USING COGNITIVE INTERVIEWING FINDINGS TO EXPLORE THE RELATIONSHIP BETWEEN ACCULTURATION AND SURVEY RESPONSE

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This paper presents the results of a qualitative study conducted to examine whether variations in time living in the U.S. and language preference for interview are related to comprehension and response problems in survey items focusing on physical activity and adaptation to American/Anglo culture. By examining the kinds of problems or issues in survey response coming from respondents who had been in the US differing amounts of time and who either preferred to be interviewed in Spanish or English, we can begin a discussion about how we can further move away from a "one-size-fits-all" perspective on survey design (See Harkness et. al, 2003) and better account for the complicated role of acculturation, "…the process of adopting the cultural traits or social patterns of another group,[1]" in survey response in our design of survey items.

1. BACKGROUND

As background for our methods and findings discussion, we provide a brief overview of two issues: why it is important to examine the way variations in acculturation influence survey response and why a cognitive interviewing setting is appropriate for addressing this question.

Examining Variation in Acculturation as Influences on Survey Response

The implicit assumption in survey data is that the respondent understands the question you are asking. When you are working across cultures and languages, this is more complex than it seems. Language, syntax, grammar, and word choice can all play into seemingly similar questions and response sets yielding entirely different interpretations than expected. (See Harkness and Schoua-Glusberg [1998] for a discussion of this issue.) A systematic translation process that takes into account all these factors promotes shared item comprehension and thereby comparable data. (See Forsyth et. al, 2007 for an example of this process.) However, it is not clear to what degree we need to consider variation in acculturation across target groups of respondents as part of this systematic translation process.

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[1] Acculturation. (n.d.). Dictionary.com Unabridged (v 1.1). Retrieved April 05, 2008, from Dictionary.com website: http://dictionary.reference.com/browse/acculturation

While the concept of acculturation as a construct as well as a predictor of health status is fraught with definitional and measurement issues (for example, Abriado-Lanza, 2006; Hunt et al, 2004) and its simple assessment as nativity, length of stay in the United States, or language has been criticized as providing constricted measures of a much fuller and more complex concept (Abriado-Lanza, 2006), its usefulness as a tool, even broadly measured, to better understand survey response is intuitive. It is clear that adapting to any new country (and its system of meaning) takes time. Immigrants do not arrive in their country of destination all at once. Once they do arrive, it is unlikely that all acculturate or accommodate the majority culture at the same pace. They do not all learn the new language and culture at the same pace or in the same ways. It, therefore, seems prudent for survey developers to consider the degree of acculturation (measured and conceptualized in many ways) of both their pre-testing respondents and ultimate intended respondents in order to achieve the desired level of "perfect fit" between the respondents and survey. For example, if respondents during the testing of the survey items have assimilated to the majority culture, however defined, more thoroughly than the ultimate target population, the final data could reflect unidentified comprehension problems. Concepts that the pre-test respondents find clear may reflect their longer time in the host country (or clearer understanding of host country terminology) and might be troublesome for less acculturated respondents.

The purpose of this study was to begin to test these ideas by assessing the variation in survey item problems associated with acculturation. We measure acculturation in two ways combining them to form three test groups. We look at language of preference for the interview and time in the United States as two indicators of acculturation: (1) Group 1 included 9 respondents who preferred Spanish for the interview and had been in the U.S. for less than 5 years, (2) Group 2 included 9 respondents who preferred Spanish and had lived in the U.S. for 15 or more years, and (3) Group 3 included 9 respondents who preferred English for the interview and had lived in the U.S. for 15 or more years. Our assumption is that each group represents increasing levels of acculturation. By looking at the number and types of problems identified in survey responses by these conditions, we hope to gain insight into the role of language and cultural adaptation or acculturation in survey response.

