

# Evaluation of a 12-Month Reference Period in the National Crime Victimization Survey (NCVS)

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## Introduction

In 1973 BJS introduced the National Crime Victimization Survey (NCVS, formerly NCS), with the purpose of learning “more about crimes and the victims of crime [and] to measure crimes not reported to police as well as those that are reported” (BJS 1988:11). The NCVS collects data twice a year from a nationally representative sample to obtain information about incidents of crime, victimization, and trends involving victims 12 years of age and older and their households. The survey underwent an “intensive methodological redesign” in 1993 to “improve the questions used to uncover crime, update the survey methods, and broaden the scope of the crimes measured” (BJS 2004:1; see also, Taylor & Rand 1995).

BJS has recently set forth four priority areas for methodological research on potential improvements to the National Crime Victimization Survey (NCVS). One of these priority areas is a recommendation to explore the possibility of changing the 6-month reference period to a 12-month period to increase the cost efficiency of the survey.

The recommendation reads as follows:

“Changing from a 6-month reference period to a 12-month reference period has the potential for improving the precision per-unit cost in the NCVS framework, but the extent of loss of measurement quality is not clear from existing research based on the post-1992-redesign NCVS instrument. BJS should sponsor additional research-involving both experimentation as well as analysis of the timing of events in extant data-to inform this trade-off.”

A challenge in determining the reference period for the NCVS is to find the best balance between cost, data quality and respondent burden. Increasing the length of the reference period from 6 to 12 months has an obvious favorable impact on cost, since the data can be collected in fewer interviews. However, an increased reference period also risks data quality. The further crime incidents are from the date of the interview, the more likely they will be forgotten, leading to underreporting. A competing effect on data quality with a longer reference period is increased telescoping, in which errors in the recall of date of crime incidents may result in overreporting.

NORC is conducting an investigation of the impact of a 12-month reference period on data quality and respondent burden in the NCVS. NORC is developing and testing methods of improving the accuracy of recall and minimizing respondent burden through the use of enhanced contextual priming and event history calendars. These memory aids will be tested in both web and telephone modes. In our paper we will describe the cognitive issues posed by a 12-month reference period for the NCVS, present the memory aids that are under development, and outline the plan for testing these memory aids in a field test.

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## **Understanding the Problem**

### **Information Retrieval**

The process that is most important for research on reference periods is that of information retrieval. Remembering is a process by which the memory storehouse is searched to retrieve a particular item that is being sought. If we think of memory as a big storehouse, it is clear that it must be organized in some way in order for us to be able to retrieve things from it. Just as we must label files when we put them in file drawers, we also must attach some kind of labels to information in the memory storehouse. The labeling process, often called “encoding,” refers to various aspects of the information or the experience, including emotional tone, attached to the item when we stored it in memory so that we can retrieve it. (For a more complete discussion of memory models see Tourangeau, Rips and Rasinski, 2000, Chapter 3).

Information, such as the wording of the question and any explanatory material available to respondents at the time they are asked to recall an event, acts as retrieval cues. Retrieval cues are any words, images, emotions, and other cues that activate or direct the memory search process. If retrieval cues do not specify the event type, e.g., a crime, then the event type must be inferred before the search can begin. This inference can come from the wording of the question or from the larger context in which the question is asked, including the preceding questions or the introductory material to the survey.

Cues presented in a question may facilitate retrieval. Cue lists are assumed to reduce survey measurement error in a number of ways (e.g., Tulving and Pearlstone, 1966; Hudson and Davis 1972; Bellezza and Hartwell, 1981). The presence of a cue list may aid the respondent at the comprehension stage in understanding the question and determining what should be included in the answer (Dashen & Fricker, 2001). Cues may also help respondents with retrieval and estimation, in which they recall the information needed to answer the question and decide whether the information is relevant to the question. Further, according to models of memory that describe memory as an associative network (e.g., Collins & Loftus, 1975), the mention of a particular example may activate memories of other, related events the respondent may have experienced.

However, cue lists can have a negative impact on response for a number of reasons (Nickerson, 1984; Slamecka, 1968; Roediger, 1978; Marsh, Dolan, Balota, & Roediger, 2004). First, omitting items from the cue list may lead respondents to assume those items should not be included. Further, the presentation of some items as cues may prime those items, enhancing the activation and easing retrieval of those items in comparison to other, non-primed items.

Because information, both in episodic and semantic memory, is encoded in many different ways, the cues in the question or in the context surrounding the question including previous questions, may facilitate or constrain the activation and produce better or less good retrieval. Tulving (1983) developed the idea of “encoding specificity” in which all of the aspects of events at the time of their occurrence, including, importantly, emotional states, get encoded in the representation of the event in memory. Retrieval is more likely to be successful based on the degree to which cues activate specific aspects of the coding.

