

Concurrent Cognitive and Usability Testing: Taking Full Advantage of Pretesting Methodologies

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Overview

- Background
 - Cognitive and Usability Labs
- Case Study – U.S. 2010 Census
 - Example 1 – Separate Cognitive and Usability Testing
 - Example 2 – Joint Cognitive and Usability Testing
- Conclusions

Description of Pretesting Methods

- Cognitive Testing
 - Focus on respondent's understanding of questions
 - Some focus on navigation
 - Often used to determine final question wording
- Usability Testing
 - Focus on user's ability to complete the survey
 - User = Interviewer
 - User = Respondent
 - Focus on users' interaction with questionnaire and on visual design (look and feel)
 - Used to improve visual design and navigational controls

U.S. Census Bureau Pretesting Lab Structure

- Cognitive Lab
 - Psychologists, sociologists, anthropologists, demographers, etc.
 - Based on CASM and Tourangeau's 4 stages
 - Measures comprehension, accuracy and ability and willingness to respond
- Usability Lab
 - Psychologists, human factors and usability specialists
 - Based on principles of user-centered design (UCD)
 - Measures accuracy, efficiency (time to complete tasks), and satisfaction

Census Bureau Pretesting Lab Techniques

- Cognitive Lab
 - Concurrent think aloud
 - Concurrent and/or retrospective probing
 - Retrospective debriefing
 - Vignettes (hypothetical situations)
 - Emergent and expansive probing
 - In-depth ethnographic interviews
- Usability Lab
 - Concurrent think aloud
 - Concurrent and/or retrospective probing
 - Retrospective debriefing
 - Scenarios (hypothetical situations)
 - Split panel design
 - Eye tracking
 - Satisfaction questionnaire

Case Studies: United States 2010 Census

U.S. 2010 Census

- Basic demographic questions
 - Name, relationship, age, sex, race and Hispanic origin for each household member
- Mail forms to most households
- Non-response follow-up by personal visit

U.S. Census Nonresponse Followup (NRFU)

- Developed and tested CAPI instrument
 - Usability and cognitive testing independently conducted
 - Example 1
- Turned to PAPI data collection
 - Usability and cognitive testing conducted concurrently
 - Example 2

Example 1: CAPI Instrument Testing

- Usability testing and cognitive testing conducted separately



Separate CAPI Testing Methods

- Usability
 - 11 users
 - Can interviewers navigate the instrument?
- Cognitive
 - 60 respondents
 - Can respondents understand the questions?

Separate CAPI Testing Findings

- Usability Findings
 - Data entry
 - Navigation issues
 - Question text
 - Interview tasks
- Cognitive Findings
 - Navigation issues
 - Question text
 - Interviewer tasks

Separate Usability and Cognitive Testing Conclusions

- Separate Testing
 - Some unique results
 - Some redundant results
 - Partial expertise and knowledge of relevant research
- Joint Testing
 - More complete expertise and knowledge of relevant research
 - Able to generate recommendations to resolve problems

Example 2: Joint Cognitive and Usability PAPI Testing



- Paper and Pencil Instrument
- 40 cognitive interviews
- 20 usability sessions
- Concurrent testing leading to development of joint recommendations

Joint PAPI Testing Methods

- Cognitive Testing
 - Respondent-focused
 - Comprehension, accuracy, ability to answer questions given personal situation
- Usability Testing
 - Interviewer-focused
 - Accuracy, satisfaction and efficiency

Joint Findings and Recommendations

Information Sheet

Your Answers Are Confidential

Your answers are confidential and protected by law. All U.S. Census Bureau employees have taken an oath and are subject to a jail term, a fine, or both if they disclose ANY information that could identify you or your household. Your answers will only be used for statistical purposes, and for no other purpose. As allowed by law, your census data become public after 72 years. This information can be used for family history and other types of historical research.

You are required by law to provide the information requested. These federal laws are found in the United States Code, Title 13, (Sections 9, 141, 193, 214, and 221) and Title 44, (Section 2108). Please visit our Web site at <www.census.gov/privacy/> for additional information.

