

The interviewers did feel, however, that the training itself could be improved or made more efficient with respect to several aspects. In the next section we will give a number of recommendations based upon our own experiences during the training and the evaluation of the interviewers during the focus group meeting.

Recommendations With Respect to the Training

Exercises should be simple, describing a respondent with relatively few and nonproblematic life events. Exercises should be directed primarily toward using the instrument, not toward learning EHC principles. The first exercise should treat the whole questionnaire instead of covering only a small part, as was the case in the present study. In this way the interviewer becomes

acquainted with the whole questionnaire in a relatively short time and a firmer base is laid with respect to the basics of handling the CAI device. Later exercises can add more complex life events.

Like the exercises, role-playing scripts should concern not-too-difficult situations (after all, it is not possible to confront trainees with all kinds of possible complications). Equally important, trainees should be better instructed about their roles as respondents. In addition, the role-play scripts we used contained information about only one particular domain (e.g., job history). Role-play scripts, however, should also have basic information about the timelines that precede the part of the EHC that the role-play addresses (e.g., education, marriage, and births) to give the trainee the opportunity to practice cross-checking.

Interviewers differed with respect to computer skills and in one case these skills were completely insufficient. Interviewers should have sufficient computer skills before entering the training. It is recommended that a short computer test be administered to candidate interviewers to check their computer skills.

The Interviews

The EHC part of the interviews (excluding introductory questions, SMMSE, and final questions concerning SES) took on average somewhat less than 1.5 hours (87 minutes). The shortest interview was nearly one hour, whereas the longest took a bit more than 2 hours. Like the first evaluation study, there was no significant correlation between length and order of interview ($r = -0.19$) or respondent age ($r = 0.01$).

A number of indications about the adequacy of the performance of the interviewers were derived from a systematic analysis of the audio-and videorecordings of the interviews. We discuss here a number of issues like question reading, parallel cueing, and probing in more detail.

The majority of the prescribed initial questions were read adequately (44%) or with only minor changes (39%). Generally, the interviewers performed better than the interviewers in the first evaluation study; nevertheless it is also clear that there is room for improvement. Table 15.1 shows some of the more astonishing examples of misread questions. From these examples it will be clear that the training should stress that questions be read as worded. This is also an issue for interviewer monitoring during fieldwork; especially when interviewers are made aware of monitoring and are given effective feedback, this is likely to influence their behavior positively (Cannell & Oksenberg, 1988).

From the conversation between interviewer and respondent we could infer that interviewers did not always show the response alternatives on the respondent's screen. We suggest that the CAI device be adjusted in such a way that the alternatives are displayed; for example, if alternatives are not shown, it will not be possible to enter data.

In contrast to findings in another study (Belli et al., 2004), interviewers used parallel cues reasonably often. In particular, the timelines "Addresses," "Employer," and, to a lesser degree, "Marriage events" were used for cueing. However, about 50% of the parallel cues were suggestive rather than neutral. Interviewers apparently found it difficult to distinguish between suggestive and nonsuggestive parallel cueing. For example, "Did you start smoking when your mother died?" is a suggestive cue. Cues should be *balanced*, like: "Did you start smoking before or after your mother died?"

In particular, the diagnosis of certain diseases was sometimes based upon changing food and smoking habits: Interviewers assume that when respondents quit smoking, drinking alcohol, or using fat products this is directly related to the diagnosis of a disease, and therefore suggest this in their probe.

Interviewers seldom used the landmarks, except World War II (especially with the diet timelines); most of the other landmarks were hardly helpful at all. Instead, personal life events that have a lot of impact, like the death of important persons, were much more helpful; this timeline should be extended with additional life events, like a car accident or a very special holiday.

During the interview, interviewers should probe often for changes. For example, while administering the "Diet" timeline, the interviewer should ask something like, "Did your diet change after that?" In many cases, however, the interviewer probed in a suggestive way, like: "And that was the same your whole life?" Because respondents tend to agree with such probes, data quality may be affected (note that incorrectly agreeing with "Did your diet change" is unlikely to affect data quality, because the respondent next has to indicate *what* changed). About 20% of the probes for changes were suggestive and occurred especially in the health domain (questions about diet and alcohol use; about 32% of the probes).