Retrieval takes time. One clear empirical finding is that giving respondents more time to answer questions produces more accurate reports, particularly for behavioral questions. But time is not all there is to it. Memories for events in one’s life appear to be organized in event sequences which are hierarchically organized (Barsalou, 1988). Giving respondents cues to remind them about the sequence is more effective than trying to get them to retrieve information about a specific event. For example, in questions about alcohol consumption, giving examples of the kinds of situations in which one might drink increases consumption reports (Bradburn, Sudman & Associates, 1979).

### **Telescoping**

While one might expect lengthening the reference period for recall of events to lower the report of events, an offsetting phenomenon may in fact produce an overreporting of events in a particular reporting period. This phenomenon is called “telescoping.” Telescoping was first reported by Neter and Waksberg (1964) in a study of response errors in the Consumer Expenditure Survey. Rubin and Baddeley (1989) proposed a model to account for telescoping based on the dating of autobiographical events in calendar time.

Huttenlocher, Hedges & Bradburn (1999) proposed a model to account for telescoping based on the dating of autobiographical events in terms of elapsed time from the present. The two models share the same general approach but differ in details because of their focus on how the events are represented in temporal memory.

Both models assume there are no systematic errors in dating events (that is, dates associated with events are stored in memory correctly) but rather that observed errors in reporting are the result of errors in the recall process. The observed telescoping errors that result in overreporting are caused by the combination of three independent factors. The first is the normal forgetting process. The second is that, even when events are remembered, errors in dating occur randomly and increase linearly with time. The third is that intrusions often occur from events outside the reference period, but cannot occur from events that have not yet happened. In other words, intrusion occurs in only one direction—from the past forward.

Telescoping can be reduced by “bounding,” that is reminding respondents of what they reported in the previous interview. The design of the NCVS, with its repeated interviews with the same household, reflects a concern for telescoping. In the NCVS, the first of the seven interviews is a bounding interview. Previously, the data from this interview were not included in the data set, but used to bound the data in the subsequent interview. However, the current procedure is to apply a correction factor to the first, unbounded, interview to adjust for telescoping. Whenever a crime incident report is completed in the NCVS, the interviewer also enters information (called “bounding information”) about the incident onto a control card (Field Interviewer Manual, page B1-97; U. S. Census Bureau, 2003). After completing the control card, the interviewer checks the bounding information for previous enumeration periods. If a review of the bounding information shows that there may be duplicate incidents, the interviewer must ask probing questions of the respondent to determine whether they are duplicates or different incidents. With a longer reference period, the amount of telescoping will increase, because respondent uncertainty about when events happened becomes greater the further away from the present the event occurred (see Huttenlocher, Hedges, and Bradburn, 1994 for a full explanation of the phenomenon). Bounding may reduce the telescoping produced by the longer reference period but will not totally eliminate it.

## **Developing Memory Aids for the NCVS**

### **Event History Calendar**

The event history calendar (EHC) is a well-tested tool for improving recall of retrospective data (Freedman, Thornton, Camburn, Alwin, & Young-DeMarco, 1988). In this method of interviewing, a calendar is used to record major life events. The purpose of the calendar is to stimulate the recall of autobiographic information and to aid the respondent in dating life events. This methodology is to be contrasted with the standard “question-list” (Q-list) approach in which scripted questions are asked and the respondent’s answers are recorded. In comparison to standard interviewing, the EHC approach offers more retrieval strategies for the respondent (Belli, Lee, Stafford, & Chou, 2004). Standard questions are more restricted in the type of cues they provide to respondents. The more conversational style of EHC interviewing affords the respondent more cues for use in retrieving information. In their study of the types of retrieval cues present in EHC and standard Q-list interviewing, Belli and colleagues (2004) note that most of the sequential and parallel interviewer probes they coded appeared more often in EHC interviews than in Q-list interviews. Further, probing was more frequent with EHC than with Q-list interviewing.

EHCs have been used widely as a tool to improve event dating; that is, retrieval of forgotten events is not so much the focus as the accurate dating of events. The events that the EHC is often used with include residence, periods of employment and unemployment, and periods during which benefits such as food stamps were received. These events are continuous in nature and the duration of the event, such as employment at a particular job, and the timing of a transition, such as to another job, are of primary interest in the data collection. For example, the National Longitudinal Survey of Youth<sup>2</sup> (NLSY) collects data on dates of employment, training and other variables. The Panel Study of Income Dynamics<sup>3</sup> (PSID) collects

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<sup>2</sup> Information about the NLSY is available at <http://www.bls.gov/nls/home.htm>.

