

Cognitive testing as a method of pre-testing questionnaires in high and low context cultures: a comparison of Korean and English cognitive interview data

Hyunjoo Park and Mandy Sha, RTI International

Yuling Pan, U.S. Census Bureau

ABSTRACT

More and more, survey materials are translated from English into non-English languages. To ensure that the translated texts are delivered as intended, it is recommended that translated survey materials be pretested. Cognitive interviewing has been widely used as an effective tool to pretest questionnaires and detect problematic survey questions. However, there is little existing research about cognitive interviewing in languages other than English. Recent research identifies new challenges and methodological issues due to the differences in cultural assumptions and linguistic strategies that speakers of non-English languages bring into the cognitive interviewing setting (Pan et al., 2008). For the current study, we will compare Korean and English cognitive interview data to determine whether the survey question problems that are detected in the English cognitive interviews can also be found in the Korean cognitive interview data. The data for this study come from a cognitive testing project undertaken at the U.S. Census Bureau in which we conducted a total of 109 cognitive interviews with monolingual speakers of five languages: English, Chinese, Korean, Russian, and Vietnamese.

We selected the Korean language because of its difference from the English language in terms of its language and culture. Korean culture has been described as “high context” culture meaning that Korean speakers rely heavily on contextual elements, background information, and interpersonal cues in their communication. In contrast, the English language and culture are regarded as “low context” where communication relies more on facts and information; that is, the actual content of the message is more important than when, how, and by whom it is expressed (Hall 1959, 1976 and Hall and Hall 1987). Thus,

a varying degree of efforts to elicit enough details and clarify information may be necessary when conducting cognitive interviews in Korean where the Korean social and cultural context is in play. Yet, in general, cognitive interviewing has been implemented in the communicative norms of English and Western culture where directness and openness in expressing one's opinion is a preferred communication style (Pan et al., 2008). Despite the different expectations in communication pattern between the English and the Korean languages, we hypothesize that if these cognitive interviews identify similar survey question problems in high context (Korean) and low context (English) languages, it would suggest that cognitive interviewing may be a valid method to pretest questionnaires in high context languages.

1. Introduction

With the growth of multinational and cross-cultural surveys, more and more survey materials and instruments are translated from English into non-English languages. To ensure that the translated documents convey the intent and effect of the English text, best practices suggest pretesting translated survey materials.

Cognitive interviewing has been widely used as an effective tool to pretest questionnaires and detect problematic survey questions (Willis 2005; Conrad and Blair 1996; Carter and Schwede 2007). Its application to translated questionnaires is recommended by the U.S. Census Bureau, particularly, the Census Bureau Pretesting Standard (U.S. Census Bureau, 2003) and the Census Bureau Guideline for Translation (U.S. Census Bureau, 2004 and Pan et al., 2005).

Cognitive interviewing in languages other than English is an area of growing interest (Goerman and Caspar 2007) and recent research showed the effectiveness of cognitive interviews to test Spanish Instrument and proposed testing the source version (English) as a basis for comparison (Goerman, 2005). Another line of research identified new challenges and methodological issues of cognitive interviews in non-English languages. Specifically, speakers of non-English languages bring different cultural assumptions and linguistic strategies into the cognitive interviewing setting (Pan, 2004, Pan et al., 2005, Pan et al., 2007, Pan et al., 2008a, Pan et al., 2008b). The current study contributes to this new line of literature and explores the effectiveness of cognitive testing as a method to pretest translated survey questionnaires and materials.

For the current study, we will compare Korean and English cognitive interview data to determine whether survey question problems that are detected in the English cognitive interviews can also be found in the Korean cognitive interview data. The data for the current study come from a cognitive testing project undertaken at the U.S. Census Bureau involving English and four non-English languages: Chinese, Korean, Russian, and

Vietnamese. We selected the Korean language because of its difference from the English language in terms of its language and culture.

The Korean culture has been described as “high context”, meaning that Korean speakers rely heavily on contextual elements, background information, and interpersonal cues in their communication. In contrast, the U.S. culture is described as “low context” where communication relies more on facts and information; that is, the actual content of the message is more important than when, how, and by whom it is expressed (Hall 1959, 1976 and Hall and Hall 1987). Thus, a varying degree of efforts to elicit enough details and clarify information may be necessary when conducting cognitive interviews in Korean where the Korean social and cultural context is in play. For example, in Korean cognitive interviewing, the interviewers may need to ask additional probes. This is because demonstrative pronouns (e.g. this, that, or those) are often used in colloquial Korean conversations. Interpreting what these demonstrative pronouns represent may be difficult without conversational context and clarifications.

Yet, in general, cognitive interviewing has been implemented in the communicative norms of English and Western culture where directness and openness in expressing one’s opinion is a preferred communication style (Pan et al., 2008). Despite the different expectations in communication patterns between the English and the Korean languages, we hypothesize that if these cognitive interviews identify similar survey question problems in high context (Korean) and low context (English) languages, it would suggest that cognitive interviewing may be a valid method to pretest questionnaires that have been translated into high context languages.

In the sections to follow, we will provide background information about the project and describe the method that we used for this research followed by data analysis and results. We will conclude with a brief discussion of limitations of this research. The goal of the paper is to investigate the effectiveness of cognitive interview in high context languages.