Using Cognitive Interviewing to understand influences on survey response

Cognitive interviews are commonly used in the U.S. and Western Europe in the pretesting of draft questionnaires. They help survey developers identify problems respondents have understanding and answering draft questionnaire items and to develop revised items that enhance understanding and response accuracy. In a cognitive interview, the interviewer typically administers draft questionnaire items to a cognitive interview respondent who answers them. The interviewer uses a cognitive interview script to administer additional probe items in order to gather additional information from the respondent about how they interpret the question, how they go about remembering the information requested, and how they select a response. Typically, cognitive interview probes focus on difficulties respondents have understanding, remembering, or answering the draft questionnaire items.

Because cognitive interviews have been very useful for pretesting questionnaires, researchers have extended the methods for the purposes of pretesting questionnaire translations and pretesting wordings for questionnaires designed to be administered in cross-cultural settings. This extension has helped to identify striking issues related to conceptual non-equivalence (e.g., Willis et. 2005;

Carrasco, 2003; Schoua-Glusberg, 2006; Napoles-Springer et al., 2006), particularly when methodological refinements are used to circumvent anticipated cognitive interview difficulties (Goerman, 2006).

In fairness, there is some debate about this use of cognitive interviewing. Some have suggested using cognitive interview pretest methods cautiously for these broader, cross-language and cross-culture purposes because the act of the very process of cognitive interviewing may be fraught with cultural/conceptual nonequivalence. For example, Pan (2003) observed that the indirect communication styles prevalent in some Asian cultures may make it difficult for cognitive interview respondents to answer traditionally direct cognitive interview probe questions. In addition, Pasick and colleagues (2001) and Goerman (2006) both reported culture- or language-related differences in how respondents interpreted some cognitive interview probe questions.

Even given these limitations, we believe that the use of cognitive interviewing techniques can provide significant insight into issues in understanding of survey questions within and across cultures and language groups and across respondents with varying levels of acculturation.

2. STUDY DESIGN AND RESEARCH METHODS

The data were collected by Westat, a survey research company in the Washington DC area, for the National Cancer Institute. The survey questions focused on physical activity (e.g., frequency of physical activity, walking, other types of exercise) and acculturation or the degree to which respondents have adapted to the American/Anglo culture (e.g., language spoken with friends, thinking of self as American). (See Appendix A for a list of survey items.) The physical activity questions were translated into Spanish previously as part of the NHIS 2005 Core and 2005 NCI Supplement; the acculturation questions were not previously translated. In preparation for cognitive testing, the acculturation questions were translated by a native Spanish speaker of South American origin. The survey translation standards used by the Census Bureau (2004) and the European Social Survey (2002) recommend following the initial translation step with separate review and adjudication steps (also see Forsyth et al., 2007). Following these guidelines, two independent reviewers examined the newly translated acculturation questions as well as the previously translated physical activity questions. Following this review, a meeting was held where an adjudicator made all final decisions about translation issues that were raised during the review process.

Cognitive interviews were conducted by trained cognitive interviewers bi-lingual in Spanish and English. The interviewers administered the draft questionnaire using concurrent cognitive interviewing and probing techniques. Three rounds of cognitive interviewing were conducted with 27 total respondents. Respondents were recruited into three groups:

- ° Group 1 included 9 respondents who preferred Spanish for the interview and had been in the U.S. for less than 5 years,
- ° Group 2 included 9 respondents who preferred Spanish and had lived in the U.S. for 15 or more years, and
- ° Group 3 included 9 respondents who preferred English for the interview and had lived in the U.S. for 15 or more years.

Respondents were from a range of Hispanic and Latino national backgrounds, Spanish speaking or bi-lingual, born somewhere other than the United States, and a mix of ages and education levels. Table 1 in the Appendix B to this paper presents demographic characteristics of these respondents.

