Collecting Interviewer Observation Data via a Mobile Survey: Lessons Learned

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1. Introduction

On a major national, face-to-face, interviewer-administered survey, interviewers complete an interview observation form for each completed interview. The interview observation form consists of about 30 questions about the interviewing experience (e.g. Where was the interview conducted?). Presently (and in past cycles of data collection), interviewers complete the interview observations via paper-and-pencil while the respondent completes a self-administered section of the interview on the interviewer's laptop. The self-completed section, administered via ACASI, takes approximately 10 minutes to complete. The interviewer explains that they will be completing administrative tasks while the respondent completes this section of the interview. At a later time, usually at the end of the interviewer's field work for the day, the interviewer transfers the paper-and-pencil responses to the Blaise instrument on the laptop.

Transferring data from paper to computer not only introduces a risk for increased measurement and processing error, but also increases the interviewers' administrative time. To reduce error and increase interviewers' efficiency, the management team proposed to shift the paper-and-pencil interviewer observation survey to a mobile survey to be completed on the interviewers' smartphone.

2. Technical Systems

Three software applications were examined for creating the mobile interview observation survey: Open Data Kit, Illume, and Blaise IS. Each had strengths and weaknesses which are described below.

2.1 Open Data Kit (ODK)

ODK is an "app" on the mobile phone that uses instructions created by an Excel spreadsheet or other means. It is a specialized survey program for Android mobile phones that allows the survey to access features on the phone otherwise unavailable, such as the camera or GPS. ODK can store interviews on the phone, both partials and completes, until the data is ready to be sent to the data server. The interviewer can complete a number of tasks such as sending, receiving, deleting, and selecting surveys. ODK is an open source project and additional features may be available in future releases.

Development of ODK surveys are programmed using a web-based utility or by using an Excel spreadsheet that is then exported and converted into a survey. The surveys provide basic routing and calculations, but are lacking features when compared to Illume or Blaise IS.

2.2 Illume

Illume is a server-based interviewing system with web-based sample management features. Surveys are created via an editor program, and are stored as XML files. Formatting of the surveys is optimized for desktop systems. Specialized processing during the interview can be accomplished by writing DLLs that are called by Illume, such as prompting once if a field is left empty. While we began development in Illume for this project, we did not complete development using this system. Development was started on creating a mobile survey in Illume but was not completed for the mobile observations project. It became apparent that getting Illume to function the way we wanted would take some considerable effort, so the decision was made to focus our efforts on Blaise IS as Blaise IS would take considerably less effort.

2.3 Blaise IS

Blaise IS is also a server-based interviewing system that allows for control of many features of the survey, can perform complex calculations, and has a great deal of flexibility. However, like Illume, mobile phones require a constant connection to the Blaise IS server. Blaise IS does have a form-based (offline) survey with the following limitations:

- All questions are on one page in a large grid:
  - Question text is in the left column
  - Answer categories in the right column
- Look and feel is not optimized for a mobile survey
- The questionnaire, as an HTML page, would have to be sent to the interviewer
- The interviewer would have to open the HTML page to run the survey
- No rules logic
- Range checks only (such as numeric ranges)
- No consistency checks (i.e., can't check "none" and something else)
- A submit button at the end of the page and no previous/next buttons
- The default receipt page needs to be customized
- When the page is closed before submitting all data is lost
- Some fields don't appear (e.g., field for secondary key)
- Multiple sessions are not supported

Enabling Blaise IS for use on a mobile phone would require creating an "app" that would function similarly to ODK and implement the Blaise rules engine. Such an "app" would take considerable development time and resources and the decision was made not to pursue this avenue further.

Facing project deadlines, the decision was made to use Blaise IS for the mobile interview observation survey. ODK would have provided the functionality of the survey itself, but with the added complexity of integrating ODK with our systems (Blaise, SurveyTrak, and WebTrak), Blaise IS was determined to best fit the project's needs given the time constraints and available resources. Illume was not selected for similar reasons and that the usability of Illume was not as high as Blaise IS.

