

## USING COGNITIVE TESTING IN THE DESIGN OF A BUSINESS SURVEY QUESTIONNAIRE

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**KEY WORDS:** Establishment survey, cognitive testing, business births, questionnaire design

### 1. Introduction

This paper reports on the use of cognitive testing to develop the Business Births Pilot Study (BBPS) questionnaire. One objective of the BBPS is to test the feasibility of identifying new businesses by means of a telephone interview with recent recipients of new unemployment insurance (UI) accounts. The task of the BBPS questionnaire is to differentiate between newly-established businesses, called business births, and businesses that obtained new accounts for other reasons—in a telephone interview lasting 5 minutes or less.

The context for the BBPS is the Current Employment Statistics (CES) Survey. CES is the source of current monthly data on U.S. nonfarm payroll employment. The Bureau of Labor Statistics (BLS) conducts this survey each month with a sample of approximately 400,000 business establishments. While the sample is large, it does not currently include new businesses, or business births, in the early months of their business lives. The BBPS is testing one approach to bringing these new businesses into the CES sample much more quickly than has been possible in the past.

A business birth is a business establishment, with employees, which formerly had no chance of being selected in the survey (Grzesiak and Lent, 1988). Business births contribute from 1 to 4 percent of the payroll jobs in the United States (Subcommittee, 1994), on a base of approximately 115 million payroll jobs. One reason for conducting the BBPS is to obtain a more precise measure of birth employment.

CES is a Federal/State cooperative statistical program that is related to State UI programs. States require most employers to pay quarterly UI taxes for their employees. Participants in a State's Unemployment Insurance (UI) program comprise the CES sampling frame. Each State selects a sample of employers in the State, following guidelines from BLS. The UI account number is the basic unit by which employers fall into the CES sample.

Employers open UI accounts in each State where they have business establishments. Most States require employers to register for an account within 90 or 180 days of becoming liable for UI taxes in that State. In addition to new businesses, reasons for new UI accounts include changes in ownership, mergers or acquisitions, name changes, and incorporations. In general, an account assigned to a continuing economic venture (such as an ownership change) had a prior probability of selection into CES and is not a birth. However, an established business may become a birth by opening a business unit in a State where it does not

currently have a UI account. Similarly, an organization that moves from one State into another becomes a birth in the new State—and a death in the old one.<sup>1</sup>

The BBPS is a telephone survey of employers who received new UI accounts in the preceding month. Data collection for the BBPS began in July 1996. The study will be conducted in up to ten States, using a sample drawn monthly from those States' Employer Master Files. Interviewers will contact the establishments in the sample, administer a series of questions to determine the birth or non-birth status of those units, and obtain initial and current employment for the birth units.

### 2. Cognitive Research for Establishment Surveys

The theories and methods of cognitive psychology have given survey researchers tools with which to look at the response process from the perspective of the respondent. A growing literature describes the application of focus groups, think-aloud interviewing, respondent debriefings, retrospective probing, and response analysis surveys, among others, to establishment survey questionnaire design. (Phipps, Butani, and Chun, 1995 summarize relevant research.) Most of the establishment surveys in this literature involve personal interviews to test self-administered (mail) questionnaires.

In any survey, the questionnaire must reach a designated respondent. In an establishment survey, a major issue is what the respondent's organizational role should be. While information on the characteristics of these organizations is supplied by individuals, they do so as spokespersons for the organization rather than for themselves (Cox and Chinnappa, 1995). We usually seek a spokesperson who is the "most knowledgeable" respondent, described by Tomaskovic-Devey, Leiter, and Thompson (1994) in terms of the *authority* to respond, the *capacity* to respond, and the *motive* to respond. These authors suggest that authority may be limited by the respondent's position, the establishment's rules or policies governing surveys, and relationships with parent organizations. Capacity to respond refers to an organization's practices and division of labor as it affects relevant knowledge for the survey questions, while motive involves both organizational and individual willingness to participate. Put another way, capacity refers to both the respondent's ability to understand the request for information and the organizational constraints that affect the respondent's ability to supply the data. For

<sup>1</sup>Research on business deaths will parallel that of births. The net difference between births and deaths is estimated at 0.5 to 1.0 percent of payroll employment (Subcommittee, 1994).

example, establishment survey requests for information from records may not match the way information is stored in those records (e.g., Phipps, 1990; Goldenberg, Butani, and Phipps, 1993), a factor which contributes to measurement error.