3. ANALYSIS AND RESULTS

We used a four-step qualitative analysis process. This process reflects recommendations by Conrad and Blair (2004) that pretest analyses should be structured first to interpret interview results and identify problems and then to code identified problems by type. The four steps are described in the bullets below:

- ° Step 1—we reviewed the audio taped interviews and summarized key findings by item separately for each cognitive interview respondent;
- ° Step 2—we identified and classified problems separately for each interview;
- ° Step 3—we cataloged problems and issues observed across interviews; and
- ° Step 4—we compared counts of problem items and problem types by level of acculturation and question topic area.

In Step 2, analysts identified an item as having problems or issues when an interview summary contained evidence of response error or the potential for extraneous response variance due to difficulties understanding the question (or related concepts), or difficulties selecting a response. Analysts then classified the problems as either (1) a translation issue caused when translated item wording was difficult to understand or altered the intent of the original question, (2) a culture- or language- specific related issue caused when an item's intended meaning was difficult to convey using cultural constructs or when item interpretation was affected by cultural conventions, (3) a general cognitive issue, when respondents reported difficulties that might be related to comprehension, recall, or response selection that seemed independent of culture or language, or (4) a mixed issue caused by a combination of translation, culture-related and/or generic issues. Analysts then applied a second-level code to describe the problem or issue in more detail.

Results

The specific research questions we addressed as we reviewed the results of the analysis were the following:

1. Is variation in the number and type of problem identified with survey items dependent on the time participants had been in the United States or their language preference for the interview (i.e., Spanish or English) or a combination of the two conditions (i.e., Spanish preference less than 5 years in U.S., Spanish preference more than 15 years in the U.S., English preference more than 15 years in the U.S.)?
2. Is variation in these problems related to the content of the questions (i.e., acculturation and physical activity) and is that variation related to the conditions described above (i.e., language preference for the interview, time in U.S., and three combined conditions)?

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Table 1 below presents the percentages of tested items identified as having one or more problems or issues, by general problem type, question topic area, and acculturation design condition.

Table 1. Percent of tested items with one or more problem by general problem type, question topic area and acculturation design condition[2]

| | Percent of tested items with one or more problem | | | |
	Translation	Culture-related	General Cognitive	Mixed
Design condition				
Physical activity items				
Spanish; short time	0%	12%	56%	6%
Spanish; longer time	6%	12%	50%	6%
English; longer	0%	0%	50%	0%
# Items tested = 16				
Acculturation items				
Spanish; short time	3%	31%	62%	3%
Spanish; longer time	3%	24%	38%	3%
English; longer time	0%	24%	45%	3%
# Items tested = 29				

In general, these analyses indicate that translation problems and mixed-type problems were uniformly low across acculturation conditions and question topic areas. On the other hand, generic problems were more common than either culture-related or translation problems and this general result held for all three acculturation design conditions and both question topic areas. The fact that culture-related problems were more common for acculturation items than for physical activity items is an important finding that will be addressed later in this paper (Question 2).

QUESTION 1: Is variation in the number and type of problem identified with survey items dependent on the time participants had been in the United States or their language preference for the interview or a combination of the two conditions?

Using Table 1, it seems clear that there are some systematic relationships between proportion of items with problems and time spent in the U.S. and language preference for the interview:

    ° Generic problems are more common than the other types of problems and appear to decrease with time spent in the U.S.

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[2] Spanish; short time = respondents who preferred to complete interviews in Spanish and who lived in the U.S. less than 5 years. Spanish; longer time = respondents who preferred to complete interviews in Spanish and who lived in the U.S. 15 years or more. English; longer time = respondents who preferred to complete interviews in English and who lived in the U.S. 15 years or more

- ° Culture- or language-related problems are less common and slightly decrease with time spent in the U.S. The decrease is most clear for the acculturation items because culture- or language-related problems were generally more prevalent for the acculturation items.
- ° Language preference appears to only be marginally important and that is for the physical activity items only.
- ° As might be expected, the group that preferred Spanish and had been here the shortest time consistently had as many or more problems than the other groups with one exception. This exception involved translation problems with the physical activity items.

