

# Using CARI and Behavior Coding to Evaluate Questionnaires

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# What is CARI

- Computer Audio Recorded Interview
- Records both CATI and CAPI interviews directly on to interviewers' laptops

# What is Behavior Coding?

- Systematic method to describe & quantify interviewer-respondent interactions
- Each turn of speech (“utterance”) by interviewer or respondent is assigned standardized code(s)
- Open-text notes complement codes
- Analytic focus: frequency of behaviors; notes help interpret quantitative data

# Anatomy of an Interview

- “Utterance” = everything one person says before the other person says something
- “Exchange” = pair of utterances: one from interviewer and one from respondent
- “1<sup>st</sup> level” exchange = first pair of utterances
- “2<sup>nd</sup> level” exchange = second pair, etc.
- “Final outcome” = respondent’s final answer to the question

# Typical Behaviors of Interest

## Interviewers

- Asking questions as worded or changing wording
- Verifying or skipping questions
- Providing clarification
- Probing for more detail

## Respondents

- Providing straight answers
- Providing indirect or qualified answers
- Asking for clarification
- Other response that does not answer question

# Evaluating Questionnaires

- How often are Qs asked as worded?
- What wording changes are most common?
- What are the consequences of wording changes?
- How often do Rs give straight answers?
- How do these factors vary by:
  - Question
  - Interviewer
  - Treatment (test vs control)
  - Mode (CATI vs CAPI)
  - Language
  - Etc.

# Conventional Behavior Coding

- Usually used for CAPI since CATI has centralized monitoring
- Interviewers carried analog tape recorders and tapes
- Requested consent; turned on recorder; recorded full interview
- Unsystematic selection of cases recorded; usually interviewer judgment of respondent's likelihood to cooperate
- Rule-of-thumb goal: record ~100 cases

# CARI Behavior Coding

- Interviews are recorded directly on to computers; no need for additional equipment
- Feasible to record all interviews not just subset
- CARI produces image of Q as displayed for interviewer and final data entry of R's answer
- Researchers can sample at varying rates from entire universe:
  - HHs/people based on known characteristics
  - Select topic areas; particular questions



# American Community Survey (ACS)

- Replaces Census “long form”
- Year-round data collection
- Annual data release
- Person-by-Person questions
- Multi-mode:
  - Mail out/mail back
  - CATI
  - CAPI

# ACS Content Test

- Two main goals for content test:
  - explore improvements to existing Qs (program participation; veterans; wages)
  - examine alternative Qs for new content areas (computers/internet; place of birth)
- Data Collection:
  - August-September: mail out/mail back
  - October-November: CATI and CAPI interviews conducted and recorded

# HH and R Characteristics

- HH and person-level characteristics of interest varied by topic area
- Computers:
  - Urban vs rural
  - More or less than HS education
- Parental Place of Birth:
  - 1<sup>st</sup> vs 2<sup>nd</sup> vs 3<sup>rd</sup> generation
  - Hispanic vs Non-hispanic

# Case Allotment by Topic Area

Goal: 1,600 cases (hh interviews)

- 800 CATI
- 800 CAPI

Within each mode:

- 400 English cases
  - 100 program participation/computers
  - 100 parental place of birth
  - 100 wages
  - 100 veterans
- 400 Spanish cases

# ACS Caseload Disposition

|                                    | CATI   | CAPI      |
|------------------------------------|--------|-----------|
| Sample released                    | 23,673 | 15,202    |
| Completed + partial cases          | 4,523  | (pending) |
| Recording consent rate             | 88.5%  | 64.8%     |
| Cases recorded                     | 4,005  | 4,137     |
| Cases selected for behavior coding | 796    | 708       |

# ACS Scope

- First two exchanges & final outcome:
  - Interviewer 1<sup>st</sup> level exchange
  - Respondent 1<sup>st</sup> level exchange
  - Interviewer 2<sup>nd</sup> level exchange (if any)
  - Respondent 2<sup>nd</sup> level exchange (if any)
  - Final outcome
- Codes applied at utterance-level
- Multiple aspects of each utterance coded (eg: behavior, language, interruptions)

# Language and ACS

- English-Spanish translation
- Cross-cultural differences
- Multiple cultures within Spanish-speaking population
- Interviewers' language proficiency
- Interviewers' language training



# Interviewer 1<sup>st</sup> Level

## 1. Initial Q-Asking

- As worded
- Major change
- Verification
- Skip

## 2. Language (English, Spanish, mix)

## 3. Interrupted (if applicable)

## 4. Language Problems (if applicable)





# Interviewer 1<sup>st</sup> Level Detail

- If Major Change (check all that apply):
  - Modified or dropped introduction
  - Modified or dropped reference period
  - Other
- If Verification (check one):
  - Correct
  - Incorrect
  - Unclear

# Respondent Behavior (1<sup>st</sup> and 2<sup>nd</sup> Levels)

## 1. Answering Behavior

- Codeable answer
- Indirect answer
- Qualified answer
- Uncodeable response
- Request for clarification
- DK or Refused

