Audio Computer-Assisted Self-Interview (ACASI) Implementation Across Languages and Cultures

Nicole Kirgis, Yu-chieh (Jay) Lin, and Zeina Mneimneh
Overview

- What is ACASI and why use ACASI?
- Design considerations and implementation issues
- Field experiences: NSFG, CMHS, KSA
What is ACASI?

• Technique used in combination with CAPI in order to provide increased privacy for respondents answering questions about sensitive or stigmatizing behavior.

• Respondents listen to recorded questions using headphones and enter answers directly into the computer.
Why Use ACASI?

• It can be used with any respondent who can hear; it does not require reading literacy.

• It offers the traditional advantages of computer-assisted survey technologies.

• It provides a completely standardized measurement system.
Why Use ACASI?

• Since mid-1990’s, used on various U.S. surveys such as:
  ▪ National Survey of Adolescent Males
  ▪ Longitudinal Study of Adolescent Health
  ▪ National Survey of Family Growth

• Results: increased reporting of sensitive behaviors.
New Advances in ACASI

- Text-to-Speech technology instead of human recordings.
- Currently being used on NSFG.
- Analysis: more use of ACASI by respondents, less time to complete, less missing data, higher reports.
Human Voice Recordings: Pros and Cons

Pros:
• Sounds like an interviewer
• Natural pronunciation, esp. for other languages.

Cons:
• Human labor
  ▪ Coordination
  ▪ Re-recording
  ▪ Inconsistency
• Equipment and facilities
Text-to-Speech Recordings: Pros and Cons

Pros:
- Very Quick and Easy
- Inexpensive
- Consistency of Affect

Cons:
- Inflection Issues
- Potentially Off-Putting Computer Voice
National Survey of Family Growth (NSFG) Background

• Conducted by the National Center for Health Statistics (NCHS) in the U.S.
• Data collected by the University of Michigan
• Currently in Year 2 of Cycle 8
• National, area probability sample of 15-44 year olds
• CAPI with ACASI
ACASI

- Respondents complete approximately 15 minutes of the interview on their own.

- Questions are sensitive in nature—sexual risk behaviors, abortions, drug use.
Evaluation of Human Voice vs. TTS

• Male and Female instruments
• Data from last cycle
  ▪ Females: n=12,279
  ▪ Males: n=10,403
• Data from two quarters of current cycle
  ▪ Females: n=1,398
  ▪ Males: n=1,235
Data Quality Indicators

• ACASI observations
  ▪ While R completed ACASI, interviewer completed observation form

• Paradata
  ▪ Item-level times

• Substantive data
  ▪ Missing data
  ▪ Substantive distributions
ACASI Observations

- R’s needed less assistance.
- R’s used headphones more.
- R’s used text-only less (no audio).
Paradata

- Evaluated item-level timings for variables common in both cycles.
- ACASI lengths shorter in C8 for both males and females.
- Spanish ACASI lengths also shorter.
Discussion of Time

• If respondents are making more use of ACASI, why are they taking less time?

• Three possible explanations
  - TTS audio files are significantly smaller
  - Fewer “empty spaces” at start and end
  - Pace of TTS audio slightly faster
Missing Data Rates

• Slightly lower rate of Don’t Know/Refused is C8 (but non-significant).

• Higher reporting of sensitive behaviors related to sexual activity and drug alcohol use.
Summary of NSFG Text to Speech

- Production of TTS files took less effort than human recording
- Interviewer observations suggest respondents may be making more use of the audio in ACASI
- But TTS takes less time than recorded ACASI
- Suggests some efficiency gains
- Slightly lower (but n.s.) missing data rates in C8 than C7
- No evidence that substantive responses are negatively affected by transition to TTS
- Adoption of TTS judged successful
Current NSFG Outcomes

- Very low refusal rate—In current cycle, 25 respondents out of 7922 completed interviews (.3%).
- Of those who have refused, only two respondents were Spanish-speaking.
- CAPI interview transitions to ACASI at end; no option to do ACASI content in CAPI mode.
China Experiment

• Proposed use of ACASI on China Mental Health Study (part of World Mental Health initiative).
• Experiment conducted on rural village sample to determine feasibility.
• College sample experiment forthcoming.
China Design

- Rural area of Hunan Province
- 13 interviewers
- Used Suicide and Marriage modules of Composite International Diagnostic Interview (CIDI) 3.0.
- Investigate respondent’s acceptance of ACASI mode and reporting of sensitive topics.
China ACASI Sample

- Sample size was 1223
  - 696 assigned to ACASI
  - 527 assigned to CAPI

- CAPI administered interview prior to sensitive questions.
China ACASI Outcomes

• Respondents informed of the mode to be used.