2. Methodology

We used data from a cognitive testing project undertaken at the U.S. Census Bureau in which we conducted a total of 109 cognitive interviews in five languages: English, Chinese, Korean, Russian, and Vietnamese. The primary objective of the cognitive testing project was to test the translated 2010 Census form. The 2010 Census form is a self-administered mail-out/mail-back questionnaire that asks about the number of people in a household and their names, relationship to the householder, Hispanic origin, race, and housing situations. The cognitive interview respondents spoke little or no English but were native speakers of Chinese, Korean, Russian and Vietnamese. In order to gauge whether the same survey question problems occur in the census form in the English language, additional cognitive interviews were conducted in English. A Panel of Experts was organized for each language to review the cognitive findings and recommend alternative wording of translations. These language experts also served as the cognitive interviewers.

Sixteen English cognitive interviews and twenty three Korean cognitive interviews were completed by bilingual cognitive interviewers over two rounds of interviewing. They took place in the Greater Washington D.C. area and Illinois between February 2008 and April 2008. The two sites were selected specifically because they are close to the research teams geographically and because these sites have sufficient concentrations of the target populations. The 2006 American Community Survey (ACS) CAPI data were used to identify the characteristics of the persons who would most likely need to use a translated 2010 Census Form. These characteristics were used to develop respondent recruiting profiles. The demographic information of the cognitive interview respondents is summarized in table 1.

Each cognitive interview was administered using a protocol guide that included a list of standard probes and instructions. The respondents were first asked to fill out the census form by themselves as if they had received it at home via mail. Then they were asked to read certain texts aloud and to answer probing questions which were developed to test

respondents' comprehension and reaction. Hypothetical vignettes of household composition were also administered to evaluate the respondents' understanding of the terms used to describe different relationships between household members and Person 1 (the adult household member who is listed first on the form). The English interview protocol was developed first and then translated into the target languages. The Korean protocol guide included additional probing questions to address Korean language-specific issues. In the first round, we focused on comprehension issues. Whenever possible, we also tried to evaluate the respondents' understanding of form navigation and issues of item nonresponse. The second round of cognitive interviewing tested changes made to the Korean translation based on the results from the first round.

Table 1. Demographics of English and Korean interview respondents

Characteristic	English Interviews	Korean Interviews
Educational attainment		
Completed level of school or degree that is...		
Less than high school graduate	2 (12.5%)	3(13.0%)
High school graduate and no college degree	10(62.5%)	10(43.5%)
college graduate	4(25.0%)	10(43.5%)
Race		
White	12(75.0%)	0(0.0%)
African American	4(25.0%)	0(0.0%)
Other	0(0.0%)	23(100.0%)
Gender		
Male	8(50.0%)	11(47.8%)
Female	8(50.0%)	12(52.2%)
Age		
34 or younger	5(31.3%)	3(13.0%)
35–54	5(31.3%)	9(39.1%)
55 or older	6(37.5%)	11(47.8%)

Characteristic	English Interviews	Korean Interviews
Place of Birth		
Born in Korea	0(0.0%)	23(100.0%)
Born in U.S. or other	16(100.0%)	0(0.0%)
Year of Entry		
Living in U.S. 1 year ago	N/A	21(91.3%)
Not living in U.S. 1 year ago	N/A	2(8.7)
Total	16	23

To address issues specific to the Korean language, additional probing questions were developed for the cognitive interviews that were to be conducted in Korean. However, we limited our comparison to probing questions included both in the English interviews and the Korean interviews for this paper. These are 10 demographic questions on the Census Form and hypothetical questions asking about relationship terms to the householder with Vignettes. This was done to better serve our research purpose of comparing cognitive interviewing data collected in the two languages. Appendix A shows the list of Census questions and the related probing questions that we included for our analysis.

Prior research that evaluates the method of cognitive interviewing varied in their research contexts. For example, Stein and Memom (2006) evaluated the efficacy of cognitive interviews in eliciting more information from witness as police interviewing. For the data analysis of the current study, we adopted the method developed by Conrad and Blair (1996). Specifically, they developed a coding scheme that requires coders to systematically consider a broad set of criteria in evaluating the verbal report for each survey question. This method can be used to analyze cognitive interview data and identify survey questionnaire problems. It serves the purpose of our research well, as we compare the problems of survey questions identified in the English and Korean cognitive interviews.

3. Data Analysis

Conrad and Blair's five problem categories evaluate lexical problems, inclusion/exclusion problems, temporal problems, logical problems, and computational problem. Below is a short summary of each problem category. The detailed definition of each problem category can be found in Conrad and Blair (1996).

- 1) Lexical problems have to do with not knowing the meaning of words or how to use them. For example, a respondent does not know what "spatial" means in "spatial abilities" or is not familiar with idioms such as "the lion's share".
- 2) Inclusion/exclusion problems arise in interpreting the scope of a term or concept. This type of problem also involves word meanings but is more closely related to determine whether certain concepts are considered within the scope of a word in the question. These are sometimes special cases of lexical problems. For example, when a respondent includes "chiropractors" when interpreting "doctors" in the question while the author intends to include only "physicians", this is an inclusion/exclusion problem.
- 3) Temporal problems are related to the time period to which the question applies or the amount of time spent on an activity which is described in the survey question. When a respondent interpret the phrase "in the last year" to mean "in the previous calendar year" instead of "in the last 12 months", this is an example of temporal problems.
- 4) Logical problems involve false presuppositions of the question, the devices used to connect concepts such as logical connectives like "and" and "or", and contradictions and tautology. For example, in the question "In the last week, have you purchased or had expenses for meats and poultry?", "meats and poultry" and the author expects a respondent to answer "yes" if s/he has purchase any items from the category either a meat or poultry product. However, if a respondents interprets that question to respond "yes" only if s/he has purchased both meat and poultry products, that will be an example of logical problems.
- 5) Computational problems are problems related to respondents' difficulty processing the given information in the survey question. Thus, in some sense all

of these problems above can be computational problems. When respondents have significant problems which do not fall into the other problem categories, they are classified as computational problems here.

