

STUDY SERIES REPORT
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**Report on Cognitive Testing
of
Tenure, Age, and Relationship Questions
for the 2005 National Content Test**

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Abstract

Cognitive interviews were conducted in the Washington, DC metropolitan area with owners, renters, households with infants, and large households with different compositions of relatives and nonrelatives to test changes in question wording in the tenure, age, and relationship questions. The results showed that eliminating “cash” from “cash rent” and “occupied without payment of cash rent” in the tenure question did not have a negative effect on respondents’ understanding. Reversing the order of the age and date of birth questions work well, as did adding an instruction to “please report babies as age 0 when the child is less than 1 year old.” However, the font and layout of the age question de-emphasized the reference date, and the ages of several people whose birthdays occurred between the reference date and the interview date were misreported. Changing “natural born son or daughter” to “biological son or daughter” and “foster child” to “foster child or foster adult” worked well, as did changing the layout of the relationship categories to save space on the form. Recommendations concerning the font and layout of the age and date of birth questions are being included in the 2005 National Census Test.

Report on Cognitive Testing of Tenure, Age, and Relationship Questions for the 2005 National Content Test

In preparation for the 2005 National Content Test, cognitive testing of proposed content changes to three questions on the decennial census short form was conducted. The questions included tenure, age, and relationship. In the tenure question, two changes were tested. First, eliminating “cash” from the “rented for cash rent” and “occupied without payment of cash rent” categories and second, adding the sentence “include home equity loans” at the end of the “owned by you or someone in your household with a mortgage or loan” category. In the age question, two changes were also tested. First, adding an instruction at the end of the question to “please report babies as age 0 when the child is less than 1 year old.” Second, reversing the order of the age and month/day/year of birth questions. In the relationship question, three changes were tested. First, changing “natural born son or daughter” to “biological son or daughter.” Second, adding the term “foster adult” to the “foster child” category. Third, changing the layout of the relationship categories to save space on the form. These layout changes included the inclusion or exclusion of an “other relative” write-in and wrapping the relative categories into the second column or layering them with the relative categories all above the non-relative categories.

The questions for persons 7 through 12 in the household is abbreviated on the 2005 NCT forms. The manipulation of reversing the order of age and date of birth was used in this section of the form as well. In addition, an abbreviated relationship question is asked for these people. We tested these modifications as well. This report documents the results of the testing of all of these manipulations.

Methodology

In October and November, 2004, 18 cognitive interviews were conducted by staff from the Center for Survey Methods Research (CSMR) in the Statistical Research Division. Respondents were targeted for recruiting based on the changes made to the census form. We recruited owners, renters, households with infants, large households with different compositions of relatives and nonrelatives, and persons living in foster homes. The composition of interviewed respondents according to these characteristics is listed below.

# of Owners	8
# of Renters	10
# of Households with Infants	6
# of Households with Foster Persons	1
# of Households with 7+ Persons	4

The demographic characteristics of the recruited households were of secondary importance. The

majority of the interviews were conducted with female respondents (14 females, 4 males), and the majority were conducted with African American respondents (14 African Americans, 3 Whites, 1 Chinese). Interviews were conducted at the CSMR cognitive laboratory and at places more convenient for respondents.

The interviews were conducted using concurrent think-aloud and retrospective debriefing methods. Respondents were asked to read aloud as they completed the self-administered form and to verbalize their thoughts as they read the questions and formulated their answers. Interviewers probed respondents' answers to elicit information about how they interpreted terms and concepts. At the end of the interview, respondents were debriefed and given 6 short vignettes describing household roster situations and asked how to report the relationship for one of the persons in the vignette.

Results

Tenure Question

As noted previously, two changes were tested in the tenure question. Three combinations of these changes were tested. The question wordings were as follows:

Version A. **Is this house, apartment, or mobile home –**
Mark X ONE box.

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

Version B. **Is this house, apartment, or mobile home –**
Mark X 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 for cash rent?
- Occupied without payment of cash rent?

Version C. **Is this house, apartment, or mobile home –**
Mark X 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?

Versions A and C contained a change that eliminated “cash” from the “rented” and “occupied without payment of rent” categories. Versions B and C contained the addition of the instruction to include home equity loans in the “owned with a mortgage or loan” category. While Versions A and B included only one of these changes, Version C included both of the changes.

We did not observe any interaction between the two changes, since one applied to renters and one applied to homeowners. Therefore, we will discuss the results of the two changes independently.

