COMPUTERIZED EVENT HISTORY CALENDAR METHODS: FACILITATING AUTOBIOGRAPHICAL RECALL

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Event History Calendars and Autobiographical Recall

Paper and pencil Event History Calendars (EHCs) have had a notable impact on many fields including population studies and sociology (Axinn, Barber, and Ghimire 1997; Caspi, Moffitt, Thornton, Freedman, Amell, Harrington, Smeijers, & Silva, 1996; Freedman, Thornton, Camburn, Alwin, and Young-DeMarco 1988), psychopathology (Kessler and Wethington 1991; Lyketsos, Nestadt, Cwi, Heithoff, and Eaton 1994), and drug abuse research (Chou, Hser, and Anglin 1996; Hser, Anglin, Grella, Longshore, and Prendergast 1997) due to their ability to collect high quality retrospective survey reports. For example, Caspi et al. (1996) found at least 90% of agreement between retrospective reports of activities for a given month on an EHC and concurrent reports obtained 3-years earlier with living arrangements, cohabitation, schooling, employment, and job training. Freedman et al. report similar rates of agreement for events that occurred 5 years ago. Paper and pencil EHCs have been successfully implemented to measure important life transitions using both short (e.g., just a few years) and long reference periods (e.g., from childhood to the present).

Theoretically, EHCs acquire their ability to elicit high quality retrospective reports from tapping into available idiosyncratic structures in autobiographical memory (Belli, 1998). EHCs encourage a narrative style of interviewing and remembering in which events from respondents' past experiences are used as cues to facilitate the recall of other related events. Belli (1998) specifically points to three types of mechanisms that are afforded within the structure of autobiographical memory: top-down, sequential, and parallel cueing. These cueing mechanisms activate interrelationships among autobiographical memories for lifetime periods, general events, and specific events, which are organized within a hierarchical structure (Barsalou, 1988; Conway, 1996). Top-down cueing occurs when memories of lifetime periods remind individuals of general events, which in turn index specific events. For example, remembering the time that I was an assistant professor at Creighton University, I taught courses in experimental psychology, and during these courses, I had several specific interactions with students. Sequential cueing refers to the chronological sequencing of general or specific events and their transitions within particular lifetime periods (e.g., within one's employment history), and relies on events being organized in memory on the basis of what happened earlier (backward chronologically) and later (forward chronologically) in time. Finally, parallel cueing refers to the associations of contemporaneous events that exist across different lifetime periods. For example, changes in employment may affect, and be related to, aspects of one's relationships with significant others and family, and vice-versa.

Whereas EHCs have the potential to utilize all three types of cueing mechanisms, traditional standardized state-of-the-art question-list (Q-list) surveys, primarily because they do not effectively tap into the temporal association among events, are typically limited to administering top-down cues or a limited selection of sequential ones. In the first direct comparison between EHCs and traditional standardized question-list (Q-list) methods, Belli, Shay, and Stafford (1999, 2000) found better quality retrospective reporting for residence changes, number of jobs, earned income, and weeks unemployed with the EHC interviews for retrospective reports that targeted a reference period that was one to two years ago. There were no substantive differences in interviewing time between methods. Follow-up questionnaires revealed that interviewers enjoyed the EHC interviews more than the Q-list ones, they found the EHC easier to administer, and that they believed that the respondents found the questions on the EHC to be easier to answer. Despite the EHC collecting much more detailed information than the Q-list, respondents reported the same levels of burden for both methods. In summary, the results of the experiment supported the notion that EHC methods promote a better utilization of beneficial autobiographical memory processes in comparison to state-of-the-art standardized Q-list methods.

The paper and pencil administration of the EHC did lead to certain disadvantages, however. Data entry time was significantly longer in the EHC than the Q-list condition due to the transcription of complex EHC timeline information into a usable

computer data file being more cumbersome than the transcription of pre-arranged data entry fields that are available with Q-list paper and pencil instruments. In addition, although a qualitative analysis of the verbal content of 5 audiotaped EHC interviews confirmed the use by interviewers of top-down, sequential, and parallel probes, there were also noted failures of interviewers using probes optimally. For example, one interviewer missed an opportunity to engage in parallel probing between the residence and employment timelines, which led to an asynchronization in the timing of a cross-country move that corresponded to a change in employers. Thus, paper and pencil EHCs are problematic because of their reliance on the uneven skills of interviewers to recognize and administer probes in optimal situations.