All of these five problem types indicate that a respondent has trouble fully understanding survey questions or has problems in the process of responding to a survey question. We created a sixth problem category, translation problems, to indicate issues related to inaccurate translation that would not have been covered under Conrad and Blair (1996)'s coding scheme.

- 6) Translation problems are related to inaccurate or poor translation. For example, when a respondent understands the translated terms/sentences correctly but s/he doesn't understand the intended meaning because the translation did not capture the intended meaning of the original English texts.

Under our coding scheme of the six question problem categories, we analyzed the Korean and the English cognitive interviews and compared whether the same types of survey question problems identified in the English interviewing data were also found in the Korean cognitive interviewing data. Respondents' answers to the scripted and spontaneous probes from the interviewer were coded based on these categories. The interview probes were designed mainly to evaluate the translation and identify issues that appear in both the source (English) language and the translation. Therefore, these probes are useful in carrying out our analysis.

For data coding, we used individual interview summary reports which detail the probing questions and the respondents' answers to them from each cognitive interview. Each report was prepared by the interviewer who conducted the cognitive interview. Although summary reports may reflect each interviewer's interpretation of the respondent's answers, they included many actual quotes and conversations that were close to the actual interview. Because these reports were not transcripts, at times, there was insufficient detail for coding purposes and this affected both English and Korean interview data equally. When this happened, we followed several coding principles. First, the data was

coded as “no problem” when it did not provide clear evidence for us to code it into one of the problem categories. For example, in once case, a respondent defined “adopted son” as “a son who is not biologically related to either parent.” Although this response did not discuss the legal process that defines an adoption, it was not indicative of comprehension problems because the respondent did discuss the blood relationship, one of the essential parts to define “adopted son”. The response, however, was probably too short and should have been probed further by the interviewer because the lack of information also could have been the result of the summary reporting by the interviewer . Thus, we decided to code these responses as “no problem”. On the other hand, if the response had incomplete information but contained clear comprehension issues, we coded it as “problem”. For example, another situation that arose was when the respondents interpreted the wording as intended, but they did not mark the intended answer when they filled out the census form. We also found a few examples that a respondents left a question blank (did not mark any response choices), but demonstrated no comprehension issues through probing in the cognitive interview. This may indicate difficulty in form navigation, but for our research purpose, we coded them as “no problem” because we don't have enough evidence to indicate they have problems in understanding the survey questions. The majority of the interview summaries had sufficient details and we coded them according to the six problem categories: Lexical, inclusion/exclusion, temporal, logical, computational, and translation. For data coding, we allowed multiple codes in one response; thus the number of responses do not equal the number of codes. In other words, when a response contains multiple problems, they were coded into the corresponding (different) problem categories. However, there were only few responses which indicated multiple problems. The Korean cognitive interview dataset consisted of 521 responses (522 codes)¹ from 23 individual interviews and the English cognitive interview dataset consisted of 322 responses (325 codes) from 16 individual interviews. Because the English cognitive interviews did not examine translated items, there were no translation problems coded.

¹ There were 2 missing responses from the Korean interviews because the interviewers had inadvertently skipped the probing questions. There were 38 missing responses from the English interviews. These missing cases were excluded from the analysis.

Three persons who completed advanced training in social science were involved with coding. The lead coder was one of the lead interviewers who conducted Korean cognitive interviews. The other two coders also participated in the Chinese and the English cognitive interviews. Thus, they had enough background knowledge about the cognitive interviews and interview protocols. The coders had meetings and email communications to set up a coding scheme. After the first coding was completed by the lead coder, the other coders met several times to resolve the unclear cases. Final coding value was assigned to each case from the results of these discussions.

4. Findings

In general, frequency of question problems by category shows a similar pattern between the English and Korean data. As shown in Table 2 below, a total of 80.6% of the English cognitive interview responses did not have any problems and 75.9% of the Korean responses did not have any problems.

