TAILORING DATA COLLECTION METHODS TO HARD-TO-EXAMINE POPULATIONS: THE USE OF LIFE EVENTS AS RECALL AIDS IN SURVEY RESEARCH

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Abstract

Collecting retrospective survey data is known to be error prone and gets even more challenging when it has to be done among populations, like elderly or refugees, for whom recalling life histories entails a difficult task. Concerns about this problem have led to aided recall instruments among which the calendar method is the most encompassing one. This paper examines a central characteristic the calendar method: the use of landmark life events that aim to facilitate recall. Using data from the Event History Calendar as embedded in the PSID-survey (USA) in 1998, we explore what types of landmarks respondents generated and whether the use of landmarks is related to recall accuracy.

Key Words: *retrospective surveys, data collection, life events, recall accuracy*

JEL Classification: C83, C42

1. INTRODUCTION

In the field of social sciences many empirical studies are based on retrospective data such as life histories. It is well known that retrospective surveys often suffer from recall errors that threaten the quality of the data. Collection of retrospective data gets even more error prone in case respondents experience a 'high task difficulty' in recollecting information (Tourangeau et al., 2000). This is the case, for example if lengthy recall periods are applied (e.g. life histories) or if retrospective data is collected among vulnerable groups like elderly, respondents with low literacy, or people like refugees who live in complex circumstances (c.f.: James and Burke, 2000; Navarra et al., 2012; Quetulio-Navarra et al, 2014). One of the major innovations in survey research the last decade is the inclusion of event history calendar (EHC) methods in order to enhance recall accuracy in retrospective surveys (see for reviews: Belli et al., 2009; Glasner and Van der Vaart, 2009). EHC methods are aimed at helping respondents gain better access to long-term memory by providing them with a visual time frame, a grid, in which both recall aids and life history information can be represented. This paper examines one of the central characteristics of EHC methods: the use of landmark events. Landmarks are salient events from people's lives that aim to facilitate recall of other events and particularly their dates.

1.1. Landmark events in calendar methods

In past studies, the inclusion of public (Loftus & Marburger, 1983) as well as of personal landmarks (Van der Vaart & Glasner, 2011) has been shown to enhance response quality in surveys. The employment of landmark events forms an important characteristic of so-called calendar methods in social and medical surveys (e.g., Freedman et al., 1988). These methods can be used in addition - or as an alternative - to the standard survey method with chronologically ordered question lists. Calendars provide respondents with a graphical time frame that aims to facilitate access to long-term memory (Belli, 1998; Belli et al., 2013) when answering retrospective questions. Most instruments consist of two-dimensional grids, in which one of the axes denotes the time dimension while life themes ("work", "education", "health" etc.) are specified on the other axis. In recent years the use of calendar techniques such as the Event History Calendar has been growing rapidly in the social and medical sciences. The outcomes of evaluation studies indicate that those instruments have beneficial effects on the quality of retrospective data (Belli et al., 2001, 2004; Van der Vaart, 2004; Van

der Vaart & Glasner, 2007). However, it remains unclear in which way specific design characteristics of calendars contribute to these beneficial effects. Our study concentrates on one important characteristic: the use of landmark events. It aims to gain more knowledge about how to identify and select autobiographical events that can be used as landmarks in calendar instruments.

The following questions will be explored: 1) How many and which type of landmark events do respondents report in case of unrestricted recall instructions? 2) How are the reported landmarks distributed within the reference period and within calendar years? 3) Do different types of respondents use different types of landmarks? 4) Are numbers and types of reported landmarks related to recall accuracy? First we will present relevant issues from studies into autobiographical memory.

1.2. Landmark events and autobiographical memory

Three main issues form autobiographical memory research may help us to understand what type of events might function as landmarks in surveys. First, only a few events are stored in autobiographical memory with a specific date, often referred to as a "time tag" (e.g. Friedman, 1993). Events that are rehearsed, commemorated or celebrated regularly (like a birthday, one's own wedding, a nation's Liberation Day), or events that occur on "easy to remember" dates, such as 02/02/2002, are most likely to be time-tagged (Janssen et al., 2006). As a consequence, dating most other events involves a certain amount of reconstruction (Friedman, 1993). Obviously, reconstructing dates inferring information from un-tagged, and potentially falsely dated events, increases the risk that the target event is dated incorrectly. Second, it has generally been found that when older adults are asked to provide autobiographical memories from their lives without restrictions on content or time period, roughly half the reported events occurred within the most recent year of life (Holmes & Conway, 1999; Rubin et al., 1998); a phenomenon called the "recency effect". In addition, there is robust and substantial empirical evidence that people tend to report a relatively great number of events that have occurred in adolescence and early adulthood. This latter phenomenon is referred to as the "reminiscence bump" (Holmes & Conway, 1999; Rubin et al., 1998). Landmark events thus will not be distributed evenly over a reference period. Studies suggest that recall of more important events show less bias than less important events and are better recall cues for other events (Brown & Schopflocher, 1998). Third, most models of autobiographical memory state that thematically organized lifetime periods serve