Tomaskovic-Devey et al. (1994) maintain that organizational complexity influences both the authority and capacity to respond. Consequently, the owner of a small single establishment firm is likely to have both the knowledge and the authority to answer survey questions, while the owner of a large single establishment firm has the authority but not necessarily the knowledge. They liken the role of small-business owner to that of a head of household in a household survey. In this case, the respondent is a spokesperson for the organization, but is reporting information related to his or her own personal situation as owner.

The organizational spokesperson, however, is a human being and responds as an individual. Therefore, the processes that take place when an individual is confronted with a question apply to establishment contexts as well as surveys of individuals or households. Models posed by Cannell, Miller, and Oksenberg (1981), Tourangeau (1984), and Willis, Royston, and Bercini (1991) all suggest that a respondent must comprehend a question, perform some type of mental processing in which to determine whether and how to find the answer, find the answer or choose not to, and produce a response that incorporates some element of judgement as to what the respondent wants to reveal and what the question was seeking.

Edwards and Cantor (1991) extend the individual response model to the case of establishment surveys requiring the retrieval of record-based data. Their approach begins with the encoding of information, which they call *record formation*, continues with *comprehension* and a *decision* as to the source of information, turns to *record look-up* instead of retrieval, and continues with *judgement* and *communication* of a response. These models of individual question-answering processes can be placed within the context of the Tomaskovic-Devey et al. model, given that a respondent has the authority and capacity to answer questions and is motivated to do so.

Motivation to respond is both an individual attribute and an organizational one. The individual respondent makes a decision about the feasibility or value of attempting to retrieve information before doing so. Part of this decision could be a determination of whether the question can be answered from memory or whether it is necessary to obtain it from an external source (Willis et al., 1991). At the organizational level, Tomaskovic-Devey et al. (1994) view motive in terms of the organization's best interest, which may result in nonresponse if the potential respondent sees providing information as counter to that best interest.

### 3. Questionnaire Development

The Business Births Pilot Study seeks to obtain a small amount of information from the sampled busi-

nesses, but has a vested interest in obtaining information that is highly accurate and that conforms completely to CES definitions. We will obtain the reason for a new UI account, the birth status (determined primarily by whether the new UI account is replacing another one), and if a birth, when the business began, number of employees at birth, and current employment.

As the questionnaire evolved, the need for cognitive testing became increasingly apparent, with uncertainty about how respondents would react to and answer certain questions. Issues centered around:

- **The choice of respondent.** Who should we speak to, and how would we find them? Would the State-provided contact be able to answer the questions?
- **Respondent understanding of basic concepts.** Would respondents be familiar with UI accounts? If not, would it affect our ability to conduct the survey? How would respondents describe their business start dates? How would they interpret the number of employees?
- **Content.** Does a forced-choice question cover the entire range of reasons for new UI accounts, or do we have to ask an open-ended question? Do the questions provide the information necessary to determine birth status and birth employment?
- **Questionnaire mechanics and question wording.** How should we phrase questions for different respondents? Would wording that was appropriate for one group be awkward for another?
- **Response strategies.** Would respondents use records or answer from or memory? Would respondent characteristics or organization attributes affect the response process and response accuracy?

#### 3.1 Cognitive pretesting procedures

We conducted a total of 18 interviews, all at the respondents' workplace. The interviewing approach was one of asking a question, followed by structured probes while the initial question was still in short-term memory. Willis et al. (1991) describe several advantages of structured probing over think-aloud interviewing, including giving the interviewer the flexibility to direct the interview and to focus on emerging themes. The planned probes also allowed us to obtain comparable information about the questions from each respondent. Interviews averaged 25 to 30 minutes and were audio-taped and transcribed. Most interviews took place between January and March, 1996.

#### 3.2 Cognitive Interview Schedule

The cognitive interview schedule consisted of the most recent version of the proposed telephone interview schedule, supplemented with follow-up questions about specific items. Response probes included requests for paraphrasing, time period, meaning of terms, and who was included in quantitative responses. We also asked whether respondents would be able to find

employee counts in their records, although we did not ask them to do so.

We modified the interview schedule incrementally as problems arose, ultimately making two major sets of revisions. The second version received no further cognitive testing, but was incorporated into the telephone questionnaire for pretesting.

### 3.3 Respondents

We obtained names of employers who had received new UI accounts during the preceding month from UI program offices in two states. We called the designated contact person and read a prepared script that introduced BLS, explained that we were developing a business telephone survey, and asked for about 30 minutes to test the questionnaire. A total of 183 calls with 55 establishments ultimately resulted in 18 completed interviews (33 percent of establishments, 10 percent of contacts). Direct and indirect refusals (e.g. cancelled appointments) accounted for another 27 percent of the contacted establishments. We were unable to locate or speak to a respondent at the rest of the establishments.