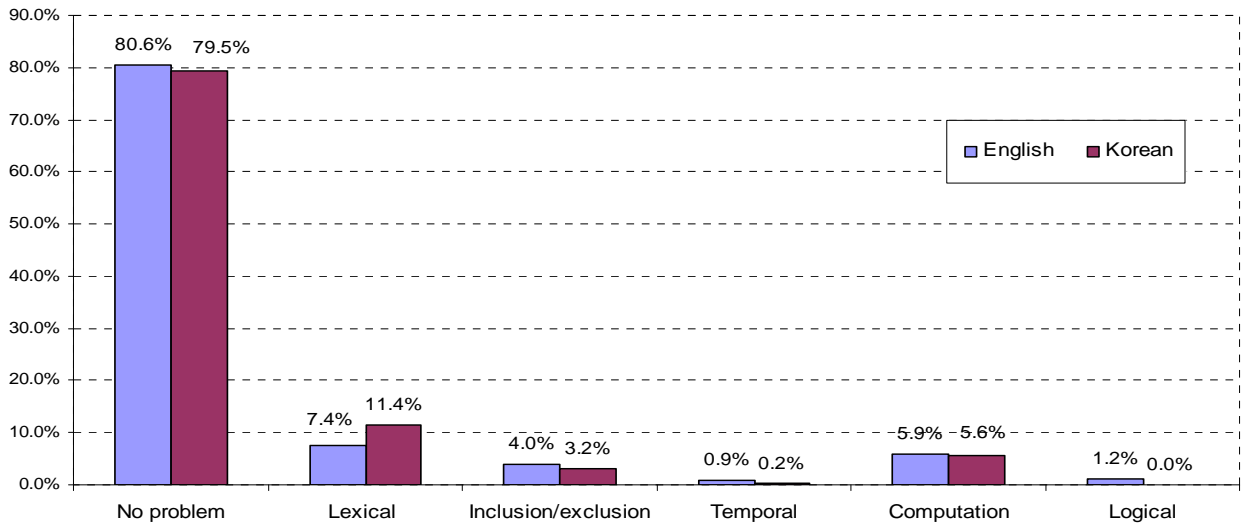
Table 2. Question problems by category

Problem category	English interviews	Korean interviews
0. No Problem	261(80.6%)	396(75.9%)
1. Lexical	24(7.4%)	57(10.9%)
2. Inclusion/exclusion	13(4.0%)	16(3.1%)
3. Temporal	3(0.9%)	1(0.2%)
4. Computational	19(5.9%)	28(5.4%)
5. Logical	4(1.2%)	0(0.0%)
6. Translation	N/A	24(4.6%)
Total	324(100.0%)	522(100.0%)

Because the translation problem can only occur in the Korean interviews, we ran another frequency by excluding translation problems from the Korean interviews. As shown in

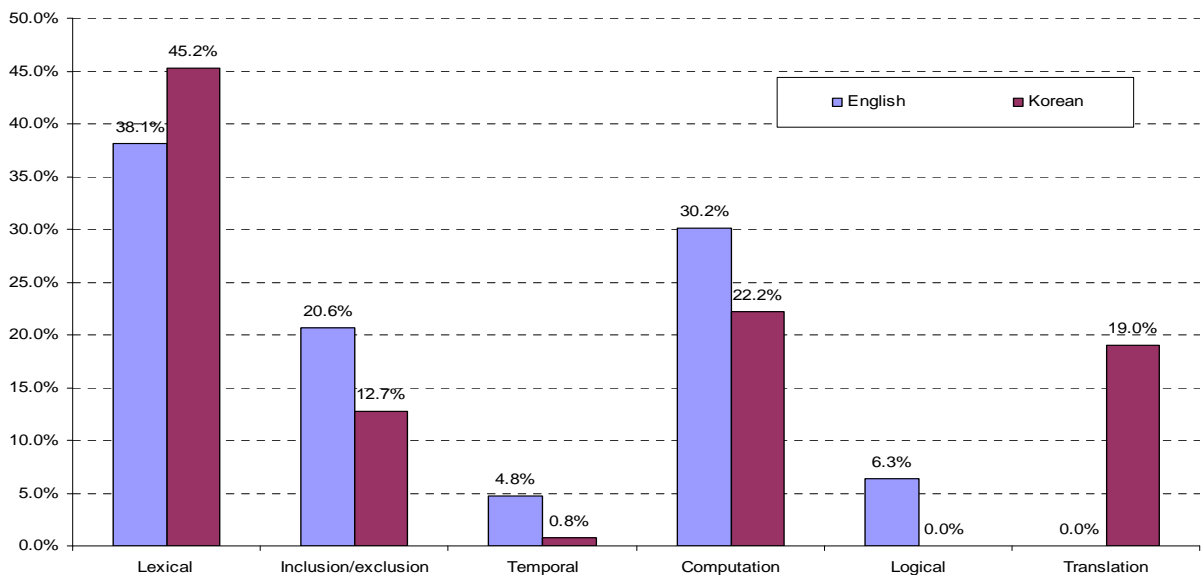
Graph 1 below, the distribution of the problems also shows a parallel pattern between the English and the Korean interview data.

Graph 1. Question problems by category (excluding translation category)



There were 63 identified problems in the English interview data and 126 identified problem responses in the Korean interview data. As shown in Graph 2, for the English interviews, lexical problems were identified most often (38%), followed by computational problems (30%) and inclusion/exclusion problems (21%). For the Korean interviews, lexical problems were identified most often (45%), followed by computation problems (22%), and translation problems (19%).

Graph 2. Question problems by category among responses identified as problems



The specific examples of identified problems by category in the English and the Korean interviews are as follows.

1) Lexical problems

Lexical problems, which were identified most frequently in both the English and the Korean interviews, occurred when respondents did not know the meaning of certain words in the given contexts.

Example 1 [English interview]

2. How is this person related to Person 1? Mark ONE box.

<input type="checkbox"/> Husband or wife	<input type="checkbox"/> Parent-in-law
<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Son-in-law or daughter-in-law
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Other relative
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Roomer or boarder
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> Housemate or roommate
<input type="checkbox"/> Father or mother	<input type="checkbox"/> Unmarried partner
<input type="checkbox"/> Grandchild	<input type="checkbox"/> Other nonrelative

This question asks about the relationship between a household member (“this person”) and Person 1, who was listed first by the respondent on the Census form. Person 1 should be an adult owner or adult renter of the home according to the instructions. In the example below, the interviewer probed about one of the response choices, “housemate or roommate”.

