

Developing organization level screen layout and design guidelines for Blaise 5

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1. Background

The Survey Research Center (SRC), at the University of Michigan, originally developed screen design guidelines for Blaise survey instruments in 2000 - these guidelines were then reviewed and updated in 2002 and 2008. The benefits of establishing organization level screen design guidelines have been well documented in earlier papers (Couper (2000), Gatward (2003), Hansen (2003), Kuusela (2003), Wensing (2003)). In addition a series of papers presented by the Survey Research Center outline the process and design principles that were followed when the Screen Design Guidelines, Specification and Programming standards were initially developed (Hagerman 2009, Hansen 2003, Hansen 2004).

Over the past five years SRC has been testing new releases of Blaise 5. As the method to design screen layouts is completely different in Blaise 5, the necessary programming or settings cannot be rolled forward from Blaise 4.8 into Blaise 5. We had to start from scratch and develop screen design templates in Blaise 5. For this reason, it was an ideal time to review and update the screen design and layout guidelines. In addition, we wanted to take advantage of the increased flexibility for screen design that Blaise 5 provides.

The focus of this paper is to detail the steps we followed to review and update SRC's long-standing guidelines for Blaise 5, including decision making from both a technical and as well as a design perspective and lessons learned. Although the scope of the project included updating guidelines for web surveys, this paper focuses just on the work necessary to develop the screen templates for interviewer administered modes.

For context, the templates were developed as we transitioned the Health and Retirement Study to mixed mode and Blaise 5. This work began in 2012 and mixed mode data collection launched in April 2018 using Blaise 5.3.1501.

2. Scope and goal

The full scope of the work undertaken is broader than developing screen design and layout guidelines for Blaise 5 in interviewer administered modes. Those relevant to Interviewer administered modes are as follows;

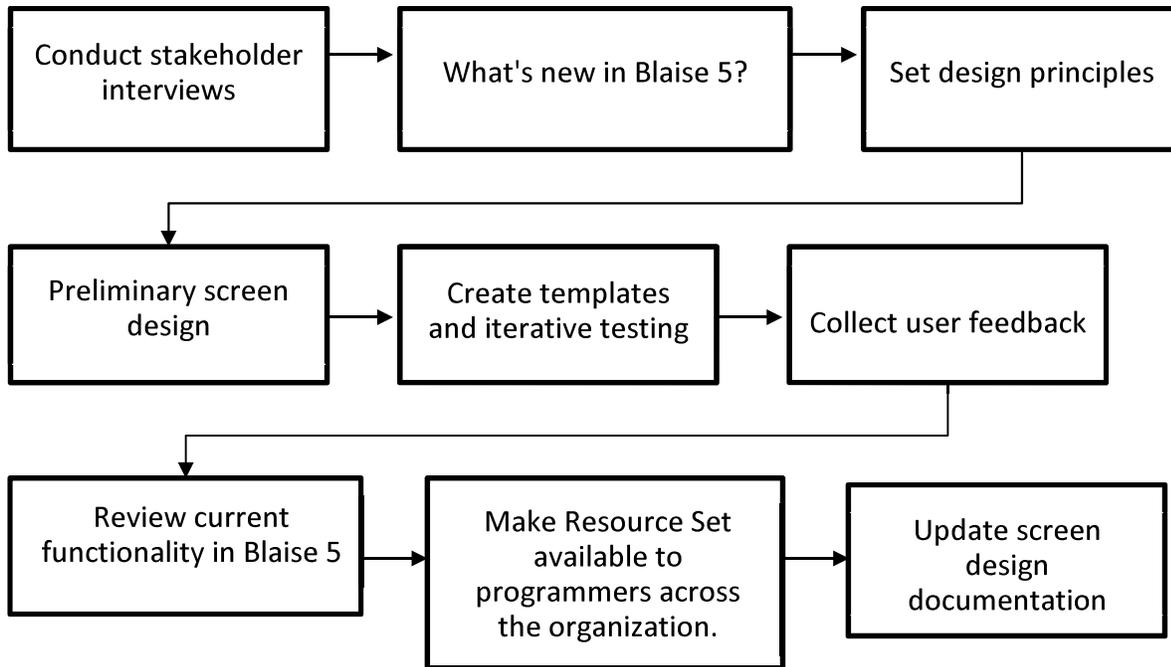
- Update the Blaise screen design guidelines for Blaise 5.
- Create a library (or Resource Set) of Blaise 5 screen templates (interviewer administered, self and mobile) to be used across SRC projects. The creation of the templates includes creating an organization level Resource Editor Database.

3. Review and design process

The process we followed to review and update the Blaise screen design guidelines is described below, and summarized in the flowchart (Figure 1). It is a standard process, there is nothing particularly innovative

about it, although some additional steps were necessary because we are adapting to and creating guidelines in Blaise 5.