• Refusal Rates
  ▪ 30.6% ACASI
  ▪ 7.0% CAPI

• Difference is significant.
## Willing to Participate

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<tr>
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<th>ACASI</th>
<th>CAPI</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>YES</td>
<td>483 69.4%</td>
<td>490 93.0%</td>
<td>973 79.6%</td>
</tr>
<tr>
<td>NO</td>
<td>213 30.6%*</td>
<td>37 7.0%*</td>
<td>250 20.4%</td>
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<tr>
<td>Total</td>
<td>696 100.0%</td>
<td>527 100.0%</td>
<td>1223 100.0%</td>
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\[X^2 = 102.56\]
\[P < 0.001\]
China ACASI Outcomes

- Have you ever seriously thought about committing suicide?
- Among the respondents who were willing to participate, 8.3% said ‘yes’ in ACASI compared to 5.3% in CAPI.
- Difference is not significant at 0.05 level.
Ever Seriously Though About Committing Suicide

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<td>40</td>
<td>26</td>
<td>66</td>
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<tr>
<td></td>
<td>8.3%*</td>
<td>5.3%*</td>
<td>6.8%</td>
</tr>
<tr>
<td>NO</td>
<td>443</td>
<td>464</td>
<td>907</td>
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<tr>
<td></td>
<td>91.7%</td>
<td>94.7%</td>
<td>93.2%</td>
</tr>
<tr>
<td>Total</td>
<td>483</td>
<td>490</td>
<td>973</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
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</table>

X² = 3.406
P < 0.065
Outcomes by Age

• 55 Years or Less
  ▪ Significant difference in the rate of refusal (17.9% for ACASI vs. 6.1% for CAPI)
  ▪ No significant difference in reporting of suicide intentions (8.8% vs. 7.2%).

• Older than 55 Years Old
  ▪ Significant difference in the rate of refusal (49.1% for ACASI vs. 8.3% for CAPI)
  ▪ Significant difference in reporting of suicide intentions (6.9% vs. 2.5%).
Summary

• Respondents who were informed of the ACASI mode to be used tended to refuse participation more than CAPI mode. Older respondents were more likely to refuse ACASI.

• Reporting of suicide intentions was higher for ACASI, but only significant for the oldest respondents.
Next Steps for China

• Continue experiment on college student sample.
• Refine training on ACASI for interviewers and re-design introduction of ACASI for respondents.
• Decide on ACASI use for China’s Mental Health Study.
ACASI Use on KSA WMH

• Saudi National Mental Health Survey (KSA)

• Currently in data collection.
  ▪ January-June 2013 – Eastern, Western, and Central regions
  ▪ September-December 2013 – Northern and Southern regions

• Experimental design, ACASI and CAPI.
  ▪ Sections include: Suicide, Marriage, Social Satisfaction, Attitudes towards Substance/Alcohol Use, Alcohol, Illegal Substance Use, Religiosity, Conduct Disorder
KSA ACASI Sample

- Group 1: 758 respondents were interviewed with Suicide, Marriage modules.

- Group 2: 149 respondents were interviewed with Social Satisfaction, Attitudes towards Substance/Alcohol Use, Conduct Disorder modules.

- Group 3: 148 respondents were interviewed with Alcohol, Illegal Substance Use, Religiosity modules.
KSA Experimental Design

• Group 1: Assigned to ACASI (CAPI option only offered if ACASI is refused).

• Group 2: Randomized half ACASI, half CAPI (ACASI offered if CAPI was refused).

• Group 3: All respondents from Group 2 assigned to ACASI right after Group 2 modules.
Outcome – Group 1

- 758 respondents were selected into the Suicide module and 16.9% of respondents refused to do ACASI but were willing to be interviewed with CAPI.
  - Higher refusal rate for female respondents

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<th>CAPI</th>
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<tbody>
<tr>
<td>Female</td>
<td>261</td>
<td>83</td>
<td>344</td>
</tr>
<tr>
<td></td>
<td>75.9%</td>
<td>24.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Male</td>
<td>369</td>
<td>45</td>
<td>414</td>
</tr>
<tr>
<td></td>
<td>89.9%</td>
<td>10.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>630</td>
<td>128</td>
<td>758</td>
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<tr>
<td></td>
<td>83.1%</td>
<td>16.9%</td>
<td>100.0%</td>
</tr>
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Outcome – Group 2

- 149 respondents were randomized into the Social Satisfaction module and 24.2% of respondents refused to do ACASI but were willing to be interviewed with CAPI.
  - Higher refusal rate for female respondents.

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<tr>
<th></th>
<th>ACASI</th>
<th>CAPI</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>Female</td>
<td>46</td>
<td>23</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>66.7%</td>
<td>33.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Male</td>
<td>67</td>
<td>13</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>83.8%</td>
<td>16.2%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>36</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>75.8%</td>
<td>24.2%</td>
<td>100.0%</td>
</tr>
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Outcome – Group 3

- 148 respondents were selected into the Social Satisfaction module and 20.9% of respondents refused to do ACASI but were willing to be interviewed with CAPI.
- Higher refusal rate for female respondents.

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<tr>
<th></th>
<th>ACASI</th>
<th>CAPI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>67</td>
<td>23</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>74.4%</td>
<td>25.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Male</td>
<td>50</td>
<td>8</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>86.2%</td>
<td>13.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>31</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>79.1%</td>
<td>20.9%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Summary

• Group 1 (16.9%) has the lowest refusal rate, then Group 3 (20.9%), and Group 2 (24.2%).
  ▪ The lowest refusal rate happened at the first time ACASI was assigned.
  ▪ Respondents still refused ACASI after having experience with Group 1 and 2 modules.

• Female respondents are more likely to refuse to proceed with audio sessions.
What We’ve Learned So Far

- Importance of interviewer training.
- Strategies for introducing ACASI to respondents with low education/little or no computer experience.
- Hardware considerations—small keyboard.
- Gender considerations based on KSA results.