Probing question: What do you think they mean by “housemate or roommate”?

Interviewer’s Summary of Respondent’s Answer:

“Housemate would be, they share the house and they probably share expenses. A roommate is just somebody that may have moved in temporarily, for 5-6 months, whatever.”

Example 2 [Korean interview]

3. Is this house, apartment, or mobile home —
 Mark ONE box.

Owned by you or someone in this household with a mortgage or loan? *Include home equity loans.*

Owned by you or someone in this household free and clear (without a mortgage or loan)?

Rented?

Occupied without payment of rent?

This question intends to find out whether the respondent’s home is owned, rented, or occupied without payment of rent. In the following example, the respondent did not know the translated word for “household”.

Probing Question: What do you think they mean here?

Interviewer’s Summary of Respondent Answer:

The respondent said the question was very unclear and it was difficult to figure out what the question meant, especially the word “세대(household)”. The respondent kept asking the meaning of the word. When the interviewer explained what is meant by a household, the respondent understood it but said the term should be changed to an other term such as “집(house)”.

As shown in the examples above, respondents who did not know the meaning of the words used in the Census questions or response choices most likely did not comprehend the meaning of the question as intended. In these examples, lexical knowledge of phrases and words like “housemate or roommate” and “household” played a critical role in comprehension.

2) Inclusion/exclusion problems

As described in the previous section, inclusion/exclusion problems occur when a respondent include or exclude things when interpreting a term in a survey question differently from what the question author intends to.

Example 3 [English interview]

The Census must count every person living here on February 1, 2008.

Before you answer Question 1, count the people living in this house, apartment, or mobile home using our guidelines.

- Count all people, including babies, who live and sleep here most of the time.

The Census Bureau also conducts counts in institutions and other places, so:

- Do not count anyone living away either at college or in the Armed Forces.
- Do not count anyone in a nursing home, jail, prison, detention facility, etc., on February 1, 2008.
- Leave these people off your form, even if they will return to live here after they leave college, the nursing home, the military, jail, etc. Otherwise, they may be counted twice.

The Census must also include people without a permanent place to stay, so:

- If someone who has no permanent place to stay is staying here on February 1, 2008, count that person. Otherwise, he or she may be missed in the census.

1. How many people were living or staying in this house, apartment, or mobile home on February 1, 2008?

Number of people =

This question asks about the number of people living or staying in the current residence on a Census day (Here it is February 1, 2008). According to the instructions that precede this question, respondents should not include people living in group quarters. These instructions are given to prevent over-counting of individuals.

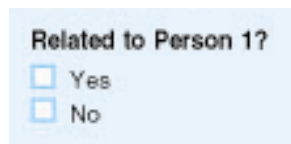
Probing Question: How did you choose that answer? Who did you include?

Interviewer's Summary of Respondent Answer:

The respondent included himself, his wife, and his daughter. They lived and slept here most of the time. Then his teenage son was a student away from home, but he was not a college student, so he was not excluded “on the basis of the first admonition”. Even though he did not sleep here most of the time, the respondent decided that he lived here and he should include him.

Since the instructions mention only college (“The Census Bureau also conducts counts in institutions and other places, so: do not count anyone living away either at college or in the Armed forces”), the respondent decided to include his son as a household member because the son was at a boarding school. This problem occurred because the respondent excluded “boarding school” when interpreting a term “institutions” in the instruction.

Example 4 [Korean interview]



Related to Person 1?
 Yes
 No

This question is located toward the end of the form and is intended for households with more than six members. Earlier in the Census form, the relationship between each household member and Person 1 was asked; for example, whether a household member is Person 1’s wife, daughter, parent-in-law, and so forth. However, this particular question is only asking about whether this seventh household member, Person 7, is related to the householder. In the example below, this respondent interpreted the term “related to” to only include relatives.

Probing Question: What do you think they mean by “related to person 1?” in this question?

Interviewer’s Summary of Respondent Answers:

The respondent said it was not clear to him what “친척관계 (translation of “related to”)” meant here. What he was not sure about was whether his family members could be called “친척(relative)”. He said he would mark on “No”, if his youngest sister happened to be Person 7 (when he put himself as person 1), because he regarded her as his own family, not “a relative”.

This question intends to include first degree relatives. Thus, if Person 7 were the householder’s youngest sister, the respondent should have answered “yes”. However,

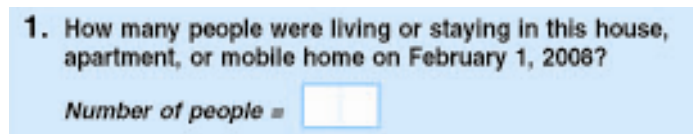
because he interpreted the term “related to” in a narrowed way, this inclusion/exclusion problem occurred.

As shown in the above examples, both English and Korean interview data demonstrated comprehension issues related to their interpretation of the terms used in the questions. More specifically, both respondents had a narrower interpretation of the terms than what was intended.

3) Temporal problems

Temporal problems involve the time described in the survey question when a respondent interpret the amount of time spent on an activity or certain period of time not in the intended way. We identified only a few temporal problems in the English interviews and the Korean interviews.

The examples cited here involve the same question, which asks about the number of people living or staying in the current residence on a Census day (Here it is February 1, 2008).



1. How many people were living or staying in this house, apartment, or mobile home on February 1, 2008?

Number of people =

Example 5 [English interview]

Probing Questions: How did you choose that answer? Who did you include?