General cognitive problems were the most common and, for the acculturation items, appear to decrease with time in the U.S. Interviewer difficulties made up a large number of the general cognitive problems or issues identified. A single item format seemed to cause most of these interviewer difficulties. The item below illustrates the format. In these items, interviewers used a closed set of categories to code open-ended responses.

A9a.   Where was your mother born? (RESPONDENTS REPORT AN OPEN-ENDED ANSWER AND INTERVIEWERS CIRCLE A NUMBER TO CODE THE RESPONSE).

UNITED STATES... 1
MEXICO.. 2
CUBA.. 3
PUERTO RICO 4
DOMINICAN REPUBLIC.................................... 5
CENTRAL AMERICA (Name of Country)   6
SOUTH AMERICA (Name of Country)   7
OTHER 8
DK 9

Six of the 29 acculturation items used this general format. The format was difficult for interviewers because respondents often reported the names of villages, towns or regions. If interviewers were unfamiliar with the countries respondents meant to refer to, then additional unscripted probing was necessary to identify the appropriate country or territory.

In reviewing these issues by group, we found that there was a decrease in problems dependent on how long the participant had been in the U.S. and a further decrease for those who also preferred to be interviewed in English. For those with less than 5 years in U.S., all respondents answered with the name of their village or town. Among those who were interviewed in Spanish but had been in the U.S. at least 15 years, 6 respondents answered with the name of the country, and only 2 with the town or state. But for those who were interviewed in English and had been in the U.S. for at least 15 years, all respondents answered with the name of the country

The culture-related problems also provide some interesting examples of how interpretation may vary depending on how long the respondent has been in the U.S and the language preference for interview. One example of a culture-related issue that was related to time spent in the US and more weakly related to language of preference for the interview was a problem with question wording. This problem focused on the term "Anglo" that was used in two questions.   The

questions asked "When you were growing up, how many of your friends were of Anglo origin?" and "How many of your friends now are of Anglo origin?"

Most respondents who lived in the U.S. less than 5 years were unfamiliar with the term "Anglo". Some respondents who lived in the U.S. 15 years or more and who preferred to complete the interview in Spanish were also unfamiliar with the term "Anglo." Not surprisingly, the term was familiar to all respondents who preferred to complete the interview in English. Interestingly, even the respondents who were familiar with the term "Anglo" interpreted it somewhat differently. In response to cognitive interview probes, respondents interpreted "Anglo" as "from another nationality" (e.g., "non-Salvadoran; non-Puerto Rican"), "those who speak English", "non-Hispanic", "white" or "Caucasian"; "born in the U.S."; "white American"; "North American"; "of English descent"; and "northern European" (e.g., France, Germany, Holland, Switzerland).

Because of the multiple interpretations of the word, "Anglo", we recommended that "Anglo" be replaced with alternative, well-defined terms that make intended measurement goals clearer (e.g., "non-Hispanic ancestry"; "northern European ancestry (e.g., France, Britain, Poland, Norway)"; "U.S.-born, including U.S. born Hispanic").

A second example of a culture-related problem is more complex and, in part, somewhat counter-intuitive. This issue involves the term "ethnic identification" and the response choices offered when there is no response to the open-ended question "What ethnic identification (does/did) your mother use?" The term "ethnic identification" in the item was unfamiliar to several respondents in all three design conditions. Many respondents inferred that the term meant to refer to ethnic background either from the question context or from the response categories in follow-up item. A few respondents who lived in the U.S. less than 5 years inferred an unexpected meaning for the item. These respondents hypothesized that the item on "ethnic identification" was a question about official paperwork related to proving citizenship or legal status.

