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The Use of Cognitive Interviews to Test Spanish Instruments

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1 Introduction

Pretesting methods that are currently used in survey research to develop and improve survey questions have been evolving for the past 20 years. A widely accepted starting point for the formalization of pretesting techniques, which were originally adapted from cognitive psychology, is the Cognitive Aspects of Survey Methodology (CASM) Conference (Jabine et al., 1984). These early efforts to develop formal pretesting methods were later followed by the formal implementation of pretesting techniques at many federal statistical agencies (e.g., U.S. Census Bureau, 2003). Since then, a number of studies have been implemented to assess the relative merits of different pretesting methods (e.g., Presser, et al., 2004).

While there has been increased focus on issues related to multicultural and multilingual survey design in recent years, (e.g. Harkness, Van de Vijver & Mohler, 2004) there has been relatively little research on the appropriateness of specific pretesting methods and techniques with respondents from different cultural and/or linguistic groups. At the same time, many researchers have identified difficulties in using widely accepted cognitive interview techniques with different cultural and linguistic groups (for example, Pan, 2004; Coronado & Earle, 2002; Blumberg & Goerman, 2000; Kissam, et al., 1993).

This paper lays out a research plan designed to continue the process of tailoring and refining cognitive interview techniques to enhance their effectiveness across cultural and linguistic groups, with a focus on Spanish-language interviews in particular. It includes 1) a review of the literature on pretesting multilingual surveys, and 2) plans for an exploratory pilot study designed both to identify difficulties in conducting cognitive interviews with Spanish-speaking respondents and to identify and test alternative methods. The paper concludes with a brief discussion of research on pretesting Spanish instruments that is currently underway at the U.S. Census Bureau.

2 Review of the Literature on Pretesting Multilingual Surveys

2.1 The increasing need for multilingual survey instruments

Because of growth in globalization and migration in recent decades, there has been an increasing need to conduct surveys in multiple languages in order to ensure that data are representative of all members of culturally and linguistically diverse populations. This has been the case for both research that crosses national boundaries and research within single countries. Within the United States alone, the Census Bureau identified 380 categories of individual languages or language groups in 2000 (Shin & Bruno, 2003).

There are many people in the United States who have difficulty communicating in English. The Census Bureau reported that 4.4 million households, encompassing 11.9 million people, were linguistically isolated in 2000.

The Census Bureau defines a linguistically isolated household as "…one in which no person aged 14 or over speaks English at least 'very well.'" A linguistically isolated person is defined as "…any person living in a linguistically isolated household." It should be noted that this definition can include household members under 14 years of age who do in fact speak English fluently or very well (Shin & Bruno, 2003). The numbers of linguistically isolated households and people are up dramatically from the 1990 Census, in which 2.9 million households and 7.7 million people were classified as linguistically isolated.

In the United States, the proportion of people over age five who spoke a language other than English at home grew from 14% or 31.8 million people in 1990 to 18% or 47 million people in 2000 (Shin & Bruno, 2003). Spanish was the most common non-English language spoken in the home in 2000, with 28.1 million speakers. Almost half of these people reported that they spoke English less than "very well." Chinese was the second most common language spoken in the home with 2 million speakers, followed by French, German, Tagalog and Vietnamese (Shin & Bruno, 2003).

Both federal and private survey research organizations throughout the world are becoming increasingly aware of the potential bias inherent in the use of predominantly monolingual and monocultural survey instruments to measure diverse populations (Harkness, et al., 2004; McNally, 2000; Rogler, 1999). In recent years, the U.S. Census Bureau has made many strides towards providing multilingual survey instruments. For example, the 2000 Census of Population and Housing was available to respondents in five non-English languages: Spanish, Chinese, Korean, Vietnamese, and Tagalog. In addition, language guides were available in 49 languages and were used to assist respondents in filling out their answers on English language questionnaires. Previously, the 1990 Census had provided

paper questionnaires in English and Spanish and language assistance guides in 32 languages (Briggs, 2001). The Census Bureau has recently issued both a Translation Guideline and a Pretesting Standard, which will greatly improve the quality of newly created survey translations (U.S. Census Bureau, 2003, 2004).

2.2 Pretesting multilingual instruments

An examination of current practices related to multilingual surveys shows that, unfortunately, it is not common practice to pretest all language versions of a survey before it is finalized (Harkness, 2004; Willis, 2004; Potaka & Cochrane, 2004). Survey designers often do extensive pretesting of the original version of a survey, but there are a number of barriers to thorough pretesting of translations. First of all, pretesting is time-consuming and can require a great deal of financial resources. Pretesting multiple versions of a survey increases this burden. In addition, there is pressure for researchers to maintain question wording that has been used in the past. Historically, there has been a belief that translations should be kept as similar as possible to the original (Harkness, 2004). There are additional barriers to the extensive pretesting of multilingual surveys, such as difficulty in hiring the appropriate bilingual or multilingual pretesting staff, and difficulty recruiting respondents from various cultural and language groups (Willis, 2004).