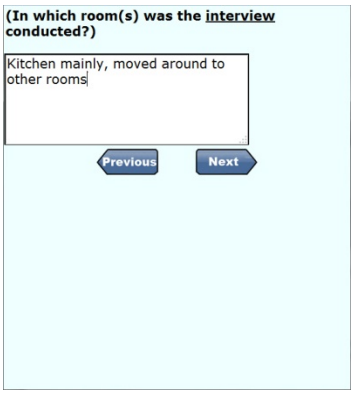
3. Implementation

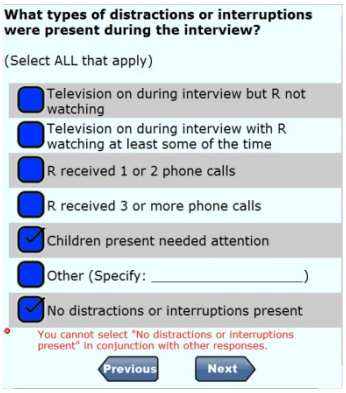
The existing interview observation survey (desktop Blaise) was not changed or adapted for the mobile version. The question wording and the display was developed to mirror the desktop Blaise data entry, which displays one question per screen. However, three variables were added to the mobile version: Sample identification number, interviewer identification number and respondent concern (which is discussed later).

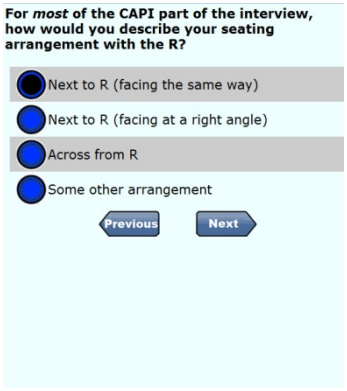
The default Blaise IS implementation of the survey did not function well on the phone. The text, radio buttons and check boxes were too small and did not resize. Question text, navigation buttons, and code frames were sometimes clipped if there was too much information on the screen. In such situations navigation was impossible because the buttons were unavailable.

Because the security of the data is of utmost importance, the data had to be handled carefully. It was decided to use a two-server setup: one web & rules server, and one data server. When the Blaise IS survey is deployed to the web/rules server Blaise automatically creates relative Blaise OLEDB Interface (BOI) files that point to the secure database on the data server. Initially, the data was going to be stored in SQL Server, but significant performance gains were observed when the native Blaise database was used.

The initial programming modified the Blaise IS stylesheets by utilizing jQuery to customize the radio buttons and check boxes with clickable, resizable images, and add row highlighting on code frames. Clicking anywhere on the row would select the radio button or check box. The color and size of the radio buttons, checkboxes, next and previous buttons were entirely customized. The purpose was to minimally modify the stylesheets so that all the features of Blaise IS would remain. The images below are simulated screen shots from this implementation.



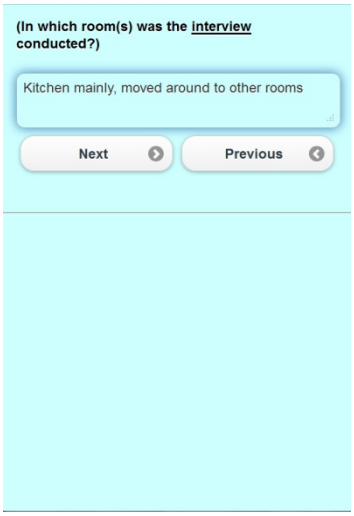


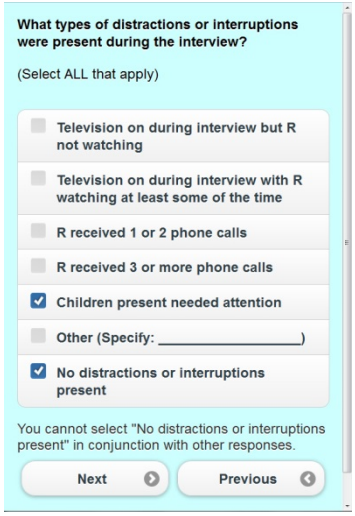


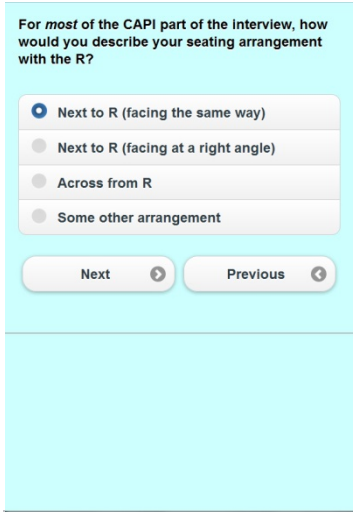
However, pages with too much information were still clipped, and the pages themselves still did not resize well on the phone. This behavior stemmed from the default stylesheets used in Blaise IS. There was also a significant lag when navigating because of the amount of information that had to be transferred between the mobile phone and the web/rules server.