We suggested as a result of the testing that the questionnaire avoid terms referring to "identification" that may have unintended interpretations or connotations, particularly for less acculturated and potentially more vulnerable respondents

Testing of the follow-up question when respondents do not reply to the question about the ethnic identification of their mother yielded some interesting, if counterintuitive findings. The follow-up question is:

Would you say you are:

Latino, ...
Hispanic, ...
American, ...
North American, ...
Cuban, ...
Mexicano, or
Something else? (Specify): _____

Respondents who lived in the U.S. less than 5 years were familiar with the terms for ethnic background used in the follow-up item. Several respondents in the two groups who lived in the U.S. 15 years or more did not identify with any of the response options.. They mentioned that the response options consisted of U.S. terms that had no meaning for them until they immigrated to the U.S. Respondents observed that these labels over-simplify ethnic background, by glossing over important distinctions among groups from different regions and groups with different nationalities. This example suggests that items on ethnic background may have subtly different meanings for more and less acculturated respondents.

QUESTION 2: Is variation in these problems related to the content of the questions) and is that variation related to the acculturation groupings?

Relations between culture- or language-related problem frequency, language preference and time in the U.S seem to be related to question topic. Time in the U.S. seems most important for reducing culture-related problems among acculturation items. Language preference seems somewhat more important for reducing culture-related problems among physical activity items; however, these problems were minimal.

Our examples above focused on time in the U.S. and its impact on problems with acculturation items. Two examples of the somewhat tenuous relationship between language preference and culture-related problems for the physical activity items are problems with culture-related problems with question wording or specifically, the terms weekday and weekend. Testing indicated that these were vague or ambiguous terms for respondents.

When asked the following questions:

 Outside of work, how many hours do you spend per day during **WEEKDAYS** sitting?

Outside of work, how many hours do you spend per day during the **WEEKEND** sitting?

Some respondents who preferred Spanish for the interview told us that they were thinking of everyday, 5-6 working days (1 year in the U.S. and 14.5 years in U.S.) or that day (17 yrs in the U.S.) when asked about weekday (that specific term) and that weekend included only Sunday (1 year in the U.S. and 17 years in the U.S.) or it included Friday, Saturday, and Sunday (14.5 years in U.S.), for one respondent.

4. SUMMARY AND CONCLUSIONS

In general, this cognitive interviewing study supported our hypothesis that levels of acculturation would make a difference in the kinds of issues and survey problems we would identify. Both our quantitative analysis and one of our examples demonstrates this support. As respondents spent longer in the U.S., culture-related and generic problems decreased. Whether these findings can be explained by increasing comfort with U.S. culture and terminology or increased comfort with the survey process cannot be determined at this point but certainly warrants further consideration to ensure that they can be considered in the control of response error.

Our second example, however, provides an interesting and provocative story that is counter to this finding. In the case of ethnic identities, our more acculturated respondents, regardless of language preference, had issues with the response choice where their "less-acculturated" counterparts did not. This counter-intuitive finding even more strongly suggests that unidentified and unexpected differences in survey response related to acculturation are an important component of response error that must be addressed.

Importantly, it seems that culture-related problems, the ones we might specifically expect to be related to acculturation, were significantly more common in the questions about culture and acculturation than in the question about physical activity. It may be that that unidentified and unexpected differences in survey response related to acculturation are an important component of response error that must be addressed only for some content areas. This too warrants further consideration.

We must remind you that we have interpreted issues identified by cognitive testing as indicators of "problems" with the survey or respondent interpretation that may affect conclusions drawn from the data. It is clear that these issues were problems for the cognitive interview respondents. We do not have either survey data or a gold standard by which to verify that issues we identified through cognitive interviews are real problems in fielded interviews. Further research is needed on this complex issue to determine the degree to which variations related to acculturation may affect interpretation of survey questions.

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APPENDIX A

Acculturation Items

1.   Language Items

In general, which language do you speak?
Which language did you use as a child?
In general, which language do you read better?
Which language do you usually speak at home?
Which language do you usually speak with your friends?
In which language do you usually think?
In which language are the radio programs you usually listen to?