Despite these challenges, there has been an increase in the number of multilingual instruments being pretested in recent years (e.g. Pan, 2004; Carrasco, 2003; Potaka & Cochrane, 2002, 2004; Coronado & Earle, 2002; Blumberg & Goerman, 2000; Kissam, et al., 1993). Many researchers have identified limitations in the use of widely accepted cognitive interview techniques when used with non-English-speaking populations in the United States.

2.3 Common cognitive interview methods

Widely accepted cognitive interview techniques include a variety of methods (Willis, 2005; Gerber, 2004; Pan, 2004; Sirken, et al., 1999). For example, many researchers use think-aloud protocols, for which respondents are asked to "think out loud" as they choose responses to survey questions, or fill out a paper questionnaire. In addition, there are a number of widely used cognitive interview probes. First of all, "meaning-oriented probes" are commonly used to ask about a respondent's interpretation of a term, phrase or entire question. A typical meaning-oriented probe would be, "What does the term *foster child* mean to you in this question?"

"Process-oriented probes" are those which ask a respondent to explain "the process by which [he or she] calculates an answer, decides between alternative answer categories, or makes a judgment about an answer" (Pan, 2004). A typical process-oriented probe would

read "How did you arrive at/choose that answer?" "Recall probes" are often used to determine ways in which a respondent recalls information; for example, one might ask, "How do you remember that *you've been living in your house for 17 years*?" A final example of a common cognitive interview technique is that of paraphrasing. In order to find out whether a respondent is interpreting a question in the way that survey designers intended, a "paraphrasing probe" would ask the respondent, "Can you tell me in your own words what this question is asking?"

2.4 Cognitive interview challenges

It is important to keep in mind that low educational level, English-speaking respondents in the U.S. have been found to have difficulty with cognitive interview techniques in general (Willis, 2005; Miller, 2003; Bickert & Felcher, 1996; Wellens, 1994). For example, Willis has found paraphrasing to be difficult for respondents with low educational levels. Bickart & Felcher and Wellens have found that low educational level respondents often have great difficulty in producing think-aloud protocols. However, it should be noted that Wellens' respondents with limited English proficiency were interviewed only in English.

Finally, a lack of experience with the survey interview context in general and difficulty with certain types of survey questions in particular have been shown to cause English-speaking respondents of low educational levels to experience great discomfort in the cognitive interview setting (Miller, 2003). Within the United States, many linguistically isolated people tend to have low levels of education, so in this context one must take care not to confound these two variables.

2.5 Cognitive interviews in non-English languages in the U.S.: Chinese speakers

Pan (2004) has found that a number of widely accepted cognitive interview techniques are problematic when adapted for use with Chinese speakers living in the U.S., regardless of their educational level. Pan conducted 10 cognitive interviews with Chinese-speaking respondents based on the Chinese paper and pencil version of the U.S. Decennial Census questionnaire. She found that regardless of their educational backgrounds, most of her immigrant respondents were not familiar with the social context of a survey interview. In many cases this caused them to interpret the task at hand as a sort of test, where they needed to provide the correct answer as opposed to their own interpretations or opinions of question wording. Despite her repeated attempts to explain the task at hand, respondents asked for constant reassurance and often exhibited defensiveness during the interview process.

Pan also found that standard cognitive interview probes were difficult to translate into Chinese and often cultural equivalents for the terms and concepts in question simply did not exist. She had difficulty getting respondents to understand and respond to both think-aloud instructions and process-oriented probes. Pan found that meaning-oriented probes were generally more effective with Chinese-speaking respondents. This type of probe was most effective when she asked respondents to describe their interpretation of specific words or phrases, but was often ineffective when she asked them about their interpretation of entire questions.

Most notably, Pan's respondents experienced these difficulties with cognitive interview techniques regardless of their educational level. She attributes many of their difficulties to differences in cultural frames of reference, differential experience with the survey process, and problems with the translation of the terms and concepts involved in typical cognitive interview probes. It remains to be seen whether and to what extent these findings will apply to other cultural and linguistic groups, such as Spanish-speaking immigrants in the United States, the focus of the present research.

2.6 Cognitive interviews in non-English languages in the U.S.: Spanish speakers

Researchers conducting cognitive interviews with Spanish-speaking respondents in the U.S. have also encountered difficulties in applying standard cognitive interview techniques to their respondents (e.g. Blumberg & Goerman, 2000; Coronado & Earle, 2002; Kissam, et al., 1993). None of these studies was specifically designed to evaluate cognitive interview techniques, but all mention difficulties encountered by the researchers.