Figure 1 - Summary of the process followed to review and update the screen design guidelines.



3.1 Conduct stakeholder interviews

The first step was to conduct interviews with stakeholders with the aim of collecting ideas about potential improvements to CAI screen designs. Individuals selected (n=5) to be interviewed were identified with the intention of representing various perspectives and projects with respect to Blaise and CAI instrument development. They included faculty, interviewer managers, and other project staff with considerable experience in specifying and testing Blaise questionnaires.

3.2 What's new in Blaise 5 – or what can we now do using Blaise 5?

Blaise 5 allows more flexibility around controlling the look of a screen and thus more complex design is possible. This step involved gaining familiarity with the screen design process in this new version of Blaise and the additional functionality available. We also needed to identify layouts that we were not able to achieve using previous Blaise versions (or required workarounds) and then assess if these were now possible using Blaise 5.

3.3 Set design principles

At this stage we set the parameters we would work within as we updated the guidelines. These design principles were established as we reviewed the feedback provided during the stakeholder interviews (they are described in sections 4 and 5 below).

3.4 Preliminary screen design

Using the design principles we created a prototype screen. This was simply an initial screen for the team to react to.

3.5 Review requirements across current surveys

We reviewed surveys conducted by SRC to establish a comprehensive list of question types and screen components that are used across surveys. This served as a check list to ensure new templates were created to meet all project needs.

3.5 Creation of templates and iterative testing

Once we had agreed on a basic design and developed a prototype using Blaise 5, we began developing templates for all the basic question types.

3.6 Collect user feedback

We were now ready to begin ‘in house’ testing and collect feedback from various Blaise users - including, Field Managers, Interviewers, Blaise programmers, and Faculty/experts in screen design. Feedback was collated and reviewed and the programmer implemented necessary changes to the templates.

3.7 Review current functionality in Blaise 5

Development of Blaise 5 continued as we were working through the development process which meant that it was necessary to review more recent versions of Blaise 5 as they were released, for additional functionality relevant to this work.

3.8 Make templates available to programmers and other users across the organization

A primary goal of this project was to achieve consistency for the user. To encourage the use of the guidelines across all SRC projects we developed a library of templates that can be applied to Blaise questionnaires by programmers.

3.9 Update the screen design guidelines

The final step is to update the current documentation which details the screen design and layout guidelines.

4. Outcome of the stakeholder interviews and resulting design decisions

4.1 Common interview themes

There were several general themes that were raised during all or most of the stakeholder interviews. These are summarized below. For reference, an example question in the current Blaise 4.8 design guidelines is included below (Figure 2).

- Current CAI (4.8) screen designs are based on sound principles, and people generally felt that the current screen designs were effective as is.
- Users recognized several areas in which Blaise 5.0 functionality is not yet to the level of Blaise 4.8. Users assumed that any previous capabilities would eventually be available, but their absence was a dominating topic in the present interviews. (*The Stakeholder interviews were conducted in May 2016*)

- As an organization, we need to improve our consistency in screen presentation and functionality both within and across interviewer- administered data collection instruments. Issues of consistency were primarily related to design and implementation (rather than Blaise functionality).

4.2 Initial Design recommendations

Each of the following items was discussed in the majority of the interviews. Most of these items speak to the need for improved consistency in design. All functionality is already present in Blaise 4.8, and is expected to be available in 5.0 if it is not already.

Screen panes

There was overall agreement that the three distinct panes for the question, response categories, and entry fields should be retained. Most agreed that the size of the panes should remain flexible to best accommodate the question content.

Entry pane

The entry pane should remain gray and continue to display relevant items adjacent to the present questionnaire item. Users agreed that the presence of additional items provided context for the interviewer regarding skips and the relationship between items, as well as confirmation that responses were entered correctly.

Entry pane labels

Users agreed that the labels on the left of the entry pane should be descriptive, intuitive representations of the survey questions, rather than cryptic labels or variable names.

Entry field labels

Users also agreed that it is most beneficial to the interviewer when the response category text is displayed to the right of the entry field after the interviewer keys the response.

Question pane

A new question should always begin in the same place on the screen so that the interviewer does not need to scan for the question text. This may vary, however, if an interviewer instruction is required before the interviewer begins reading the question.

Definition (QXQ) placement

Ideally, important definitions are incorporated into question text. Any additional definitions that are displayed on the screen should be displayed in a consistent location. Any definitions that are not displayed on the screen should be displayed in a consistent location (triggered by a short-cut key) within the question pane.

Question batteries/series

When a question series includes a common stem with a single construct changing within the question, the construct unique to the question should be highlighted (or displayed in another color) so that the interviewer can easily identify the unique part of the question.