While the number of interviews is small, respondents came from most of the major industry categories, and a variety of business sizes. Eleven of the 18 businesses were in trade, services, and finance, which is indicative of the locus of business formation in the 1990s. Nearly three-fourths of the completed interviews were with business owners, and these were distributed across the size classes. Of course, the small number of interviews means that any conclusions drawn from them are tentative and suggestive at best.

## 4. Findings from the Cognitive Interviews

### 4.1 Who is the respondent?

As noted above, an important element of an establishment survey is identifying the correct respondent. In most cases we expected this person to be the owner of a small business, and our experience is consistent with this expectation. Thirteen of the interviews were with owners, and all but one was present at the time the transition took place. Nearly all of the non-owners were also present at the start. Because of the respondents' personal involvement with the business, many of our questions appear to tap autobiographical memory.

### 4.2 Understanding Basic Concepts

Unemployment Insurance Account. The BBPS centers around the concept of a UI account, and we were concerned that respondents might not be familiar with these accounts. We assessed their knowledge by asking the respondent to tell us what "unemployment insurance account" meant. Two-thirds had at least some sense of UI as a fund into which they paid taxes for the benefit of their employees. Equally important, knowledge of UI was not necessary to answer the BBPS questions. Even respondents who did not understand UI were able to provide a reason for getting a new account, and were able to answer the other questions. To ensure uniformity of understanding, however, we

now introduce the questions about a new UI account with a phrase describing UI.

Business start date. If the business is a birth, we want to know when it started. Business start date is a concept whose meaning evolved along with the BBPS questionnaire. Originally, we thought in terms of the date the owners took control of the business and/or the date the business began operations. However, there was some ambiguity as to whether "begin operations" meant the date the business *opened* or the date that the owners first began to perform business functions.

Respondents, as it turned out, had no such ambiguity in mind. New business owners considered assumption of ownership and start of operations as the same thing, using phrases such as "we signed our contract in...", "we opened in...", "the first month that we had employees," and "opened our doors."

As a clarification, we asked respondents:

**If I'd asked "when did your company first open its doors", instead of "when did you begin operations," would you give me the same answer or a different answer?**

Everyone who answered this question said "same answer." However, we discovered that the date the business began operations did not necessarily coincide with the date the business first hired employees. In response to a question about whether the business had employees on its books prior to starting operations, several said they did.

After considerable discussion, we decided that what we really wanted to know was when the business became a payroll employer eligible for CES, which means when the business first hired employees. The telephone version of the questionnaire now asks if the business has employees other than the owners, and if so, asks for the month and year the first paid employees reported to work.<sup>2</sup>

*Cognitive issues:* Most respondents seemed to comprehend the question of business start date in terms of opening their doors. Judging by the speed and the precision with which most answered the question, the date the business began is highly salient to owners and original employees alike and is subject to immediate recall.

Number of employees at start; number of employees at current pay period. We wanted to know how many employees the business had when it first had employees, and we posed this question in terms of the first payroll. All respondents reported from memory the month and year that the business issued its first payroll. Two-thirds gave a precise answer about the number of employees, while the rest estimated answers.

<sup>2</sup> Start date retains some ambiguity for businesses whose only employees are the owners. A business is not an employer for CES purposes unless it has paid employees. New business owners may not pay themselves in the beginning, and may not take pay consistently. Therefore we consider the start date for businesses with no paid employees as the date the business began operations.

How did these respondents arrive at their answers? Respondents from small businesses with only a few employees were able to retrieve the information directly from memory, or by mentally counting individual employees. One respondent looked at the first payroll on the computer (i.e., checked records). Another said "I write the checks. I know." Respondents from larger firms generally used some form of estimation strategy, but the strategy was still memory-based. For example:

*("Probably about 20") "I hired the opening staff, and I remember how many people I had. And I just added myself and the manager."*

When asked about the number of employees for the current pay period, most respondents used a similar approach to answering the questions. An exception was respondents at the larger firms. For example:

*"I just got the report about five minutes ago and I haven't looked it at. I probably would say...147."*

When asked how she arrived at this number:

*"Because the last payroll we'd had 143 and I know we've only hired a few people since that time. And because we're getting really concerned about how many people we have I'm watching it closely."*

Another respondent based his estimate on the physical size of the business:

*"It's about 10. I mean, regarding number of employees in this kind of business, the number of employees stays pretty flat. I know how many people I need on my register and unless I expand, and add registers or add space, it's never going to change."*

We did not ask respondents to check their records to answer these questions. However, all respondents said they would be able to find the number of employees from the first and the current payrolls in their records.