<sup>3</sup> Information about the PSID is available at <http://psidonline.isr.umich.edu/>.

data on employment, participation in government programs, schooling, family formation and many other variables. In surveys such as these, the data collected with the aid of the calendar are the data of interest in the survey. The kind of data that the NCVS collects is different from the data often collected with the calendar. Unlike employment, schooling, residence, receipt of benefits and other variables typically collected via calendar, crime events are random, often one-time events, and not a continuous state.

In the literature on the EHC, there is some discussion of the collection of data on events that are similar in character to the crime events collected by the NCVS (intimate partner violence, Yoshihama, 2009; hospitalizations, violent events, and drinking, Roberts & Mulvey, 2009; drug use, ADAM survey, Yacoubian & Peters, 2002). Overall, the evidence on the use of the calendar is somewhat mixed. Much evidence supports its use for the collection of data on continuous events such as employment, schooling and residence. However, the smaller number of studies that have used the calendar to collect data on discrete events, such as intimate partner violence episodes or arrests, have varied in their findings on the effectiveness of the calendar in improving recall.

The EHC will be used as part of the NCVS screener help the respondent define the reference period of the survey and to recall the major life events that occurred during that period. With an increased reference period, events that are further from the interview date become more difficult to recall accurately. The intent of using the EHC is to address these recall issues by enhancing the respondent's memory for the events that happened during the reference period. Recalling autobiographical events for the reference period may lead to recall of a crime event related in time, location, people or activities.

In the EHC version of the screener, calendar questioning has been woven into the original NCVS screener questions. No additional enhancements to the screener questions have been made. Rather, the completion of the calendar and reference to the calendar is built around the exact wording of the original screener questions. The respondent fills in the calendar with events from the past 12 months, attempting to place an event in each quarter of the year. If the respondent cannot name enough personal events to populate the calendar, cultural landmarks such as major holidays are used to fill in the gaps. Events on the calendar are referenced during the crime screening.

The approach that was developed includes segmenting of the 12-month reference period into smaller intervals to encourage respondents to increase time spent on retrieval and sharpen their focus on specific time periods within the year. This segmented approach is included for some but not all of the crime screening questions because of the excessive time it would require to cycle through all the screener questions repeatedly for each segment of the year. This approach combines the need to provide respondents with more time for recall and balance that against level of burden.

Completion of the EHC may influence recall in two ways. First, using a calendar is typically thought to improve the accuracy of the dating of events. Whereas errors in event dating due to forward telescoping could spuriously increase crime reporting with a lengthened reference period, the EHC may alleviate these errors. At the same time, the activation of memory structures that occurs as the respondent recalls significant personal events as part of the calendaring could enhance recall of events during the reference period. Thus, in addition to improved dating of events, enhanced recall of crime events could result from the use of the calendar.

### **Enhanced Contextual Priming**

The context within a question can influence response. In a study of reporting of sensitive behaviors such as drinking and sex, question length was found to influence reporting of sensitive behaviors (Blair, Sudman, Bradburn, & Stocking, 1977). For example, a shorter question simply asked how often the respondent became intoxicated while drinking alcoholic beverages. In contrast, in the longer questioning, respondents were probed for the term they used to describe when people drink too much and act differently from usual. The respondent's term was then used in a survey question indicating that people sometimes drink on an empty stomach or drink too much and become intoxicated (using the respondent's word), and asking how

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often this happened to the respondent. The added context and time for processes offered by the longer questions may have contributed to the higher reporting observed.

The context provided from prior questions within a survey can also influence response. Tourangeau and Rasinski (1988) describe how the context of prior questions affects response to attitude questions. The framework provided by preceding questions may influence interpretation of later questions. Also, through a priming effect, specific information from those questions may be more accessible for retrieval and play a larger role in the process of making a judgment. As an example, question order effects have been found for two questions related to abortion (Schuman & Presser, 1981). One question mentions the possibility of birth defects and the other mentions that the woman does not want any more children. When the question on birth defects was asked first, support for abortions for women who do not want more children decreased.

In prior work on the National Crime Survey (NCS), specific cues have been found to influence recall. However, the effects varied by crime severity. Taylor and Rand (1995) found that with the redesigned NCS screener, which included many short cues to different kinds of crime, reports of crime increased, but they did not increase uniformly. There was some evidence that reports of more minor crimes increased relative to more major crimes. Reports of crime by people known to the victim increased relative to reports of crime by strangers.

Between 1972 and 1975, the NCS included supplemental attitude questions, which were administered to half the sample (Cowan, Murphy, & Wiener, 1978). The attitude questions appeared prior to the crime screening questions. The rationale for having the attitude supplement precede the crime screening was to avoid any influence of the victimization questions on attitudes to crime. Overall, the attitude supplement was found to increase reports of crime. For example, robbery showed an effect with a sign test and higher reports of theft were found. Reports of household crime were also higher for households given the supplement.