The next approach was to try the C-Moto stylesheets from Tilburg University (Amin and Wijnant, Blaise On-the-Go: Using Blaise IS With Mobile Devices). The C-Moto stylesheets were based on the Blaise default stylesheets and were simplified by removing the extra features that were not used in the Tilburg survey. The C-Moto stylesheets also used jQuery mobile- a JavaScript library with features customized for the mobile phone.

Using the C-Moto stylesheets solved the problem of having the screens clipped and the navigation, but too many features had been removed to use with the survey. The stylesheets were then modified by adding certain features, such as text formatting (underline, italic). The images below are simulated screen shots from this implementation.







4. Field Test

A feasibility study was conducted in April 2013 for collecting interview observation data via a mobile phone using Blaise IS. Our main goals for the field test were to evaluate connectivity issues (i.e. network coverage), usability, interviewers concerns, respondent concerns and data transmission.

4.1 Design

Four field interviewers were selected to test over a three week period based on their smartphone skills. Since one of the goals was to assess connectivity or network coverage issues, interviewer's location (i.e. rural or urban) was also used as a selection criterion. A special training session was held with the selected interviewers to acclimate them to the mobile survey and the field test procedures. The interviewers were instructed to explain to the respondent that they would be completing administrative tasks on their mobile phone while the respondent completed the ACASI section. The interviewers were also instructed to have the paper-and-pencil version as a backup in case they had difficulties with the smartphone version and to notify their field manager if they could not complete the interview observations on their mobile phone.

As indicated earlier, a question was added to the mobile version of the survey to assess whether or not the respondent objected or voiced concerns about the interviewer using the smartphone during the interview. The ACASI section consists of sensitive questions and our concern was that respondents may perceive a decrease in privacy since the smartphone acts as a link to the outside world, which may in turn negatively impact data quality.

4.2 Monitoring

Daily checks were performed to assess connectivity issues, identify respondent concerns, verify the correct sample identification number was entered linking the mobile survey to the main survey data, and that the data was transmitted successfully.

4.3 Results

The four interviewers completed 51 interviews during the three week period. Of the 51 interviews completed, 43 of the interview observations were collected via the mobile survey, with the remaining eight collected via paper-and-pencil. Two of the interview observations collected via paper-and-pencil was due to problems with the link to the survey and six due to connectivity issues. For the 43 mobile surveys completed, all reported no respondent concerns.

4.4 Interviewer Debriefing

In addition to the data analysis, an interviewer debriefing was held shortly after the field test. In general, the interviewers gave positive feedback about the mobile survey process and the usability of the survey, with the all interviewers expressing that they especially liked saving data processing steps ("I don't have to do it when I get home").

Despite the interviewers reporting that the mobile survey was easy to use and that they liked the "look and feel" of it, they all reported connectivity issues. While the data showed 43 interviews completed via mobile, the interviewer debriefing revealed that of the 43 completed, the majority had considerable lag time. During in-house testing, the mobile survey took three minutes on average to complete. However, for the interviewer field test, the survey time was longer and in some cases, longer than the time it was taking the respondent to complete the ACASI section (i.e. more than 10 minutes). The interviewers reported that they had to reload pages or hit the answer multiple times before the survey would advance to the next question. When the interviewers were asked if they would like the mobile version implemented for production, they all said yes, if the lag time could be fixed.

5. Future Steps

While the interviewers reported the usability of the interviewer observations (programmed in Blaise IS ,)was high, the connectivity issues were significant enough that other approaches need to be explored, with further testing, before a mobile version of the interview observation survey can be deployed more broadly. Since we cannot control the level of network connection any given field interviewer will have at a respondent's home, we are currently exploring applications that have off-line capabilities, such as Open Data Kit and Form Hub.

References

Alerk Amin and Arnaud Wijnant, Blaise On-the-Go: Using Blaise IS With Mobile Devices, IBUC 2012 Proceedings