as the primary organizational units to autobiographical knowledge (Burt, Kemp & Conway, 2003; Conway & Pleydell-Pearce, 2000). Especially important are those lifetime periods that are central to one's concept of self and its changes across the lifespan. From these models it follows that landmarks will be most effective if they are personal events and focused on the central lifetime periods of the target population. In sum, autobiographical memory research suggests that important, domain related, personal events are the most suitable landmark events.

2. METHODS

2.1. Data

The landmarks examined here, originate from a study in which a paper-and-pencil Event History Calendar was used in a telephone survey (Belli, Shay & Stafford, 2001). In order to compare methods, 617 participants in the Panel Study of Income Dynamics (PSID) were randomly assigned to being interviewed either with an EHC, or with a standardized conventional questionnaire. The current study will focus on the 309 respondents in the EHC condition who had to provide personal landmarks at the beginning of the interview. Data collection took place in May and June 1998, using paper-and-pencil telephone interviewing in both conditions. The reference period covered the years 1996 and 1997. Answers from the previous wave of the panel study were used as control data for establishing the accuracy of respondent's reports regarding events that took place in 1996.

2.2. Event history calendar

The calendar instrument used in the study comprised six thematic domains (residence, household, employment, unemployment, and aid entitlements) and covered a reference period of two years. At the start of the telephone interview, immediately after the general introduction of the study, respondents were asked to list landmark events from the end of 1995 tot the date of interview in 1998. Interviewers could use the following examples for eliciting personal landmarks: births, deaths, divorces or marriages, a vacation, health-related events such as an accident, major purchases that you have made, a job promotion or pay rise, a residence or job change (Belli, Shay & Stafford, 2001). Interviewers also had a list of public holidays, such as Christmas and Thanksgiving, which they could offer the respondents as dating cues.

2.3. Respondents and data collection

We analyzed landmarks from 231 usable interviews. For 230 respondents we had background information on socioeconomic characteristics and the respondent's answers on the main questionnaire. There was a significant difference in age between the 134 female (mean age = 42.2 years) and 96 male respondents (mean age = 47.8 years). Due to oversampling of minority households in the Panel Study of Income Dynamics, 41% of respondents in our sample were black, 54% were white, and 5% reported another race. Even though in the general PSID, different respondents from the same household can be interviewed in subsequent waves, only respondents who had also taken part in the previous wave (1997) were interviewed for the methodological study.

2.4. Landmark coding scheme

The landmark events that respondent had reported in the 231 interviews were marked in the printed transcripts and keywords or key phrases were entered into an SPSS database, together with the date of the event. Based directly on the respondents' description of events, two authors made their own first classification scheme. These schemes aggregated similar individual events into categories. After discussing the differences in both schemes, which were small, the authors formulated 17 event categories. Using this classification, all events were coded independently by the two authors and an assistant. Based on three coders the inter-coder reliability (Hayes & Krippendorff, 2007; Krippendorff, 2004) was Krippendorff's Alpha = 0.92 for all categories including 'unclear' and 'not applicable' (535 units, nominal measurement level; 231 respondents). Among each pair of coders Alpha ranged from 0.91 to 0.93 and Cramer's V ranged from V= 0,89 to V=0.90. All events that were classified differently by two coders were reconsidered and, after reaching agreement, classified into one of the 17 landmark categories (see Table 2). Inspired by Holmes and Conway (1999) we also constructed a more concise classification by merging the 17 categories into 7. In most cases we worked with this 7- category scheme (see Table 3).

3. RESULTS

3.1. Research question 1: the number and types of landmarks

3.1.1. Number of landmarks per person

In the 231 telephone interview transcripts we found a total of 535 valid landmarks events. The mean number of landmark events per respondent was therefore 2.32 (sd=1.90), the median number was 2. The number per person ranged from 0 to 11. Table 1 illustrates that respondents reported more events for 1997 than for 1996 and that a large proportion of respondents reported no landmark at all.