## 2. Language (English, Spanish, mix)

# Interviewer 2<sup>nd</sup> Level

## 1. Follow-up Behavior

- Probe/clarify/verify correctly
- Probe/clarify/verify incorrectly
- Probe/clarify/verify (unclear)
- Off-topic comment
- Other

## 2. Language

# Final Outcome Group

1. Respondent Answer (same as in Respondent Behavior)
2. Interviewer Data Entry
  - Matches respondent answer
  - Does not match respondent answer
3. Respondent Misunderstanding (if app)
4. Overall Language Problem (if app)

# Interviewer 1<sup>st</sup> Level Screen

**Categories**

- Int 1st Level
- Resp Behavior
- Int 2nd Level
- Final Outcome

| 1. Int Q Asking (check one) |                             |                          |
|-----------------------------|-----------------------------|--------------------------|
| ES                          | Exact/slight                | <input type="checkbox"/> |
| MC                          | Major change =>detail       | <input type="checkbox"/> |
| VER                         | Verification =>detail       | <input type="checkbox"/> |
| SKIP                        | Skipped Q*                  | <input type="checkbox"/> |
| OTHER                       | Other*                      | <input type="checkbox"/> |
| INAQ                        | Inaudible/Incomplete Audio* | <input type="checkbox"/> |

  

| 1a.MC Detail (all that apply) |                |                          |
|-------------------------------|----------------|--------------------------|
| INTR                          | Dr/chng intro* | <input type="checkbox"/> |
| TIME                          | Dr/chng time*  | <input type="checkbox"/> |
| OMC                           | Other MC*      | <input type="checkbox"/> |

  

| 1b.Ver Detail (check one) |                  |                          |
|---------------------------|------------------|--------------------------|
| VER+                      | Ver correctly*   | <input type="checkbox"/> |
| VER-                      | Ver incorrectly* | <input type="checkbox"/> |
| VER?                      | Ver; unclear*    | <input type="checkbox"/> |

  

| 2. Int Lang (check one) |                      |                          |
|-------------------------|----------------------|--------------------------|
| ENGI                    | English only         | <input type="checkbox"/> |
| SPAI                    | Spanish only         | <input type="checkbox"/> |
| MIXI                    | English/Spanish mix* | <input type="checkbox"/> |

  

| 3. Int Interrupted (if app) |                       |                          |
|-----------------------------|-----------------------|--------------------------|
| BRI                         | Int gets interrupted* | <input type="checkbox"/> |

  

| 4. Int Lang Prob (if app) |             |                          |
|---------------------------|-------------|--------------------------|
| PRNI                      | Lang probs* | <input type="checkbox"/> |

notes  
required

# Respondent Behavior Screen

| Categories         |   |
|--------------------|---|
| Resp Behavior      | ▲ |
| Int 2nd Level      | ▲ |
| Final Outcome      | ▲ |
| Sound File Problem | ▼ |

  

| 1. Response (check one) |  |                          |
|-------------------------|--|--------------------------|
| CODR                    | Codeable answer                        | <input type="checkbox"/> |
| INDR                    | Uncodeable but R indirectly answers Q* | <input type="checkbox"/> |
| QUAL                    | Qual/uncertain answer*                 | <input type="checkbox"/> |
| UNCR                    | Uncodeable; R does not answer Q*       | <input type="checkbox"/> |
| CLAR                    | Request for clarification              | <input type="checkbox"/> |
| DKR                     | DK/uncertainty                         | <input type="checkbox"/> |
| REFR                    | Refused                                | <input type="checkbox"/> |
| OTHR                    | Other*                                 | <input type="checkbox"/> |
| INAR                    | Inaudible/Incomplete Audio*            | <input type="checkbox"/> |

  

| 2. Resp Lang (check one) |                      |                          |
|--------------------------|----------------------|--------------------------|
| ENGR                     | English only         | <input type="checkbox"/> |
| SPAR                     | Spanish only         | <input type="checkbox"/> |
| MIXR                     | English/Spanish mix* | <input type="checkbox"/> |

  

| 3. Resp Interrupted (if app) |                       |                          |
|------------------------------|-----------------------|--------------------------|
| BRR                          | Resp gets interrupted | <input type="checkbox"/> |

  

| 4. Resp Lang Prob (if app) |             |                          |
|----------------------------|-------------|--------------------------|
| PRNR                       | Lang probs* | <input type="checkbox"/> |

  

| 5. Resp Misses Q (if app) |             |                          |
|---------------------------|-------------|--------------------------|
| MISR                      | R misses Q* | <input type="checkbox"/> |

# Final Outcome Screen

| Categories           |   |
|----------------------|---|
| Resp Behavior        | ▲ |
| Int 2nd Level        |   |
| <b>Final Outcome</b> |   |
| Sound File Problem   | ▼ |