An important comprehension issue is who is included in the count of employees. To avoid ambiguity, we used several cues to describe the individuals that should be counted, matching the CES definition.

**A company's employees include full and part time workers, temporary workers, managers, executives, office and clerical workers, and all other paid employees who are covered by unemployment insurance. How many employees did [COMPANY NAME] have on its first payroll?**

About half of the respondents did not include owners of the business in the count of employees, even after we modified the question to include the phrase "owners of incorporated businesses." When asked why, respondents said it was because the owners were not getting paid.

Current Employment/Pay period including the 12th. The final piece of information that we seek from business births is current employment. More precisely, we want to know the total number of employees who

worked or received pay during the pay period that included the 12th of the month. The pay period including the 12th is a standard BLS concept that provides a uniform reference period for payroll employment statistics. By obtaining business birth employment for the pay period including the 12th, BLS can estimate the effect of new businesses on overall payroll employment.

The pay period of the 12th may be a standard BLS concept, but these interviews suggest that it is not well understood in the business community. Respondents confronted with it for the first time seemed confused. Although they were willing to answer a question about the number of employees, they made quite a few errors in deciding what the pay period was.

We addressed the problem by adding questions to the telephone questionnaire. We first ask how often the employer pays its employees, so as to focus attention on specific pay periods. Next, we ask for the first and last days of the current pay period, and use a computer algorithm to determine whether the current pay period ends before the one with the 12th of this month. If the pay period with the 12th has been completed, we ask for employment for that pay period. Otherwise we ask for the number of employees during the current pay period, so as to get employment in the current month. If an employer pays employees on more than one pay cycle, we ask about the total number of employees in the current pay period.

*Cognitive issues:* The pay period of the 12th is largely a comprehension problem. We hope that the cues provided by payroll frequency and references to the dates of the current pay period will help respondents to think about correct reference point. Of course, in order to report employment for that pay period, they also have to keep in mind all of the types of employees who should be counted. It is a difficult cognitive task, and the difficulty may be exacerbated by telephone administration of the question.

If respondents do not find the retrieval task worth the effort, they may resort to satisficing behaviors. We have already seen this with the respondent who says "about 10" employees. Telephone interviewers have been trained to obtain an exact count where possible.

#### 4.3 Questionnaire content

One of the issues explored through the cognitive interviewing was questionnaire content. Did the questionnaire cover everything it needed to? Did it include the right questions?

Reason for New UI Account. The focus of the BBPS is whether or not a business with a new UI account is a birth. Therefore, a critical element of this study is whether respondents can provide the reason for obtaining a new UI account. A related issue is whether the research team has anticipated all of the reasons that might result in a birth, so that we can ask the appropriate follow-up questions. We learned from the early interviews that we had missed some possibilities.

In order to give respondents maximum flexibility, we initially posed an open-ended question that asked why the company requested a new UI account. The intent was to have the interviewer field-code the response and select the correct path based on the respondent's answer. If the answer did not fit into our categories, we asked a follow-up question which included "starting a business" and "buying a business" as examples.

The top half of Table 1 shows the answers we expected when we began interviewing. The bottom half shows some of the answers we received, and the reason that eventually emerged. It's fairly clear from the table that the open-ended question wasn't working very well. Only 4 of 9 respondents gave us answers that could be field-coded into appropriate categories, because we had missed several paths. The most obvious was that of an employer obtaining a new UI account because he or she had hired employees for the first time. After expanding the number of reasons, it was possible to field-code all 9 of the next respondents, and to retrospectively do so for the rest of the first 9.

**Table 1. Reasons for Obtaining New UI Accounts: Initial Categories and Sample Responses**

Initial Response Categories
<ul style="list-style-type: none"> <li>• Opened new business</li> <li>• Incorporated</li> <li>• Changed name</li> <li>• Purchased business/changed ownership</li> <li>• Moved business from another state</li> <li>• Merger or new branch</li> <li>• Reopened a closed business</li> </ul>
Sample Responses
<ul style="list-style-type: none"> <li>• "I hired employees." (new business)</li> <li>• "Because we will be having part time employees, and in order to have workman's compensation you have to have it." (new business)</li> <li>• "Because we are expanding. We started out with contract workers and we have diversified." (hired employees)</li> <li>• "To pay my taxes." (ownership change)</li> </ul>

Another finding concerning reasons for new UI accounts is that the order in which we present the possible reasons is critical. In one case a respondent gave an answer that did not fit our categories. We asked the follow-up question, with its "started" and "purchased" cues. The respondent heard "started a new business," and immediately said "yes." It wasn't until several questions later that the interviewer discovered that the new business was really a purchase of an existing firm. The lesson here is important. We have established a priority order for presenting reasons so

that items that encompass others are presented first. For example, "incorporation" precedes name change.<sup>3</sup>

Business births. We defined a birth as an employer with a new UI account which had no prior probability of selection into the CES sample. In many situations, a birth depends on whether the new account is replacing another one. Therefore, after learning the reason for a new account, we determine whether the business already had a UI account in the State of interest. If not, the new account represents a birth. If so, and the new account is replacing another one, it is a continuing economic venture and not a birth; otherwise, it is a birth.