Interviewer’s Summary of Respondent Answer:

The respondent included herself, but later listed a friend who sometimes stays.

Example 6 [Korean interview]

Probing Questions: How did you choose that answer? Who did you include?

Interviewer’s Summary of Respondent Answer:

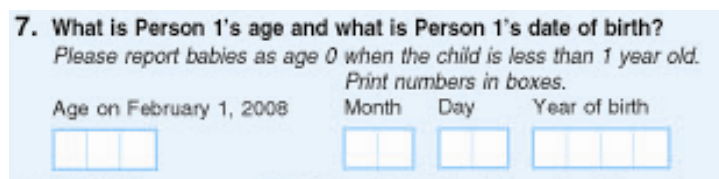
The respondent wrote three, because this is the number of his family members, who are “living or staying at his house now”. The respondents included himself (as Person1), his son (P[erson] 2) and wife (P[erson] 3). Later in the interview, it turned out that his mother-in-law was staying with his family on February 1, 2008.

As shown in both examples below, the respondents ignored the information in the question text to include the number of people on February 1, 2008. The respondent in the English interview included “a friend who sometimes stays.” Clearly, the time period that this respondent used was “sometimes.”, note the February 1, 2008. In the Korean interview example, the respondent’s time reference was “now” (the time of the interview), which was past February 1, 2008.

4) Computational problems

Computational problems involve respondents’ difficulty processing and manipulating information included in a question. For example, a long and complicated question can make it difficult for the respondent to parse the sentence and understand the meaning of the question. Problems involving mental arithmetic are also under this problem category. Since computational problems are from respondents’ difficulty understanding the question, all of the respondent’s problem can be categorized as computational problems in a sense. In our current analysis, we used computational problems as a residual category. That is, we tried to code responses to the specific problem category first. Only if there are no specific problems that would fit into the other prominent categories, we assigned these responses to computational problems.

Example 7 [English interview]



7. What is Person 1's age and what is Person 1's date of birth?
Please report babies as age 0 when the child is less than 1 year old.
Print numbers in boxes.

Age on February 1, 2008	Month	Day	Year of birth
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

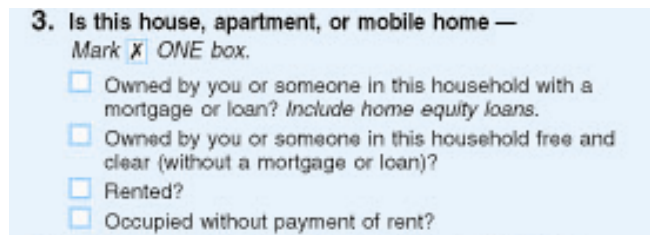
This question intends to find out Person 1's date of birth and age on February 1, 2008. Instructions about writing in the age of infants are included: "Please report babies as age 0 when the child is less than 1 year old".

Probing Question: If a person has a 4-month old baby girl, what age should you write here?

Interviewer's Summary of Respondent Answers:

"4 months. I guess they would put... I guess you just have to put 4 and write in months, I guess."

Example 8 [Korean interview]



3. Is this house, apartment, or mobile home —
Mark ONE box.

- Owned by you or someone in this household with a mortgage or loan? *Include home equity loans.*
- Owned by you or someone in this household free and clear (without a mortgage or loan)?
- Rented?
- Occupied without payment of rent?

This question asks whether the respondent's home is owned, rented, or occupied without payment of rent.

Probing Question: What do you think they mean here?

Interviewer's Summary of Respondent Answer:

The [respondent says that this] question asks what type of home that she currently lives (whether it is a house, or an apartment). The respondent said the question should have included "a condominium" along with house, apartment and mobile home.

As shown in the English interview example above, the respondent did not process the infant instruction at all but used the respondent's own information. In the Korean interview example below, the respondent interpreted the question as one that asks about the type of home. This problem could be a result of navigating this particular question format, which was different from the rest of the questions on the Census form. The lead-in text is designed to be completed with one of the response choices, where in the other

questions on the Census form, the response choices do not require lead-in text and the question ends with a question mark.

5) Logical problems

Logical problems involve any logic that is embedded in the question. We were only able to identify some logical problems from the English interviews and no logical problems were identified from the Korean interviews. Here are two examples of logical problems that we identified from the English interview data.

Example 9 [English interview]

10. Does Person 1 sometimes live or stay somewhere else?
 No Yes — Mark *X* all that apply.

<input type="checkbox"/> In college housing	<input type="checkbox"/> For child custody
<input type="checkbox"/> In the military	<input type="checkbox"/> In jail or prison
<input type="checkbox"/> At a seasonal or second residence	<input type="checkbox"/> In a nursing home
	<input type="checkbox"/> For another reason

This question asks about whether Person 1 sometimes lives or stays somewhere else. This question intends to capture over-counting because all of these responses should not have marked any of these if the respondent had followed the fill-out instruction as intended.

Probing Question: What do you think they mean by “For child custody”?

Interviewer’s Summary of Respondent Answers:

“This will lead me to believe that Person 1 is a child. This doesn’t make sense to me because Person 1 can never be a child.”

Example 10 [English interview]

7. What is Person 1’s age and what is Person 1’s date of birth?
Please report babies as age 0 when the child is less than 1 year old.
Print numbers in boxes.

Age on February 1, 2008	Month	Day	Year of birth
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

This question about Person 1 includes an instruction about writing in the age of infants: Please report babies as age 0 when the child is less than 1 year old.