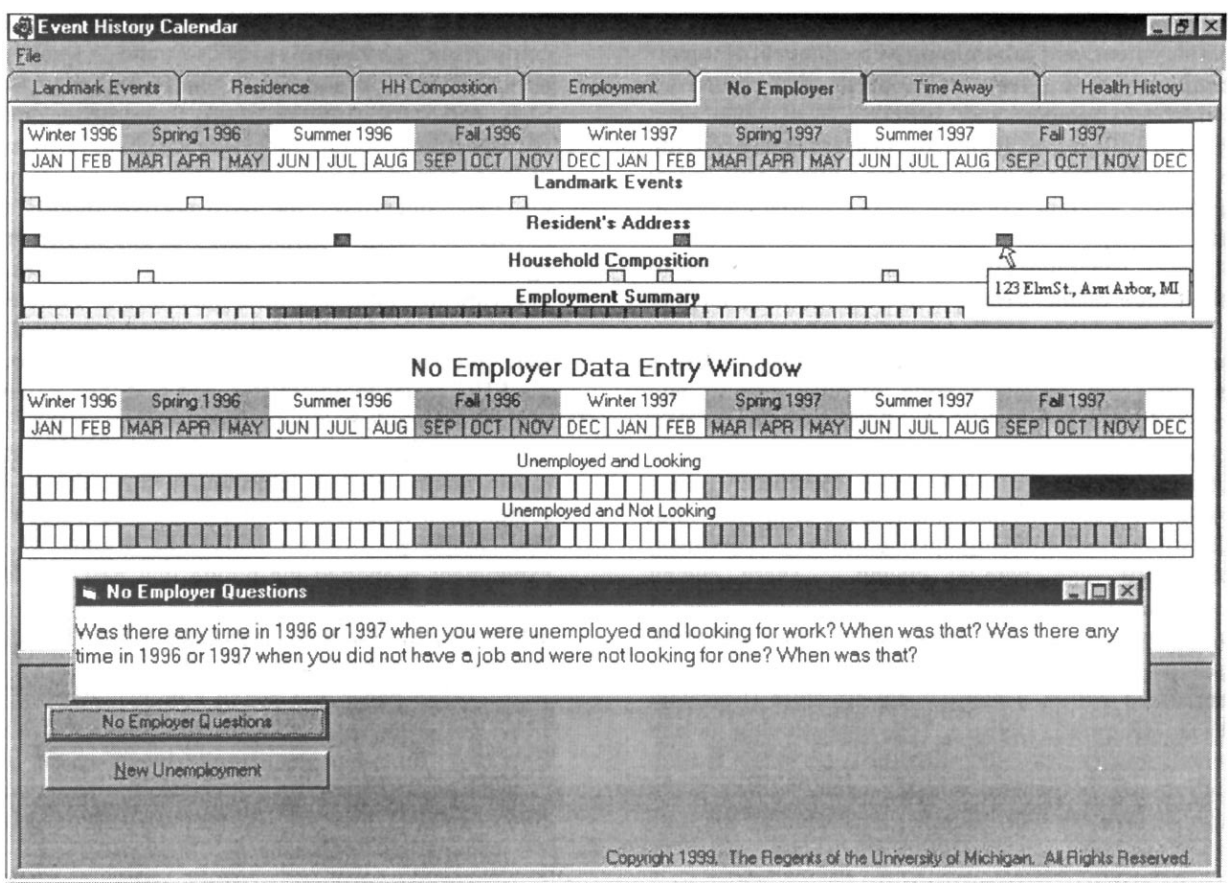
Computer Assisted Interviewing Event History Calendar

The automation available in a computer assisted interviewing EHC (CAI-EHC), if properly designed, potentially solves the disadvantages associated with the costs of data entry and uneven interviewer skills. With programming, data files can be created or updated at the same time that the data is being collected during the interview. Regarding interviewer skills, automation can ensure the consistency and completeness of collected data, and assist interviewers to recognize situations in which probes would assist autobiographical recall.