Home Equity Loan Instruction

All the homeowners we interviewed answered the question correctly. One respondent provided the strictest test of the new instruction. Her mortgage was paid off and she had a home equity loan. After reading the added instruction, she answered in the first category. She said that without the instruction, she would have marked the second category.

A couple of respondents, when probed, thought that mortgage and loan were two different things. In one case, the respondent thought loan referred to home equity loans, while mortgage was the original mortgage. In another case, the respondent thought the mortgage was the initial mortgage from the bank, and the loan was the payments that are made every month to pay back the mortgage.

Respondents were probed about the meaning of “home equity loan” and “home equity line of credit.” For the most part all had heard of a home equity loan. People generally knew that a home equity loan is a loan based on the amount of equity that the homeowner has in the house, and some commented that it constituted a lien against the house.

Respondents were less familiar with a home equity line of credit, and among those who were familiar with the term, interpretations were more diverse. One homeowner knew what it was, but thought it did not count as a lien against the house. Both renters and homeowners considered it to be generally the same as a home equity loan. And a couple of renters, for whom it is not relevant, described it as a line of credit similar to a credit card.

Cash Rent

All the renters we interviewed chose the proper response category. No one had a problem with the third and fourth response categories because the term “rent” was used instead of “cash rent.” Everyone who was probed knew that “rented” meant the payment was by check or cash. Several respondents commented on the term “cash rent.” The comments suggested that the term only referred to paying rent with cash. One respondent noted “How else could you rent?...the only way I know how to rent is with money.” Another respondent contrasted paying money rent with doing work to cover the rent bill.

The “occupied without payment of rent” category was the least understood of all. While most respondents correctly understood that it referred to cost-free shelter, there were other interpretations. Two respondents thought this could refer to owners, who pay mortgage rather than rent. However, this did not lead to misreporting since they answered the first relevant category, which was the correct one. One respondent consistently read this category by reading “with” instead of “without.” She misreported because she used this category to indicate that she rents her home.

Other Tenure Observations

One observation that was made repeatedly was that respondents typically had to re-read the question twice before they understood it. Some respondents misread the question as either “is this a house, apartment, or mobile home,” or “in this house, apartment, or mobile home.” While this did not lead to any obvious misreporting problems, it can cause confusion. Other respondents read it correctly, but still had to read it twice to comprehend it. This is consistent with an observation made by Don Dillman, noted in a memo to Betsy Martin dated November 8, 2004. He suggests that the dash at the end of the sentence may be responsible. Dashes are not typically used to indicate that the respondent should keep reading to get to the end of the thought. Instead, he suggests using an ellipsis (i.e., ...). This would do a better job of signaling to respondents that they need to keep on reading.

Recommendations for Tenure

We did not note any serious problems with the proposed changes to the tenure question. We propose that the changes be included in the 2005 National Census Test as planned. We do suggest, however, that Dillman’s suggestion to use the ellipsis instead of the dash be given serious consideration.

Age and Date of Birth Questions

As previously noted, there were two changes to the age and date of birth sequence that we were tested. This was presented in two versions of the question.

Version A - **What is this person's date of birth and what is this person's age?**
Please report babies as age 0 when the child is less than 1 year old.
Print numbers in boxes.

Month	Day	Year of Birth	Age (on October 1, 2004)
□□	□□	□□□□	□□□

Version B - **What is this person's age and what is this person'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 October 1, 2004)	Month	Day	Year of Birth
□□□	□□	□□	□□□□

Both versions have the instructions for babies. Version A reverses the order of the date of birth and age entry from what was used in Census 2000 (the control order is presented in Version B). Persons 7 through 12 are asked to enter date of birth and age as well. For these persons, there is no question text and there are no instructions for babies or to print numbers in boxes. There are simply boxes for age (on October 1, 2004) and Date of Birth - Month, Day and Year. There were several findings that came from this testing including how respondents reacted to the baby instruction, how they reacted to the order, and whether they noticed the reference date for age.

Baby Instruction

We interviewed 6 households with infants. Of the 6 respondents who had infants, 4 answered the question incorrectly despite the instruction. Of these, two respondents did not read the baby instruction and rounded up to make the child 1 instead of 0 (10 or 11 months), another respondent who also did not read the instruction wrote in 7 months. Finally the last respondent to misreport actually read the instruction for Person 1, but reported “6mo” for the baby, who appeared as person 4. She said that she had forgotten about the instruction by the time she got to that person.