Similar to Pan's findings with Chinese-speaking respondents, Coronado and Earle noted a great deal of difficulty in clarifying to Spanish-speaking respondents that the cognitive interview itself was not a "test." Many of their respondents expressed a lack of confidence and needed frequent reassurance that they were not answering incorrectly and even that they were not the "wrong" person to be serving as a respondent. Kissam, et al. (1993) similarly found that many of their Spanish-speaking respondents interpreted the cognitive interview as a "test" and that they expressed "anger, disgust or humiliation" at their own performance. A number of their respondents even asked that the tape recorder be turned off periodically, so as not to record their requests for clarification or assistance.

Coronado and Earle found that Spanish-speaking respondents had difficulty with meaning-oriented probes and most often repeated questions verbatim when asked to paraphrase them. In addition, people often became irritated with what they perceived to be the repetitive nature of the probe questions. Respondents also provided a great deal of extraneous commentary before getting to what the interviewers perceived to be the "point" of the questions.

In cognitive interviews of mainly undocumented Spanish-speaking immigrants in the U.S. for a Census Bureau study, I found that I had to spend inordinate amounts of time explaining the purpose of the interview and reassuring people about confidentiality (Blumberg and Goerman, 2000). In addition, the standard consent forms and payment vouchers used by the Census Bureau for the conduct of cognitive interviews were major stumbling blocks for some respondents, both in terms of difficulty reading them and in terms of respondents' fears about confidentiality. On the whole, a great deal of reassurance and extraneous conversation was necessary to put respondents at ease.

While increasing numbers of multicultural and multilingual surveys are being conducted and pretested, there remains a great deal of uncertainty as to the best practices and methods for pretesting different language versions of multilingual survey instruments. This paper outlines a research plan designed to examine the effectiveness of widely accepted cognitive interview techniques with Spanish-speaking respondents in the U.S.

3 Exploratory Research Plan

My exploratory study will have three phases and it represents the initial step towards the ultimate goal of building on our existing knowledge of how cognitive interview techniques can be used to develop and improve data-collection instruments. In particular, my research will focus on ways in which pretesting techniques can best be modified and adapted for use with non-English language data-collection instruments.

3.1 Research Phase 1

As a part of phase 1 of the research, I will conduct exploratory cognitive interviews with 20 monolingual, Spanish-speaking respondents of a variety of national origins or backgrounds (see Table 1). Ten of these respondents will be of lower educational levels, having less than a high school diploma or 12 years of schooling. The other ten respondents will have a high school level diploma or higher. I will conduct the interviews using classic think-aloud techniques and both concurrent and retrospective probing methods. Concurrent probes are questions asked throughout the course of a cognitive interview, immediately following each survey question. Retrospective probes are often asked as part of a debriefing section at the end of the cognitive interview. Many researchers use a combination of concurrent and retrospective probing within the same interview, for example, asking a block of survey questions followed by a series of probes.

I will create a cognitive interview protocol by translating common English language cognitive interview instructions and probes into Spanish.

Table 1 Summary of respondent characteristics for Phase 1 of the research

	Spanish speakers
Low educational level (-12 years)	10
High educational level (12+ years)	10
Total respondents	20

3.2 Research questions

The goal of this study will be to systematically identify some of the difficulties experienced by these respondents. Examples of my research questions are listed below.

1. How can the cognitive interview task best be introduced to Spanish-speaking respondents to avoid the perception of a "test" situation?
2. Are standard cognitive interview probes appropriate for Spanish-speaking respondents; do they make sense to them?
3. How are standard cognitive interview probes interpreted by Spanish-speaking respondents?
4. How can the goals of standard probes be better achieved for this population?

These interviews will be based on a segment of the CAPI (Computer Assisted Personal Interviewing) Spanish version of the U.S. Census Bureau's American Community Survey and will be conducted as a face to face, verbal interview. I have chosen the CAPI format for this study because this is the most effective mode of data collection for Spanish speakers living in linguistically isolated households in the U.S. (McGovern, 2004). In addition, the majority of Census Bureau surveys do not exist in multiple languages in paper form, and therefore CAPI interviewing is the most relevant mode of interview completion for many non-English speakers.

These interviews will include a debriefing section in which respondents will be asked their opinions on some of the cognitive interview techniques. The end product of this phase of the research will be a summary of the difficulties I encountered and a list of possible alternative techniques based upon both my findings and upon anthropological, sociolinguistic and survey methods literature.