This paper primarily addresses the development of screen designs in a CAI-EHC instrument, copyright to the Regents of the University of Michigan. As DOS based applications are limiting even within question-list designs (Couper, 1999), the apt representation of calendar timelines in a computer application is dependent on the advent of Windows based applications. Thus, Microsoft Windows is used as the operating system, the screen displays are programmed in Microsoft Visual Basic, and Microsoft Access supports data entry and storage. Another critical design issue, shared with CAI Q-list applications (Couper, 1999), is to represent the same amount of information that can be addressed in paper instruments on the limited screen real estate of a CAI application. Finally, the CAI-EHC instrument needed to be designed in a manner that would facilitate autobiographical recall.

Reflecting the structure of autobiographical memory, the CAI-EHC instrument (see Figure 1) consists of hierarchically organized timeline

Figure 1

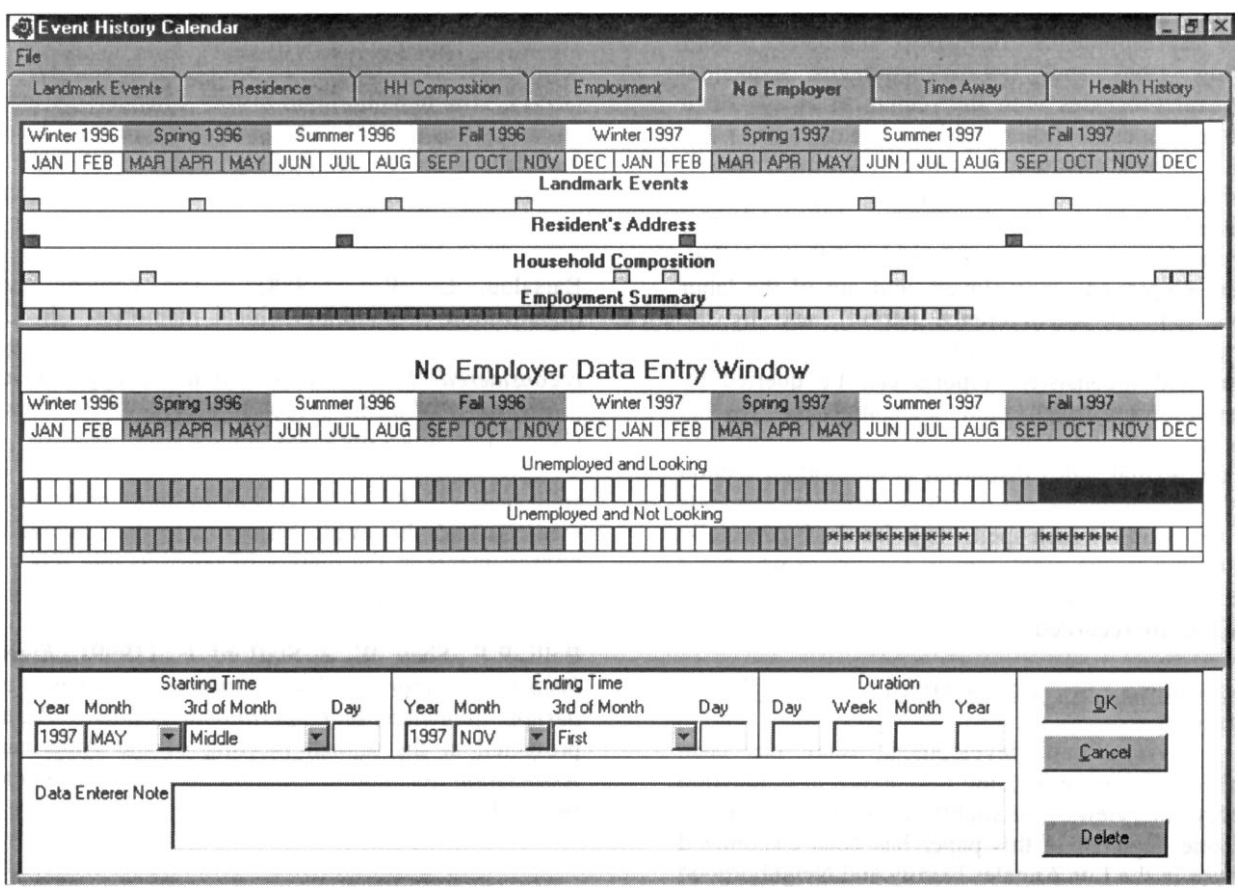


domains, including domains for landmark events, residence, employment, unemployment, and time away from work. This hierarchical organization is represented by tabs that are presented in a left to right order. The reference period of data collection is for two calendar years (1996 and 1997), with the smallest unit of analysis the third of a month (first third, middle third, last third) in order to aggregate timeline information into annual weeks per year (e.g., weeks unemployed during 1996). Seasons and months are also represented on the calendar for their potential use as cues to facilitate the remembering of when events occurred when respondents express uncertainty (e.g., "Did you start looking for work in the summer or fall of 1997? Would you say it was September, October, or November that you started looking? Was it during the beginning, end, or sometime in the middle of September that you started to look for work?").