The findings reported by Cowan et al. (1978) suggest a number of ways in which the attitude supplement could increase reports of crime. First, the supplement acts generally to prime thoughts about crime and activate memories of crime related-events before the crime screening, increasing the accessibility of memories for particular incidents. It also provides cues for specific types of crimes, such as relatively less serious crimes, that are more easily forgotten. The supplement may also clarify for respondents what counts as a crime and what should be reported.

In summary, contextual cues can enhance recall in a number of ways. The context can signal what types of incidents constitute a crime. Cues such as location, offender, weapons used, time of day, type of crime, and others can aid in retrieval of specific incidents. In designing the Enhanced Contextual Priming (ECP) materials, a broad variety of cues will be provided. The ECP version includes a set of introductory questions at the beginning, before the crime screen questions. The first two introductory questions are items on the respondent's feelings of safety at home and in the neighborhood at night. These two questions have been used in the General Social Survey (GSS; see variables FEAR and FEARHOME)<sup>4</sup>. Since the questions have been asked in prior rounds of the GSS, comparison data on the questions is available. For example, it is possible to examine the distribution of responses to these questions on the GSS for various years and by various demographic groups and compare to the data obtained for the NCVS sample. Additional introductory questions remind respondents that crime can happen in different locations and asks respondents to report the different places they go on a regular basis, whether they have traveled, and their feelings of safety when not at home. These questions were written by NORC. Finally, respondents are reminded that crimes can be committed both by people they know and by strangers; they are asked about their trust in other people. The questions on trust are adapted from the crime victimization module (module on trust and reciprocity) of the Canadian General Social Survey.<sup>5</sup>

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<sup>4</sup> For more information about the General Social Survey see <http://www.norc.org/GSS+Website/>.

<sup>5</sup> For more information see <http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=4504&lang=en&db=imdb&adm=8&dis=2>.

The intent of the introductory questions is to provide respondents with an opportunity to spend time thinking about crime in general, about the locations where crimes can occur, and the people who can commit crimes. The selection of questions that emphasize locations where crimes can occur and offenders (including non-strangers) moves to the forefront two types of cues already present in the screener. The placement of these questions before the first screener question on crime allows the respondent the opportunity to recall relevant information before being asked whether they experienced a particular crime. As discussed in the literature review, time spent on the recall task and context are both key to enhancing recall of crime events. It is important to note that different introductory questions could have been chosen for the ECP version. Currently, no data are available that supports the use of one set of questions over another. Rather, the literature supports the general approach of providing more time and context for recall to occur.

### Field Testing of the Memory Aids

The ECP and EHC versions of the screener will be tested in cognitive interviews. Cognitive pretesting provides an opportunity to test the screener questions along a variety of dimensions. The goal is to uncover potential problems with question wording, response categories, and instructions to the respondent. Once the ECP and EHC versions of the screener have been finalized, these versions and a control version will be administered to respondents in either the telephone or web mode. We expect to complete a total of 3000 interviews. This test is intended to reveal whether the two approaches, priming with enhanced context and event history calendaring, yield better reporting of crime events relative to the control condition.

Reference Period	Mode	Memory Aid		
		Control (no memory aid)	Event History Calendar	Contextual Priming
12 months	Telephone/CATI	850	850	850
12 months	Web	XXX	225	225

NORC plans on using an RDD sample of telephone numbers in the Chicago area. Based on area codes and prefixes, we will be able to select specific neighborhoods in Chicago and specific suburbs around the Chicago area. The households will be in areas that vary in racial/ethnic composition, income, and crime rate as reported by local law enforcement agencies. The sampled households will be systematically assigned to one of the five cells of the experiment.

To be able to test the effectiveness of a memory aid in the telephone and web modes, the two samples must be comparable. This would not be the case if specific types of respondents (such as lower income or older, who may be less likely to complete a web survey) are not represented equally in the telephone and web samples. We plan on screening respondents based on access to the internet. Respondents without web access who are selected for that condition will be reassigned to the telephone condition. However, when making comparisons across the telephone and web modes, only those respondents in both modes who have internet access will be included in the comparison.

In the current NCVS, any household members ages 12 and over is eligible to participate. In this experiment, we will interview only the household respondent. This respondent will be 18 or over and will be the most knowledgeable about crimes against the household and about household composition.

The information learned from the field test will form the basis for future work on a 12-month reference period for the NCVS; the results will inform the development of a plan for further study and making the transition to the 12-month reference period.

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