Table 1: Number of Landmarks Reported (in total and for 1996 and 1997).

	1995-1998	*1997*	*1996*
Mean per respondent	2.32	1.18	.76
sd	1.90	1.16	0.92
No landmarks	39 (16.9%)	74 (32.2%)	112 (48.9%)
1 landmark	46 (19.9%)	77 (33.6%)	72 (31.4%)
>= 2 landmarks	146 (63.2%)	78 (34.1%)	45 (19.7%)

The cumulative percentages of all landmark events show that 17% of the respondents reported no landmarks at all, 60% reported at most 2 landmarks, and 95% of the respondents reported at most 5 landmark events.

3.1.2. Number of landmarks per topic

The number of reported landmark events not only differs greatly per respondent but, as Table 2 illustrates, also varies between topics.

Table 2: Frequency Distribution of the Landmark Events: 17 Categories.

Landmark category	*Content key-words*	*N*	*%*
Family and relationships	Family events, marriage, divorce, personal relationships, conflict, raising children	83	15,5
Holiday specific	Holidays (including weekends and trips) with additional information (like destination, activity, persons etc)	79	14,8
Work	Work events, jobs, unemployment, time off	70	13,1
Births	Births	63	11,8
Deaths	Deaths	54	10,1
Health	Health events	40	7,5
Education	Education events, formal schooling	33	6,2
Holiday generic	Holidays (including weekends and trips) without any specification	30	5,6
Housing	Moving and buying, selling, building houses	29	5,4

Purchases	Consumer purchases: buying, selling	17	3,2
Leisure activities	Leisure events and activities (including sports, music, other hobbies, parties, pets, volunteer work)	14	2,6
Accidents	Accidents	7	1,3
Public events	National and/or political events, public holidays	6	1,1
Birthday own	R's own birthday	4	0,7
Other events	Other landmarks	4	0,7
Birthdays others	Another person's birthday	2	0,4
Total		535	100,0

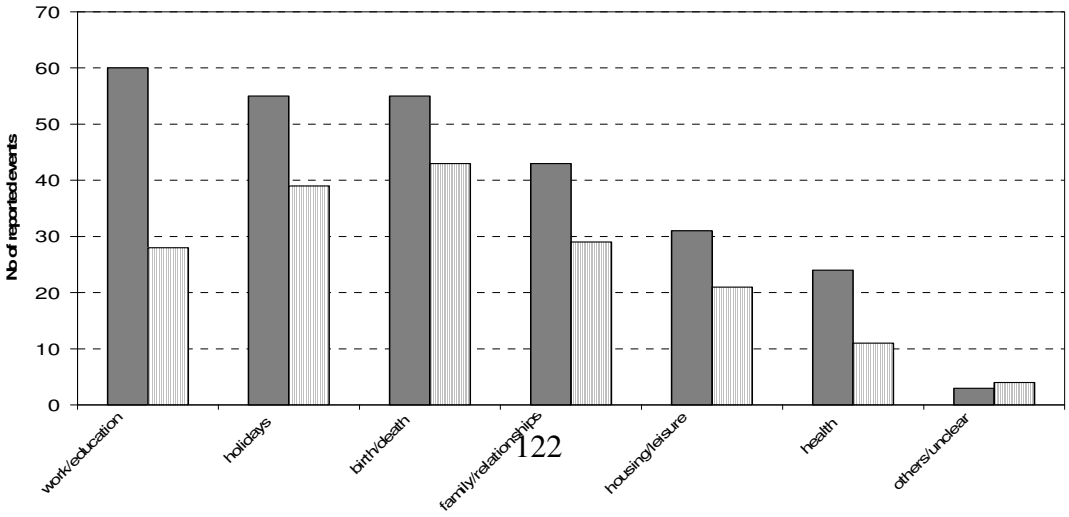
In line with earlier findings (Howes & Katz, 1992; Holmes & Conway, 1999), respondents reported very few public events, although there is a chance that this can be attributed (in part) to the instructions, which do not mention public events.

3.2. Research question 2: distribution of the reported landmarks over time

3.2.1. Frequency distribution by year

The primary reference period of the study covered two years, 1996 and 1997. Figure 1 shows that a disproportionate number of landmark events date from the more recent part of the reference period, the year 1997, which is in line with the literature on long-term autobiographical memory for important events. However, there are differences between domains. The recency effect is especially pronounced for 'work and education' and 'health' events, which both show a decline of more than 50% of reported events within one year. For the other main categories, 'births and deaths', 'family/relationships' and 'housing', but also for reports of holidays, memory decay seems to be more gradual.