One respondent who misreported reacted negatively when the instruction was pointed out to him. He had to read the instruction 3 times before realizing that he had done something incorrectly. His reaction to this was that if the baby was reported as 0, he would not count. He said “I don't like it because it's not zero, the baby's 7 months old. He's a human and he counts too. . . If you're doing the census, that's a human being and they should count. . .” He stated that even if he had seen the instruction he would still have listed the baby's age in terms of months. Another respondent also reported that she would still respond in months, even if she saw the instruction. Finally, one other respondent who did not have any infants in the household echoed the sentiment that listed a baby as zero makes them seem “non-existent.” However, the instruction did help 2 of our respondents answer correctly. Many other respondents without infants also said if they had an infant, and if they saw the instruction, they would comply.

Order of Age and Date of Birth

Several respondents had to calculate year of birth from age. They knew the person's age and the birthday, but they were not sure of the year the person was born. One respondent used a calculator, another wrote out the math on the side of the form and a couple other respondents did it in their head or on their fingers (for toddlers). One of these respondents ended up misreporting year of birth, because she calculated it wrong (assuming the age she gave was correct).

When asked which order of age and date of birth they preferred, of those who had a preference most reported the way they were asked on the form was easiest. If they had age first, they reported that was easier. If they had date of birth first, they reported that was easier.

One respondent only reported the first data point asked for, which in her case was age. In the debriefing she reported that she thought she only had to answer one of the two questions on age. She said if date of birth had been asked first, she would have reported that instead.

Age on October 1, 2004

We had 7 households with members who had a birthday between October 1st and interview day. Four of these reported the correct age as of October 1. The other 3 reported age as of the current day. In all cases, the respondents who misreported had not seen the date next to the request for age. Most respondents did not read aloud the date after the age question. In the debriefing, about half said they had seen it and the other half said they had not seen it, or did not pay attention to it.

Recommendations for Age and Date of Birth

Although many respondents did not see the baby instruction, it did help a couple of the respondents answer correctly. While it may not solve all misreporting of infants, it may help curb the problem. If respondents disagree with the instruction, they will likely report months instead of 0 (as they would do with no instruction). We do not recommend changes to the baby instruction for the 2005 NCT because it seems easy for respondents to understand, but we do recommend that attention be given to public reaction to this instruction. There is the potential for the content of the instruction to upset some people.

We are not recommending any changes to the ordering of age and date of birth questions for the 2005 NCT. However, we will make a comment on which order seemed to present the least cognitive strain. Because we saw several respondents calculating year of birth from age, it seems as though writing age first might be helpful in a paper administered form.

We believe that the lack of attention to the date next to the request for age is due to the fact that the word age is bolded and the date is in normal font in parentheses [i.e., **Age** (on October 1, 2004)] - which indicates that the date is not as important. We recommend that "Age on October 1, 2004" be written without parentheses and in normal font. In the aforementioned memo from Dillman to Martin, Dillman recommended that the words age, date of birth, month, day and year of birth be presented in regular font instead of bold. This is, in fact, consistent with the presentation of the age and date of birth questions in Census 2000. It appeared as follows:

Census 2000 - **What is this person's age and what is this person's date of birth?**

Print numbers in boxes.

Age on April 1, 2000	Month	Day	Year of Birth
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Relationship Question

We tested three manipulations of the relationship question. The first was the replacement of "Natural born son or daughter" with "Biological son or daughter;" the second was the inclusion of "Foster Adult" in the "Foster child" category; and the final manipulation was three variations of the layout of the response options. The questions appeared as follows:

Version A - **How is this person related to Person 1?** *Mark X one box.*

- | | |
|---|--|
| <input type="checkbox"/> Husband or wife | <input type="checkbox"/> Father or mother |
| <input type="checkbox"/> Biological son or daughter | <input type="checkbox"/> Grandchild |
| <input type="checkbox"/> Adopted son or daughter | <input type="checkbox"/> Parent-in-law |
| <input type="checkbox"/> Stepson or stepdaughter | <input type="checkbox"/> Son-in-law or daughter-in-law |
| <input type="checkbox"/> Brother or sister | <input type="checkbox"/> Other relative |
- IF NOT RELATED TO PERSON 1:
- | | |
|--|---|
| <input type="checkbox"/> Roomer or boarder | <input type="checkbox"/> Foster child or foster adult |
| <input type="checkbox"/> Housemate or roommate | <input type="checkbox"/> Other non-relative |
| <input type="checkbox"/> Unmarried partner | |