3.3 Research Phase 2

The second phase of the project will involve the convening of a focus group of 4-5 bilingual (Spanish/English) expert cognitive interviewers. I will present the group with my findings from the first phase of the project, along with the list of possible alternative techniques that I have identified. I will seek to find out whether the experts have encountered the same issues while conducting interviews in Spanish or English, and ask them to describe adaptations that they have used successfully in the past. Finally, I will ask for their feedback on the alternative methods and solicit additional recommendations. Using the findings from the preliminary interviews and the focus group, I will construct a new cognitive interview protocol for the same series of American Community Survey questions.

3.4 Research Phase 3

Finally, using the new protocol, I will conduct 20 Spanish-language cognitive interviews with new respondents of similar demographic characteristics to those in Phase 1 in order to explore the use of the alternative techniques that we have identified. See Table 2 for a summary of the respondents' characteristics for Phase 3 of the study. I will then examine both the reactions of respondents to the cognitive interview probes and the type of information that this new type of interview elicits from them.

Table 2 Summary of respondent characteristics for Phase 3 of the research

	Spanish speakers
Low educational level (-12 years)	10
High educational level (12+ years)	10
Total respondents	20

This exploratory research will offer insight into methods for the development of appropriate techniques for conducting cognitive interviews for use in the development of multilingual and multicultural survey instruments.

4 Research Currently Underway at the U.S. Census Bureau

4.1 Changes to the research plan

Since I presented the above research plan at the Third International Workshop on Comparative Survey Design and Implementation in March of 2005, the project has evolved in a number of ways and the research is currently underway. First of all, I have reduced the scope of the study to include only one research phase. The research is now comprised of the conduct of a total of 40 exploratory cognitive interviews; 20 with monolingual Spanish-speaking respondents and 20 with monolingual English-speaking respondents. I have included English-speaking respondents in the study in order to compare the efficacy of common cognitive interview techniques across language/cultural groups and across educational levels. See Table 3 for a summary of my respondents' characteristics.

Similar to the original proposal, the cognitive interviews are based on a segment of the CAPI version of the U.S. Census Bureau's American Community Survey. The interview protocols now include an extensive debriefing section in which I collect information about respondents' backgrounds and experience with surveys. This enables me to create a case study of each respondent, in order to examine differences in their experience and comfort level with the survey process.

4.2 Nationality/ethnicity of respondents

In order to reduce linguistic variability due to national origin and ethnicity, I have restricted my sample to Mexican immigrants and native born (U.S.) non-Hispanic, white English-speakers. All interviews are being conducted in Texas, West Virginia and the Washington, D.C. metro area.

Table 3 Summary of respondent characteristics for current research

	English speakers	Spanish speakers
Low educational level	10	10
High educational level	10	10
Total respondents	20	20

4.3 Research questions

My current research examines cognitive issues, status issues, and sociolinguistic issues, and includes a number of research questions. Examples of my research questions are listed below.

Cognitive issues

1. What kind of introduction works best to explain the purpose of the cognitive interview to Spanish and English-speaking respondents of different educational levels?

Status issues

2. How do perceived status differences between the interviewer and the respondent affect rapport between the two parties?
3. What are the most effective ways to minimize perceived differences in status between interviewer and respondent?

Sociolinguistic issues

4. Does the cognitive interview interaction go more smoothly when the interviewer engages in small talk with the respondent for a time before beginning the interview? Is this true for some respondents and not others?
5. What types of respondents have more difficulty with common probe wording?
6. Are there alternative probes that work best with specific types of respondents?

Implications for future non-English language cognitive interview projects

7. Do these findings suggest any information about the type of training that would be useful for new cognitive interviewers who will conduct interviews in non-English languages?

4.4 Evaluation of results

All interviews are being tape recorded and transcribed, and I am doing systematic text analysis to evaluate the results. I am coding interviews for things such as whether a given probe or explanation was understood by the respondent the first time he/she heard it, whether a probe caused respondent discomfort, whether probes needed to be rephrased for respondent comprehension, whether the respondent was able to answer the probe in a manner consistent with interviewer expectations, and whether the probe elicited useful information for evaluation of the survey question.

4.5 Results

On the whole, the results of this research should add to our "tool kit" of cognitive interview techniques and should aid in the development of cognitive interview protocols in Spanish and other non-English languages. I will be presenting preliminary results of this research at the Federal Committee on Statistical Methodology Research Conference, November 14-16, 2005 in Washington, D.C.

5 Future Applications of the Present Research

This exploratory research is not expected to provide conclusive results, but it will offer insight into methods for the development of appropriate techniques for conducting cognitive interviews for use with multilingual survey instruments. Future applications of this research include the expansion of these methods to the conduct of cognitive interviews with survey instruments in additional languages and to the use of other pretesting methods such as focus groups, expert review and behavior coding for the development and testing of multilingual instruments.

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