Figure 1: Number of Reported Landmarks per Year (left column: 1997; right: 1996)



3.2.2. Frequency distribution by month

The reference period in this study is too short to show 'reminiscence bumps', but it's well known that on a more restricted time scale the dates of retrieved events often show 'heaping', for example on specific months within years (Becker & Diop-Sidibe, 2003). In line with the presence of a heaping mechanism, Table 3 demonstrates that the distribution of events over months in our study deviates strongly from a chance distribution (Chi-Square=145,01, df=66, p<0.001). A relatively high number of events were reported to have taken place in either the summer months or in December. Furthermore, it appears that these 'heaping effects' are domain specific. Not surprisingly, more holidays are reported for June, July, and August, than for the rest of the year. Health events, on the other hand, are overrepresented towards the end of the year. Perhaps not surprisingly, most family events were reported for the summer months, and towards the end of the year. The same is true for the category of housing events, leisure, and purchases and, to a lesser degree, also for births and deaths. Comparing the distribution of events over month for 1996 and 1997 shows that there are no large differences between both years (Chi-Square=15.10, df=12, p=0.24).

Table 3: Type of Landmark by Month (years 1996 and 1997; landmarks, for which no month was indicated, were excluded from the analysis).

Month	*Holidays*	*Health*	*Family/ relations.*	*Births/ deaths*	*Work/ education*	*Housing/ leisure*	*Others/ unclear*	*Total*
1	1.1%	6.7%	5.6%	1.0%	3.5%	7.7%	0.0%	3.5%
2	4.5%	3.3%	1.4%	6.3%	2.4%	0.0%	0.0%	3.3%
3	0.0%	10.0%	4.2%	3.1%	5.9%	7.7%	0.0%	4.2%
4	3.4%	10.0%	5.6%	9.4%	7.1%	3.8%	16.7%	6.5%
5	10.1%	6.7%	9.7%	4.2%	18.8%	1.9%	0.0%	9.1%
6	14.6%	6.7%	11.1%	13.5%	16.5%	13.5%	0.0%	13.3%
7	28.1%	6.7%	16.7%	6.3%	4.7%	11.5%	0.0%	12.8%
8	12.4%	6.7%	12.5%	11.5%	11.8%	7.7%	16.7%	11.2%
9	7.9%	6.7%	4.2%	10.4%	11.8%	9.6%	16.7%	8.8%
10	5.6%	6.7%	9.7%	10.4%	2.4%	7.7%	16.7%	7.2%
11	3.4%	13.3%	5.6%	11.5%	5.9%	17.3%	0.0%	8.4%
12	9.0%	16.7%	13.9%	12.5%	9.4%	11.5%	33.3%	11.9%
N	89	30	72	96	85	52	6	430

These findings demonstrate that, if landmarks are self-generated by respondents in an unrestrained way, dates may be biased by domain specific heaping effects.

Though not all occurrence of heaping has to be an artifact (e.g., the heaping of holidays in the summer), the distribution over the months is uneven.

3.3. Research question 3: relationships between respondent characteristics and landmark usage

Ranging from 0 to 11, the number of reported landmarks differs greatly per person and the question is whether this is related to socio-demographic factors and whether respondents who report more events from one domain also report more events from other domains.

There are several weak, but significant, relationships between socio-demographic variables and the number of reported life events (Table 4). The correlations between socio-demographics and landmarks are similar for 1996 and 1997 reports separately. Gender appeared to be related to the total number of reported landmark events. On average, female respondents (N=133) reported significantly more landmark events than male respondents (N=93) (overall: female 2.59 – male 2.01, t=2.26, p=0.03). This difference was even more pronounced for events that had taken place in 1996 (female .92 – male .55, t=3.02, p=0.003). Differences between men and women within the subcategories of events were not significant, except for the holiday category, in which women reported slightly more events.

On average, white respondents reported the most landmarks of all racial groups. While white respondents reported 2.68 events, black respondents reported 1.96 (N=92) and respondents of other races reported 2.17 landmarks (N=12) (F=3.91, df=2, 223, p=.02). Taking into account age, gender, and income, the differences between white and non-white respondents as a group are statistically significant for the total number of reported events as well as for events within specific years. With regard to the sub-categories, non-whites reported significantly fewer work and education events.