Thank you for your cooperation. The U.S. Census Bureau appreciates your help.

If you have any comments concerning the time it takes to complete this form or any other aspect of the collection, send it to: Paperwork Reduction Project 0607-0919-C, U.S. Census Bureau, AMSD-3K138, 4600 Silver Hill Road, Washington, DC 20233. You may e-mail comments to <Paperwork@census.gov> use "Paperwork Project 0607-0919-C" as the subject.

Respondents are not required to respond to any information collection unless a valid approval number has been assigned by the Office of Management and Budget. The approval number for the 2010 Census is: OMB No. 0607-0919-C; Approval Expires 12/31/2011.

D-1(F) (8-17-2008)

USCENSUSBUREAU

List A

WHO TO COUNT ON APRIL 1st

We need to count people where they live and sleep most of the time.

Do NOT INCLUDE these people: (They will be counted at the other place)

- College students who live away from this address most of the year
- Armed forces personnel who live away
- People who, on April 1, 2008, were in a:
 - Nursing home, mental hospital, etc.
 - Jail, prison, detention center, etc.

INCLUDE these people:

- Babies and children living here, including foster children

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List B

RELATIONSHIP

- Husband or wife
- Biological son or daughter
- Adopted son or daughter
- Stepson or stepdaughter
- Brother or sister
- Father or mother
- Grandchild
- Parent-in-law
- Son-in-law or daughter-in-law
- Other relative
- Roomer or boarder
- Housemate or roommate
- Unmarried partner
- Other nonrelative

List C

HISPANIC, LATINO, OR SPANISH ORIGIN

- No, not of Hispanic, Latino, or Spanish origin
- Yes, Mexican, Mexican American, or Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, of another Hispanic, Latino, or Spanish origin – *For example, Argentinean, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.*

List D

RACE (Choose one or more races)

- White
- Black, African American, or Negro
- American Indian or Alaska Native
- Asian Indian
- Chinese
- Filipino
- Japanese
- Korean
- Vietnamese
- Other Asian – *For example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.*
- Native Hawaiian
- Guamanian or Chamorro
- Samoan
- Other Pacific Islander – *For example, Fijian, Tongan, and so on.*
- Some other race

Information Sheet Findings

- Cognitive Findings
 - Respondents understood and were able to use the Information Sheet for all relevant questions
- Usability Findings
 - Interviewers were successful in administering the information sheet and associated questions

Hispanic Origin Question

5. Please look at List C. Is (Name) of Hispanic, Latino, or Spanish origin?

Read if necessary:

Examples of another Hispanic, Latino, or Spanish origin include Argentinean, Columbian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.

- No, not of Hispanic, Latino, or Spanish origin
- Yes, Mexican, Mexican American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin —

What is that origin? ↴

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Hispanic Origin Findings

- Cognitive Findings
 - Difficulty for Hispanic respondents
 - “Latino” or “Spanish”– without country of origin
 - Describing race and origin
 - Unable to respond *unassisted*
 - With probing by interviewer, able to provide answer
- Usability Findings

Scenario	Dominican Republic	Columbian	Puerto Rican	Cambodian	Mexican
Success Rate	95%	95%	100%	95%	100%

Hispanic Origin Discussion and Recommendations

- Respondents had some difficulty, but...
- Interviewers in usability testing were able to successfully navigate the question.
- Recommendations focused on training

Conclusions from Joint Cognitive and Usability Studies

- Understanding of how:
 - Respondents react to questions
 - Interviewers react to questionnaire
 - Interviewers react to respondent situations
- Recommendations
 - Improve the form – question wording, visual design, and/or navigational instructions
 - Improve interviewer training

General Recommendations

- Conduct cognitive and usability testing concurrently with early versions of the questionnaire, with time to change:
 - Question wording
 - Visual design (i.e., format and layout of the questionnaire)
 - Navigational strategies
 - Interviewer training
- Conduct iterative testing

Future Research

- Cognitive and usability testing of American Community Survey Internet data collection instrument
 - Early in development cycle
 - Iterative testing

Thank you!

Questions or Comments?

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