Figure 1 illustrates the instrument while prepared for data collection in the No Employer domain. Each domain is represented by its own screen layout, with each layout split into three sections. For each domain, the middle section is reserved for timeline data entry in that domain. In Figure 1, in the "No Employer Data Entry Window," the respondent indicated being unemployed and looking for work from the end of the month in September, 1997, through the end of the year. The top section is usually reserved for timeline summaries from data collected in those domains that had previously been covered in the interview for purposes of parallel probing and retrieval. Figure 1 illustrates a situation in which by placing the cursor on the summary timeline for "Resident's Address" in the first third of September, 1997, a pop-up note provides the move-in address on this date. Using parallel retrieval, the interviewer can cross-reference with the respondent the timing of the move to "123 Elm Street" with the end of employment around a month earlier and the beginning of unemployment a few weeks later. The bottom section serves the role of providing introductory scripts to each domain. Figure 1 illustrates the introductory script feature; clicking on "No Employer Questions" brings up the dialogue box with the introductory script.

Figure 2 illustrates how the CAI-EHC can assist toward the avoidance of contradictory information. In this case, the respondent reported being unemployed and not looking (i.e., out of the

Figure 2



labor force) from the middle of May 1997 until the end of November 1997. There is an overlap between this reported spell and the reported period of employment until the beginning of August 1997, and an overlap of a spell of unemployed and looking beginning in the end of September 1997. As an individual cannot be both employed and out of the labor force at the same time, nor both unemployed and looking for work and out of the labor force at the same time, the asterisks in the "Unemployed and Not Looking" data entry timeline highlight these inconsistent spell overlaps for the interviewer to check with the respondent (in the actual colored CAI-EHC, the asterisks appear in red to accentuate the inconsistency). Also, Figure 2 illustrates a second role for the bottom section of the screen display to present textual fields for the entry of data elements that pertain to each event spell. The timeline data entry fields and the textual fields are integrated, so that elements entered in one are represented in the other.

In addition to parallel retrieval processes being encouraged by the cross-referencing of data entry spells in the middle section of the screen display with summary transition events in the top section, sequential and top-down retrieval processes are also encouraged within the CAI-EHC design. By itself, requesting information for a period of time, such as respondents' residences and labor history during 1996 and 1997, encourages sequential retrieval processes with the remembering of which events happened earlier and later in time. The CAI-EHC further encourages sequential (and parallel) retrieval processes by requiring that reported information be exhaustive for the two-year reference period (i.e., no gaps in residence, and that together, being employed, unemployed, and out of the labor force exhaust the reference period), and by the avoidance of inconsistent information as noted above. Gaps and inconsistent reports can be queried by interviewers through both sequential and parallel probing. Finally, top-down retrieval is encouraged by the textual fields displayed in the bottom section of the screen display, in which specific data elements are recorded for each spell. This feature is especially applicable in the employment domain, in which for each employer, data elements such as position and pay rate are recorded.

Applications of Computerized Event History Calendars

As a new development, there has been limited experience in using CAI-EHCs in production survey interviews. A slightly revised CAI-EHC to the one depicted in this paper has been customized for use in the Los Angeles Family and Neighborhood Survey, conducted by RAND. After an initial development and piloting period, production interviewing began in April 2000. Plans are to incorporate a CAI-EHC in the Panel Study on Income Dynamics (PSID), conducted by the Survey Research Center at the University of Michigan, in 2003. Also ongoing at the University of Michigan is the development of a CAI-EHC with a lifetime reference period that will be piloted in the Fall 2000 for its potential adoption for PSID and Health and Retirement Study baseline interviews. As with Q-list CAI interviewing designs (Couper, 1999), additional testing and experience will improve the interviewer usability of CAI-EHC instruments and their ability to produce high quality retrospective reports.

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