Version B - **How is this person related to Person 1?** *Mark X one box.*

- | | |
|---|--|
| <input type="checkbox"/> Husband or wife | <input type="checkbox"/> Son-in-law or daughter-in-law |
| <input type="checkbox"/> Biological son or daughter | <input type="checkbox"/> Other relative |
| <input type="checkbox"/> Adopted son or daughter | IF NOT RELATED TO PERSON 1: |
| <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"/> Foster child or foster adult |
| <input type="checkbox"/> Parent-in-law | <input type="checkbox"/> Other non-relative |

Version C - **How is this person related to Person 1?** *Mark X one box.*

- | | |
|--|--|
| <input type="checkbox"/> Husband or wife | <input type="checkbox"/> Father or mother |
| <input type="checkbox"/> Biological son or daughter | <input type="checkbox"/> Grandchild |
| <input type="checkbox"/> Adopted son or daughter | <input type="checkbox"/> Parent-in-law |
| <input type="checkbox"/> Stepson or stepdaughter | <input type="checkbox"/> Son-in-law or daughter-in-law |
| <input type="checkbox"/> Brother or sister | <input type="checkbox"/> Other relative - <i>Print exact relationship.</i> |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |
| <input type="checkbox"/> Roomer or boarder | <input type="checkbox"/> Foster child or foster adult |
| <input type="checkbox"/> Housemate or roommate | <input type="checkbox"/> Other non-relative |
| <input type="checkbox"/> Unmarried partner | |

All Versions Persons 7-12 **Related to Person 1?**

- Yes
 No

All versions contain “Biological son or daughter” and “Foster child or foster adult”. Version A and B omit the write-in line for other relative. Versions A and C have all relative categories above the non-relative categories. Version A wraps the relative categories onto the second column. Versions A and B have a spanner that identifies the non-relative categories.

We have results and recommendations on several aspects of this question. First, we will comment on the changes to the categories themselves - biological son or daughter, foster child or foster adult, and a few other things we noticed about the categories during testing. Second, we will comment on the layout. Finally, we will comment on the relationship item for persons 7 - 12.

Biological Son or Daughter

No respondents had trouble with this category. Initially a few respondents scanned the list for son or daughter, when they did not find that immediately, they looked more closely and found biological son or daughter. Respondents understood this category to mean that you had given birth to the child, the child came from a husband and wife, or it is a child with blood ties. When respondents were asked if there was a difference between biological child and natural born child, many said there was no difference. There were several, however, that said natural born indicated whether there were drugs involved in the birth, natural as opposed to caesarian birth, or natural conception as opposed to in-vitro fertilization.

Respondents understood the difference between biological, adopted and stepchild. However, there was some confusion on the difference between a foster child and an adopted child for some respondents. These respondents had neither an adopted nor a foster child, so this is not a critical

misunderstanding.

One respondent reported the child of his unmarried partner as his stepchild. When asked about it, he said that the child had to be his stepchild because the child had a different biological father. He indicated that if there had only been one option for son or daughter, he would have marked that. But, since he had to choose between biological, adopted or stepchild, he chose stepson. It never occurred to him that the child was a non-relative in actuality. By having the choice between biological, adopted and stepchildren, we see more clearly that the child is not born of the unmarried partnership in the household. We might lose this ability to distinguish if there were only one option for son or daughter. In another similar case, the respondent reported her granddaughter, while saying that although biologically the child is a granddaughter, she has raised her as her own child. When asked why she chose granddaughter over daughter, she said it was because the child is not her biological daughter. She said if it only said daughter or granddaughter, she would probably report her as her daughter, as that is how she was raised. In this case, the emphasis on biological, adopted or stepchild helped the respondent make the correct classification.

Foster Child or Foster Adult

We were able to interview one household where there were foster children. This respondent had no trouble with the combination of foster child and foster adult. Due to privacy concerns, we were not able to identify contacts to interview anyone in an adult foster care program.

All other respondents were asked what they thought foster adult meant. They were also asked to classify two foster adults in the fictional vignette portion of the interview. Many respondents were able to identify foster adults as either foster children who have grown up, or adults who need special care (such as mentally or physically handicapped adults). A few respondents misinterpreted the term to mean a foster parent. From this cognitive test, we cannot determine if this would be a real problem. Only if the foster child was listed as Person 1 would it even be possible for the relationship to be foster parent. Most likely one of the foster parents would be listed as Person 1.

In the vignettes, respondents either chose the foster category or roomer/boarder for mentally or physically disabled people living with someone to receive care. The concept of foster adult was new to many respondents. Sometimes they could apply it to the vignettes, and sometimes they could not.