Probing Question: If a person has a 4-month old baby girl, what age should you write here?

Interviewer's Summary of Respondent Answers:

The respondent commented that this instruction was not necessary because Person 1 can't be a baby.

In the first example, the respondent has learned earlier from the instruction on the form that Person 1 must be an adult. However, this response choice of “for child custody” only applies to children. Thus, the respondent found this logic faulty. In the second example, the respondent did not understand why this instruction exists, since Person 1 must be an adult. N.

6) Translation problems

Translation problems were identified only in the Korean interview data because the English interview did not involve translation at all. Technically, translation problems are not equivalent to comprehension problems because respondents do understand the translated terms as they are presented in a question. However, incorrect or poor translation hinders respondents' comprehension of the intended meaning of the survey questions. Thus, we consider it a translation problem when the translation contains mistakes and in turn does not convey the intended meaning of the source (English) language. For example, “foster children” was translated to “위탁아” which means “A child who is consigned to somewhere for various reasons”. For example, a child who is taken care of by non-relative person temporarily before adoption is called as this Korean term “위탁아”. The phrase “For child custody” was translated to “보육원” which means something similar to a nursery in the U.S. This term is also understood as an orphanage depending on the contexts. These translations convey very different meanings of distinct

concepts than what is intended. Korean respondents interpreted the translated terms of “위탁아” and “보육원” correctly but this they couldn’t understand the original message due to this poor translation.

Here are two examples of translation problems from our Korean cognitive interview data.

Example 11 [Korean interview]

2. Were there any additional people staying here February 1, 2008 that you did not include in Question 1? Mark all that apply.

- Children, such as newborn babies or foster children
- Relatives, such as adult children, cousins, or in-laws
- Nonrelatives, such as roommates or live-in baby sitters
- People staying here temporarily
- No additional people

This question asks about additional people who were not included in the previous answer which is about the number of people living or staying on February 1, 2008. It intends to capture undercounting, for example, people who were missed when the number of household members was indicated earlier. One of the response choices is “foster children” and it was translated to “위탁아”, which is “A child who is consigned to somewhere for various reasons”. When probed about this term, the respondent in the following example interpreted it to mean a caretaking situation rather than children in the foster care program. The translation was inaccurate to deliver the intended meaning and resulted in translation problems.

Probing Question: What do you think they mean by “foster children”?

Interviewer’s Summary of Respondent Answer:

The respondent thought of cases when people asked their children to be taken care of during their vacation or absence.

Example 12 [Korean interview]

10. Does Person 1 sometimes live or stay somewhere else?

No Yes — Mark all that apply.

<input type="checkbox"/> In college housing	<input type="checkbox"/> For child custody
<input type="checkbox"/> In the military	<input type="checkbox"/> In jail or prison
<input type="checkbox"/> At a seasonal or second residence	<input type="checkbox"/> In a nursing home
	<input type="checkbox"/> For another reason

In this question, “for child custody” was probed. The phrase “For child custody” was translated to “보육원”, meaning a nursery, and led to the following interpretation in the example.

Probing Question: What do you think they mean by “For child custody”?

Interviewer’s Summary of Respondent Answer:

The respondent interpreted the term as places to take care of young children. She said it’s confusing. The respondent also thought that this probably meant some places where people can leave young children. The young children may eat and sleep there for a time.

5. Conclusion

We compared Korean and the English cognitive interview data to determine whether the survey question problems that were detected in the English cognitive interviews were also found in the Korean cognitive interview data. We used six question problem categories adopted from Conrad and Blair’s survey question problem categories (1996) to categorize survey problems.

From the analysis of the coded cognitive interview summary reports, we found that the Korean cognitive interview data and the English cognitive interview data showed a parallel pattern: 75.9% of the Korean responses were identified as having “no problem” as compared to 80.6% of the English responses. By excluding the “translation” problem category, which occurred only in the Korean cognitive interviews, the gap became smaller: 79.5% of the Korean responses were identified as having “no problem” as compared to 80.6% of the English responses.

Among the cases identified as “problem”, for the English cognitive interviews, lexical problems were identified most often (38%), followed by computational problems (30%) and inclusion/exclusion problems (21%). In the Korean cognitive interviews, lexical problems were identified most often (45%), followed by computation problems (22%) and translation problem (19%). The translation problems were detected only in the Korean responses because the Korean interviews tested a translated census form. Except for logical problems, all question problem categories were detected in both English and Korean responses. Although we did not identify any logical problems in the Korean responses, this type of problems seems to be limited overall. Only 4 logical problems were detected from the 324 English responses. Because this is not a statistical sample, we did not attempt to do significance tests for these differences.

Korean speakers are known to rely heavily on cultural context and background information rather than the actual content of the message in communication. In addition, an emphasis on politeness and social hierarchy in the Korean culture seems to lead to short responses in cognitive interviews (Pan et al, 2008). Despite this difference, our paper has shown that the Korean cognitive interviews identified a similar proportion of survey question problem types when compared with the English cognitive interviews. Therefore, we think that the traditional style of cognitive interviewing can still be a valid tool to identify problematic questions in the Korean language, and possibly in other high context languages, even though the interviewers may need to ask additional probing questions to clarify a respondent’s answers.

6. Limitations and future research

Although this research has shown interesting findings for the use of cognitive interview in non-English languages, it has several limitations.