  

| 1.Resp Final Answr (check one) |  |                          |
|--------------------------------|--|--------------------------|
| CODO                           | Codeable Answer                        | <input type="checkbox"/> |
| INDO                           | Uncodeable but R indirectly answers Q* | <input type="checkbox"/> |
| QUAO                           | Qual/uncertain answer*                 | <input type="checkbox"/> |
| UNCO                           | Uncodeable; R does not answer Q*       | <input type="checkbox"/> |
| DKO                            | DK/uncertainty                         | <input type="checkbox"/> |
| REFO                           | Refused                                | <input type="checkbox"/> |
| OTHO                           | Other*                                 | <input type="checkbox"/> |
| INAO                           | Inaudible/Incomplete Audio*            | <input type="checkbox"/> |

  

| 2. Int Data Entry (check one) |                                    |                          |
|-------------------------------|------------------------------------|--------------------------|
| MATD                          | Int entry matches R answer         | <input type="checkbox"/> |
| NMTD                          | Int entry does not match R answer* | <input type="checkbox"/> |
| OTHD                          | Other/Unclear if entry matches*    | <input type="checkbox"/> |

  

| 3. R Misses Q (if app) |   |
|------------------------|---|
| LPO                    | Overall lang prob* <input type="checkbox"/> |

  

| 4. Overall Lang Prob (if app) |                                      |
|-------------------------------|--------------------------------------|
| MISO                          | R misses Q* <input type="checkbox"/> |

# RESULTS (hypothetical)



# Interviewer Q-Asking

| Interviewer 1 <sup>st</sup> Level Initial Q-Asking | n | % |
|--|---|---|
| Exact  |   |   |
| Major change                                       |   |   |
| Verification (correct)                             |   |   |
| Verification (incorrect)                           |   |   |
| Verification (unclear)                             |   |   |
| Skipped  |   |   |
| Other  |   |   |
| Inaudible  |   |   |

# Type of Major Change

|                                   | n | % |
|-----------------------------------|---|---|
| Dropped/modified introduction     |   |   |
| Dropped/modified reference period |   |   |
| Other major change                |   |   |
| Category A (from open text notes) |   |   |
| Category B (from open text notes) |   |   |
| Category C (from open text notes) |   |   |
| etc.                              |   |   |

# Respondent Q-Answering

| Respondent 1 <sup>st</sup> Level Q-Answering | n | % |
|--|---|---|
| Codeable answer                              |   |   |
| Indirect answer                              |   |   |
| Qualified answer                             |   |   |
| Uncodeable answer                            |   |   |
| Request for clarification                    |   |   |
| Don't know                                   |   |   |
| Refused                                      |   |   |
| Other  |   |   |
| Inaudible                                    |   |   |

# Sequence of Behaviors

| 1 <sup>st</sup> Level Exchange |                     | 2 <sup>nd</sup> Level Exchange |             | Final Outcome |            |   |   |
|--------------------------------|---------------------|--------------------------------|-------------|---------------|------------|---|---|
| Int Q-Asking                   | R Q-Answer          | Int Followup                   | R Answer    | R Answer      | Data Entry | n | % |
| Exact                          | Codeable            | None                           | None        | Codeable      | Match      |   |   |
| Exact                          | Uncodable           | Correct probe                  | Codeable    | Codeable      | Match      |   |   |
| Major change                   | Codeable            | None                           | None        | Codeable      | Match      |   |   |
| Major change                   | Request for Clarify | Correct probe                  | Codeable    | Codeable      | Match      |   |   |
| Major change                   | Request for Clarify | Incorrect probe                | Un-codeable | Un-codeable   | Non-Match  |   |   |
| Etc.                           |                     |                                |             |               |            |   |   |

# Sequence of Language

| 1 <sup>st</sup> Level Exchange |            | 2 <sup>nd</sup> Level Exchange |          |   |   |
|--------------------------------|------------|--------------------------------|----------|---|---|
| Int Q-Asking                   | R Q-Answer | Int Followup                   | R Answer | n | % |
| English                        | English    | None                           | None     |   |   |
| Spanish                        | Spanish    | None                           | None     |   |   |
| English                        | English    | English                        | English  |   |   |
| Spanish                        | Spanish    | Spanish                        | Spanish  |   |   |
| English                        | Spanish    | None                           | None     |   |   |
| English                        | Spanish    | Spanish                        | Spanish  |   |   |
| Spanish                        | English    | Spanish                        | English  |   |   |
| Etc.                           |            |                                |          |   |   |

# Subgroup Analysis

- Question (test vs. control)
- Language
- CATI vs. CAPI
- Person number in household
- Coder
- Interviewer
- Topic Area (and subgroups within)

# HH and R Characteristics by Topic Area

- Computers:
  - Urban vs rural
  - More or less than HS education
- Parental Place of Birth:
  - 1<sup>st</sup> vs 2<sup>nd</sup> vs 3<sup>rd</sup> generation
  - Hispanic vs Non-hispanic

# CARI Summary

- Unobtrusive easy recording mechanism
- Levels playing field between CATI & CAPI
- Valuable sampling capabilities
- Flexibility in defining what behaviors to code
- Image display offers:
  - Exact display of wording (including fills)
  - Interviewer's actual data entry value
- Real time monitoring of coding quality
- Data extractable at any time