Other Observations on Relationship Categories

Parent-in-law. Although we only interviewed one respondent with a parent-in-law in the household (and that person had no problems), one of the vignettes we used asked respondents to identify the relationship of a father-in-law. A couple of respondents identified the correct relationship, but were unable to categorize it correctly because they could not find the parent-in-law category. They looked for mother- or father-in-law and, when they did not find it, they chose

other relative (or other non-relative in one case). Although this is only preliminary evidence, it seems as though it would be more consistent with the rest of the categories to use “Father-in-law or Mother-in-law” instead of “Parent-in-law”. The term parent-in-law is not one that is commonly used among respondents. They tend to say either “in-laws” or “mother- or father-in-law.”

Unmarried partner. Most respondents in this study had an idea of what unmarried partner meant. A few respondents thought it meant someone in a serious relationship - someone who had made some kind of commitment beyond that of a boyfriend or girlfriend. These respondents said that either a roomer/boarder or a housemate/roommate would be the appropriate category if the couple was not that committed to each other. A couple other respondents thought the term meant a couple in a common law relationship. Other respondents thought it mean anyone living together who was in a romantic-type of relationship.

Layout of Relationship Categories

Lack of a write-in line. Only one respondent felt the need to write in something when there was no write-in line. However, she wrote in next to the “other non-relative” box rather than “other relative.” She reported her daughter’s unmarried partner by marking the “other non-relative” box then writing in the margin “grand baby daddy”. All other respondents were able to find appropriate categories for their household members, including those who fell into the category of “other relative.”

Visual presentation. Respondents in this study were able to find the relationship categories they needed in all 3 versions. There was slightly more confusion on Version C because the write-in line was in the middle of the response options. It took respondents a moment to realize there were additional categories under it. This did not cause anyone to misreport, though.

Although all 3 versions of the layout worked reasonably well, we think Version B was the easiest for respondents to understand. In Versions A and B, respondents tended to read the categories from top to bottom, then left to right. Reading this way causes them to read through the non-related spanner into the non-related categories, then back to related categories on the next column. While this did not cause any problems for our respondents, it could potentially cause confusion.

Non-related spanner. Respondents noticed the non-related spanner, and it seemed to help those with non-related members of the household. It provided some visual guidance when they said “they’re not related.”

Related to Person 1?

This brings us to the next observation which is how respondents perceive relationships. For

Persons 2 through 6, respondents are asked to list the exact relationship with Person 1 through detailed relationship response options. This does not seem to present most respondents with any problems. However, for persons 7 through 12, respondents are simply asked to identify whether or not the person is related to Person 1. While these ideas seem functionally equivalent (i.e., selecting from a list of relatives and non-relatives versus stating whether or not they are related), respondents differ from each other, and from the Census Bureau sometimes, in defining what it means to be related to someone. Quite a few respondents reported that related only applies when the person is related by blood, they explicitly did not include relatives by marriage. These respondents replied that a husband or wife is not related, and often commented that being related would be like marrying a cousin. Respondents differed as to whether or not an unmarried partner was related or not. Some thought it was close enough to a married partner to be considered a relative, others thought they were non-related. Some people thought that foster children were also related. This did not cause respondent problems when they chose from a list of relationship categories (sometimes it seemed transparent to them that they were organized according to relative and non-relative). It only became a problem when asked point blank if the persons are related or not.

Recommendations for Relationship

We are not recommending any changes to the panels for the 2005 NCT on the topic of relationship. However, consideration should be given to replacing “parent-in-law” with “father-in-law or mother-in-law.” We would like to note the potential problems associated with asking whether the person is related to Person 1 or not, rather than or prior to asking for the specific relationship.

Other Observations

Several respondents overlooked the box for middle initial, or misplaced the middle initial by putting it into the box for Last Name. The layout in all versions appeared as shown below:

What is Person 1's name? *Print name below.*

Last Name

First Name **MI**

Several respondents also mistakenly put first names first, in the space for last name. Sometimes they realized it and corrected it by marking through the name and entering the correct name next to it. Other times they did not realize it, or they realized it but failed to correct it.

Conclusions

This research has led to many findings, but the only thing we are strongly recommending to change for the 2005 NCT is to revert to the lack of bolding and parentheses for the age and date of birth question used in Census 2000. The two experimental panels would look like this:

Version A **What is this person's age and what is this person'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 April 1, 2000	Month	Day	Year of Birth
<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Version B **What is this person's date of birth and what is this person's age?**

Please report babies as age 0 when the child is less than 1 year old.

Print numbers in boxes.

Month	Day	Year of Birth	Age on April 1, 2000
<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

The other recommendations contained in this report should be considered for implementation at a future time.