First, our coding scheme gave us a broad picture of the problems in the English and Korean interviews and our comparisons are drawn based on the frequency of the problems by category. However, the similarities in the frequency between them can occur

at the different levels. For example, we did not compare whether lexical problems occurred around the same word. Thus, the figures should be interpreted with caution. The second limitation is related to the Census questions that we investigated. The cognitive interviews used retrospective probing to explore the 10 demographic questions used on the U.S. Census form. These Census questions are not long or complex and many do not involve complex response strategies. In fact, they could be regarded as relatively simple compared to survey questions in general. We are not sure if the scripted and spontaneous cognitive interview probes that we employed and the probing techniques used in our cognitive interviews will be applicable when pretesting a set of long and complex questions.

Additionally, our protocol was geared towards translation because our primary purpose of the project was to find out potential translation issues. As a result, our findings may be tilted towards lexical items. From our analysis, we identified a few logical problems from the English interview data but did not identify any logical problems from the Korean interview data. This may reflect the actual cultural difference. For example, the English speakers may be more attentive to logics when processing information. However, this may indicate that cognitive interviewing in Korean is not so effective to identify logical problems or this may have happened by chance. Therefore, research to test the effect of cognitive interview in identifying logical problems in high context languages can be an interesting topic.

As described earlier in the paper, our analysis was based on the interview summary reports, rather than interview transcripts. Thus, it was impossible to conduct a deeper analysis such as comparing the number of probes to elicit the appropriate answers in the English and the Korean interview data. Further research based on the transcripts will give us abundant information to evaluate the effectiveness of cognitive interview in Korean and conduct the Korean cognitive interview more effectively.

Future research to compare other high contexts languages, such as comparing cognitive interview data collected in Chinese and in English, will be useful to support our findings. These are interesting issues for future research that can further inform the development of methods for cognitive interviewing in languages other than English.

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<p>8. Is Person 1 of Hispanic, Latino, or Spanish origin?</p> <p><input type="checkbox"/> No, not of Hispanic, Latino, or Spanish origin</p> <p><input type="checkbox"/> Yes, Mexican, Mexican Am., Chicano</p> <p><input type="checkbox"/> Yes, Puerto Rican</p> <p><input type="checkbox"/> Yes, Cuban</p> <p><input type="checkbox"/> Yes, another Hispanic, Latino, or Spanish origin — <i>Print origin, for example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.</i></p> <p>_____</p>	<p>17. What is this question asking in your own words?</p>
<p>9. What is Person 1's race? Mark x one or more boxes.</p> <p><input type="checkbox"/> White</p> <p><input type="checkbox"/> Black, African Am., or Negro</p> <p><input type="checkbox"/> American Indian or Alaska Native — <i>Print name of enrolled or principal tribe.</i></p> <p>_____</p> <p><input type="checkbox"/> Asian Indian <input type="checkbox"/> Japanese <input type="checkbox"/> Native Hawaiian</p> <p><input type="checkbox"/> Chinese <input type="checkbox"/> Korean <input type="checkbox"/> Guamanian or Chamorro</p> <p><input type="checkbox"/> Filipino <input type="checkbox"/> Vietnamese <input type="checkbox"/> Samoan</p> <p><input type="checkbox"/> Other Asian — <i>Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.</i></p> <p>_____</p> <p><input type="checkbox"/> Other Pacific Islander — <i>Print race, for example, Fijian, Tongan, and so on.</i></p> <p>_____</p>	<p>18. Were you able to find a category that fit you?</p>
<p>10. Does Person 1 sometimes live or stay somewhere else?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes — Mark x all that apply.</p> <p><input type="checkbox"/> In college housing <input type="checkbox"/> For child custody</p> <p><input type="checkbox"/> In the military <input type="checkbox"/> In jail or prison</p> <p><input type="checkbox"/> At a seasonal or second residence <input type="checkbox"/> In a nursing home</p> <p><input type="checkbox"/> For another reason</p>	<p>19. What do you think this question is asking for?</p> <p>20. What do you think they mean by "College housing"?</p> <p>21. What do you think they mean by "At a seasonal or second residence"?</p> <p>22. What do you think they mean by "For child custody"?</p> <p>23. What do you think they mean by "In a nursing home"?</p> <p>24. What do you think they mean by "housemate or roommate"?</p> <p>25. What do you think they mean by "unmarried partner"?</p> <p>26. What do you think they mean by "roomer or boarder"?</p> <p>27. What do you think they mean by "stepson or stepdaughter"?</p> <p>28. What do you think they mean by "adopted son or daughter"?</p> <p>29. What do you think they mean by "related to person 1?" in this question?</p>
<p>Person 2-6. How is this person related to Person 1? Mark xONE box.</p> <p><input type="checkbox"/> Husband or wife <input type="checkbox"/> Parent-in-law</p> <p><input type="checkbox"/> Biological son or daughter <input type="checkbox"/> Son-in-law or daughter-in-law</p> <p><input type="checkbox"/> Adopted son or daughter <input type="checkbox"/> Other relative</p> <p><input type="checkbox"/> Stepson or stepdaughter <input type="checkbox"/> Roomer or boarder</p> <p><input type="checkbox"/> Brother or sister <input type="checkbox"/> Housemate or roommate</p> <p><input type="checkbox"/> Father or mother <input type="checkbox"/> Unmarried partner</p> <p><input type="checkbox"/> Grandchild <input type="checkbox"/> Other nonrelative</p> <p>Person 7-12. Related to Person 1?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	