Only a handful of respondents were asked questions about replacing an existing account. In general, respondents appeared to know whether or not their new account replaced another one.

#### 4.4 Questionnaire Mechanics and Question Wording

Owners versus nonowners. An important aspect of question wording involves phrasing questions that might be asked of either business owners or non-owners. This issue seemed to be more troublesome in the questions asked about a purchase or ownership change, but occurs throughout the questionnaire. The proposed solution was to use "you" when speaking to an owner, and "the owners" or a third-person pronoun otherwise. For example:

**At the time you/the owners bought [COMPANY NAME], did you/they already have an Unemployment Insurance account in [STATE] in the name of another business?**

This approach appeared to be satisfactory as long as we were talking to an owner or an employee of a business which had an owner. The reference did not work as well, however, when there were no individual owners, because the respondent did not personally have a UI account and there were no owners who might hold one. Our solution was to substitute [COMPANY NAME] for "you/the owners" if the respondent volunteers that the business has no owners.

In a few cases, the respondent was an employee rather than an owner. Most of the non-owner respondents had a strong identification with the business and had been present from the start. These non-owners seemed comfortable with the pronoun "your" even—and perhaps because—the reference was clearly to the business and not to them personally.

Separate Questions for Individual Paths. From the beginning of this project, we planned to ascertain the date that the business began. This simple idea raised myriad conceptual problems (see section 4.2) but we also discovered "mechanical" problems. First, each reason required a different cue to the respondent in the

<sup>3</sup>The telephone pretests pointed to other problems with this question. As a result, we revised the entire question strategy. We now ask two questions, whether the owners opened a new business or franchise *and* whether they purchased a business from someone else. If the answer to both of these questions is "no," we present a list of other reasons as yes/no questions, and move to the next topic once we get a "yes" response.

follow-up question. The content of several questions is essentially the same, but the wording is specific to the situation. For example:

**At the time you opened the new branch, did [COMPANY NAME] have any other locations in [STATE]?**

**At the time the business started operating in [STATE], did [COMPANY NAME] have any other locations in [STATE]?**

By the end of the cognitive research, we had identified six different sets of reasons for new UI accounts that were, in fact, business births. When we attempted to determine the start date for the business, again, the question needed a cue that related to the reason for the new account. Although it sounds simple and obvious, it was only by asking inappropriate question that the need for multiple question wordings become clear. One question did not fit all situations.

Order of response options. As noted earlier, by presenting reasons for a new UI account in one order, the respondent misunderstood the reason and selected the wrong one. We subsequently put considerable thought into the sequence for presenting those options so as to avoid sending the respondent to the wrong set of follow-up questions. Even so, there were cases in the telephone pretest where respondents agreed to two (to us) mutually exclusive situations, requiring us to rethink the critical sequence of questions about reasons for a new UI account.

## 5. Discussion

One objective of the BBPS is to test the feasibility of using a telephone interview to identify business births and obtain employment data from them. Cognitive testing of the proposed questionnaire revealed shortcomings in question content, language, and question order. The process of addressing these shortcomings led to a reassessment of some survey concepts.

The cognitive interviews did reveal several useful pieces of information. First, respondents do not need a clear understanding of a UI account in order to answer questions about it. Second, many respondents appear to be tapping autobiographical memory to answer questions about business start date, timing of first payroll, and number of employees. Both of these outcomes are encouraging for the BBPS.

On the less optimistic side, respondents had some difficulty with the pay period including the 12th. The telephone questionnaire incorporated probes to help focus the respondent on the correct pay period.

The questions in this interview were not subjected to rigorous evaluation through a split ballot or other systematic study. The questionnaire was too complex to ask many of the questions more than a handful of times, and few questions remained the same. The

number of completed interviews was small. Nevertheless, the results were helpful in developing the telephone questionnaire, and suggest that respondents will be able to answer questions about reasons for new UI accounts, business start date, and number of employees.

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