Conclusion

Comparing the PAPI version with the CAI version of the EHC showed that quite a lot of errors that occurred in the first evaluation study (the PAPI version) seldom appeared in the second one (the CAI version). Most notably, far fewer data entry errors were made. In this respect the CAI instrument performed much better than the PAPI version. The CAI program also reminded

the interviewer in a number of cases that the EHC was not complete when the interviewer wanted to finish the EHC part. Moreover, notwithstanding the fact that in a number of cases questions were read quite inadequately, the majority of questions were read correctly, and to a larger extent than in the PAPI version.

Table 15.1 Examples of Questions Read With Major Change or Posed Suggestively

<i>Prescribed Wording</i>	<i>Interviewer Wording</i>
<ul style="list-style-type: none"> • Have you ever lived with a partner as if married? 	<ul style="list-style-type: none"> • Did you live together with your wife?
<ul style="list-style-type: none"> • I am also interested in how many people, including yourself, were living in the same household as you? 	<ul style="list-style-type: none"> • How many persons were living in your house when you were born?
<ul style="list-style-type: none"> • Have you ever worked in any of the following professions or industries even for a short period of time? 	<ul style="list-style-type: none"> • The work you did for Company X, was this an industrial work environment?
<ul style="list-style-type: none"> • Did you work indoors or outdoors? [If indoors:] To what extent were you exposed to other people's smoking while at your workplace? 	<ul style="list-style-type: none"> • Can you tell me how was the smoking at work?
<ul style="list-style-type: none"> • Have you ever smoked 100 or more cigarettes in your entire lifetime? 	<ul style="list-style-type: none"> • Are you a smoker?
<ul style="list-style-type: none"> • Please indicate, since at least age 13, whether you had diets high in fatty foods, moderate in fatty foods, or low in fatty foods. 	<ul style="list-style-type: none"> • Do you eat a lot of fat?
<ul style="list-style-type: none"> • Did you ever consume more than 100 units of alcoholic beverages in your entire lifetime? 	<ul style="list-style-type: none"> • Do you use alcohol?
<ul style="list-style-type: none"> • Has a doctor ever told you that you have any of the following types of cancer? 	<ul style="list-style-type: none"> • Now some kinds of cancer happen to appear on my screen. Did you ever suffer from that cancer?

With respect to the degree of parallel cueing and other specific EHC techniques, the differences between the PAPI and CAI versions were not very large. We suspect that this is partly because not all interviewers mastered the computer program sufficiently, thus distracting them from other tasks. Neither was there much difference in the average duration of the interview between administering the PAPI version and the CAI version. Here, too, we expect improvement if interviewers become better acquainted with the computer program. Moreover, the CAI version eliminates time involved in data entry that is required for PAPI-EHCs: The data

from a PAPI-EHC still need to be entered into a computer.

Of utmost importance is adequate interviewer training. On the basis of our experiences with the training in the second evaluation study we completely revised the interviewer training. By now we have given this training a number of times to different trainees and are quite satisfied with its quality. In addition, we set up a scheme of refresher trainings. These one-day courses appear to be extremely helpful. It seems that during a refresher course the interviewers suddenly really grasp the ideas behind the EHC, the difference between suggestive and neutral probing, and the options provided by the computer program.

Finally, we set up a scheme for interviewer monitoring by systematically coding interviewer behavior using the audiorecorded interviews. Interviewers who perform inadequately may be completely retrained, take an extra refresher course, or just be provided with feedback.

The procedures we have discussed—conducting evaluation studies, developing a computer-assisted instrument, setting up trainings, monitoring the performance of interviewers—are no doubt costly and time-consuming. Nevertheless, we think this is the only way to obtain data of high quality. If such requirements are fulfilled, the EHC method appears to be an extremely valuable instrument for obtaining life course data. If training is not adequate, using an EHC is a waste of money as it will not represent the actual life course of the respondent, as one of our coders observed in the first evaluation study.

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