2.   Information about Parents, Grandparents and Respondents

Where was your mother born?
Where was your father born?
Where was your mother's father born?
Where was your father's father born?
Where was your mother's mother born?
Where was your father's mother born?
What ethnic identification (does/did) your mother use? (if not answer, followed by Would you say you are…)

3.   Information about Friends and Neighbors

When you were growing up, how many of your friends were Hispanic?
When you were growing up, how many of your friends were of Anglo origin?
How many of your friends are now of Anglo origin?
How many of your friends are now of Hispanic origin?
Currently your circle of friends is….
Which of the following best describes the people in your neighborhood….

4.   Respondent Attitudes about Self

I think of my self as being U.S. American…
I feel good about being U.S. American….
I think of my self as being _____
How strongly do you think of yourself as being _____
How do you feel about being _____
How proud are you of your Hispanic background?

5.   Questions about Behaviors

How often do you eat Hispanic foods?

How often do you celebrate in Hispanic tradition?

Physical Activity Items

How often do you do VIGOROUS leisure-time physical activities for at least 10 minutes that cause HEAVE sweating or LARGE increases in breathing or heart rate?

About how long do you do these vigorous leisure-time physical activities each time?

How often do you do LIGHT or MODERATE LEISURE-TIME physical activities for AT LEAST 10 MINUTES that cause ONLY LIGHT sweating or a SLIGHT to MODERATE increase in breathing or heart rate?

About how long do you do these light or moderate leisure-time physical activities each time?

How often do you do LEISURE-TIME physical activities specifically designed to STRENGTHEN your muscles, such as lifting weights or doing calisthenics?

During the PAST SEVEN DAYS, did you walk to get to some place that took you AT LEAST 10 MINUTES?

During the PAST SEVEN DAYS, ON HOW MANY DAYS did you walk for at least 10 minutes at a time to get to some place such as work, school, a store, or restaurant?

Sometimes you may walk for fund, relaxation, exercise, or to walk the dog. During the PAST SEVEN DAYS, DID YOU WALK FOR AT LEAST 10 MINUTES AT A TIME for any of these reasons?

During the past seven days, on how many days did you walk for at least 10 minutes at a time for fun, relaxation, exercise, or to walk the dog?

How much time did you spend walking on that day for FUN, RELAXATION, OR EXERCISE?

How much time did you usually spend on one of those days walking for FUN, RELAXATION, or EXERICISE?

Which one of the following BEST describes your usual daily activities related to moving around? Do NOT include exercises, sports, or physically active hobbies done in your leisure time.

Which one of the following BEST describes your usual daily activities related to lifting or carrying things? Do NOT include activities done in your leisure time.

Outside of work, how many hours do you spend during the day during WEEKDAYS sitting?

How many hours do you spend per day during WEEKDAYS sitting?

Outside of work, how many hours do you spend per day during the WEEKEND sitting?

How many hours do you spend during the WEEKEND sitting?

During the PAST 12 MONTHS, did a doctor or other health professional RECOMMEND that you BEGIN or CONTINUE to do any type of exercise or physical activity?

APPENDIX B

Table 1. Demographic characteristics of cognitive interview respondents

	Condition 1 Spanish; short time	Condition 2 Spanish; longer time	Condition 3 English; longer time
Gender			
Male	5	4	4
Female	4	5	5
Hispanic Subgroup			
Caribbean	1	1	1
Central American	3	3	3
South American	2	2	2
Mexican	3	3	3
Level of Education			
0	1	0	0
1-6	3	0	0
7-8	1	0	0
9-12	2	7	4
College graduate	1	2	4
Technical School	1	0	2
Age			
18-29 yrs	2	1	1
30-39 yrs	1	3	2
40-49 yrs	4	3	3
50-59 yrs	1	1	2
60+ yrs	1	1	1
Interview Location			
Rockville, MD	9	6	7
Denver, CO	0	3	2