At first sight, age seems to be negatively related to the total number of reported landmarks. When taking in account race, gender, and income of the respondent, however, this relationship becomes non-significant (the men in our sample were significantly older than the women). The results on specific domains show a positive relationship between age and the number of reported health events. On all others domains, age is negatively correlated with the number of reported landmarks, even though this correlation is only significant regarding the number of housing events (p= .03).

Income is not related to the total number of landmarks reported, but there is a near-significant positive relationship with the number of work and education events (p = .06), as well as a near-significant negative relationship with the number of reported births and deaths (p = .08).

Table 4: Multiple Regression (stand. betas) of Socio-Demographic Characteristics on Number of Reported Events 1996 and 1997 (family/relationships & births/deaths combined, 'others' left out).

	Total	*1997*	*1996*	*Holidays*	*Health*	*Fam.,Birth/D.*	*Work/ed.*	*Hous.*
Age	-.11	-.11	-.12*	-.05	.18**	-.09	-.08	-.17**
Female	.20***	.16**	.24***	.15**	.04	.13*	.07	.04
Non-white	-.25***	-.18**	-.23***	-.12*	-.10	-.13*	-.14**	-.11
Income	.01	.05	-.05	.08	.01	-.13*	.14*	-.04
R^2	.094	.06	.106	.04	.04	.05	.05	.04
F	5.38	3.4	6.11	1.94	2.35	2.6	2.88	1.86
P	.000	.01	.000	.105	.06	.038	.02	.118

, **, *: Significant at .10, .05, and .01 level*

3.4. Research question 4: relationships between the number and types of landmarks and recall accuracy

3.4.1. Number and types of landmarks and recall accuracy

Exploring this research question we used two types of agreement score to indicate recall accuracy. The first consists of difference scores: differences between experimental (calendar) 1998-reports and earlier 1997 reports (both about 1996). Agreement was established for eight independent measures: number of persons moved into the household, number of jobs held, income, number of weeks working, number of weeks out of labor force (due to holidays, illness self, or illness of others). No correlation was found between the total number of landmarks and difference scores for 6 out of 8 measures. For the remaining 2 measures (number of weeks away from work due to illness or vacation) the correlations indicate a very weak positive (instead of a negative) relationship. Also for specific landmark categories all correlations are very weak (below .20) and mostly suggest that reporting more landmarks goes along with larger difference scores. The number of landmarks might not reflect the availability of

'more recall aids' but instead may indicate that these respondents had more events to report in that domain and thus also are at greater risk in making recall error.

As a second measure of agreement we examined the correlations between the 1998 calendar reports and the 1997 reports (both on 1996). We compared the figures of respondents who reported one or more landmarks to those who did not report any landmarks, controlling for age, gender, race and income. These correlations weakly suggest that the experimental calendar data more closely resemble the standard of comparison if respondents did report landmarks in 1997, but not if they did report landmarks in 1996.

At least no clear relationships were found between 'recall accuracy' and number of reported landmarks. The question remains whether landmarks functioned as recall aids or just were an indication of more activity in people's lives.

4. CONCLUSIONS AND DISCUSSION

The first apparent outcome is that in our relatively unrestrained landmark task respondents use a great variety of landmark events. Also their reports show large differences in the number of landmark events per topic. Second most events stem from the most recent year and are unevenly distributed over the months. Both retention rates and heaping patterns are domain specific. There is a relatively large decline in the number of reported landmark events when the reference period is extend from one to two years. Third, associations (though weak) exist between the number and types of landmarks and respondent characteristics. Female and white respondents reported more landmarks than male and non-white respondents. Age, race and income influence the types of landmarks reported. Fourth, landmark usage appeared to be hardly related to recall accuracy. The main explanation probably is that interviewers asked for landmarks during the introduction but did hardly apply them during the core of the interview to actively cue the respondent's memory. We also found indications that the number of landmarks is related to the level of activity of respondents in a certain life domain.

If landmarks are to be employed as aided recall tools, it is important that landmark events are dated accurately and that they do not disturb or bias retrieval processes. From both laboratory studies into autobiographical memory and questionnaire studies it appears that a free recall of life events may not lead to optimal landmark usage. Landmarks probably can be more effective when employing a structured procedure. The instruction could be regulated at least in

two ways. First, in order to reduce recency and heaping effects, respondents could be requested to recall landmark events from specific time periods, like from each season or a fixed number of months. Second, in line with the important role of lifetime periods in memory, respondents could be asked to report 'domain related' landmarks, focused on specified themes that are central to the data collection.

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