Consistent navigation

Users were in agreement that specifications needed to be developed for consistent keyboard navigation across projects. Specific items included the use of hot keys, DK/Ref conventions, arrow keys, page up/down (or other forward and back navigation), saving open-ended responses, and functionality for pick lists (and plan for drop-down equivalents in web).

Figure 2. Basic screen formatted with existing guidelines

1 SRO Standard Blaise Project Template

2 Forms Answer Options Help

3 Do you currently use a computer, either at work, at home, or at school?

4 1. Yes
 5. No

5 Currently Use a Computer No
Used the Internet
Ever Used a Computer
Vacation in Last Year
Regions Visited
Regions Specified
Value IRAs
Own or Rent Home

6 B1 1001 09/12/2007 12:16:57 PM Version Date: 09/05/2007 Version Time: 2:10PM READBACK MODE

- 1. Current project
- 2. Drop down for user tasks
- 3. Question pane
- 4. Response categories
- 5. Data entry pane
- 6. Status bar

4.3 New design suggestions

The following items were discussed in all the stakeholder interviews, and there was no disagreement (although some ambivalence) about these suggestions.

- **Paired items/two-part questions**
Users unanimously agreed that it would be preferable for two-part questions to have both parts of

the question displayed on the same screen, with both entry fields visible at the same time. Figure 3 provides an example of a commonly used format.

Figure 3 – example two part question

On average, how often you do participate in vigorous exercise?

_____ Times

Per

- 1 Day
- 2 Week
- 3 Month

- **Related questions**

Similarly, there are question pairs or series where the same group of questions is consistently asked together. Presenting these questions together would provide context for the interviewer in asking the question, recording, and providing feedback. Figure 4 shows a closed question with an open question follow-up that could be displayed on the same screen.

Figure 4 – example related question (closed with open question follow-up)

Do you think that prices will continue to rise over the next 5 years?

- 1 Yes
- 5 No

Why do you think so? (Open-ended)

The users agreed that not all questions which could potentially be formatted as a grid should be presented together, but that there are examples of scales or series where this presentation makes sense, as in the interference scale in figure 5. Longer “grids” however, are generally best presented as single items with the common text in parentheses, assuming that there is no increase in performance time that results from many separate items.

Figure 5 – example of a grid with all items presented together

Using a scale from 0 to 10 where 0 means no interference and 10 means very severe interference, what number describes how much your fear of social situations interfered with each of the following activities over the past month?

	Number (0-10)
a. ...your home management like cleaning, shopping, and working around the house or yard?	_____
b. ...your ability to work?	_____
c. ...your ability to form and maintain close relationships with other people?	_____
d. ...your social life?	_____

- **Additional suggestions**

The following items were mentioned in only one or two of the interviews.

Highlighted text - two users commented on the importance of highlighting the current item for the interviewer if multiple items are presented on a single screen.

Navigation buttons - one user suggested removal of the buttons to minimize, maximize, and close the application. They suggested including only a “Quit” button.

5. Design principles and implementation

5.1 Design principles

Using the stakeholder feedback we established the following key design principles to guide our decision making as we designed the new screen layouts:

- Maintain core design elements from the existing Blaise 4.8 screen guidelines
- Enforce consistency across study instruments. Facilitate improved adherence to the guidelines through the design of the templates and their implementation - i.e. create guidelines that are well designed, comprehensive and easy to implement.
- Take advantage of the flexibility around screen design that is provided in Blaise 5 to eliminate need for work arounds necessary in Blaise 4.8.

5.2 Implementation

With these principles in mind, our initial direction was to recreate the existing design in Blaise 5. It became clear, however, that this was not the right direction. By doing this, we were not using the functionality available in Blaise 5 in the most efficient way and we were trying to ‘contort’ Blaise 5 into behaving in the same way as previous versions. We were able to create a basic design for simple questions but we were not able to find a solution for all question types or one that could efficiently be applied to multiple surveys without much additional programming. At this point we paused to assess the issues and decide how to move forward.

After some discussion we agreed to begin working on a new basic template that was simple to create using Blaise 5 but followed the key design principles we had set.

5.2.1 Prototype screen design

The screen design we agreed on and we began developing for all question types is shown in figure 6 below.

Figure 6 - Question formatted according to the update screen design guidelines

The screenshot shows a survey question interface for 'GIT 2018 - The American Study of Interesting People'. The interface includes a header with the survey title and logos, a task bar with 'Suspend', 'DK', and 'RF' buttons, a main question area with a yellow background, and a status bar at the bottom. The question text is: '(In the last month, how much did you receive in...)' followed by 'Any dividend or interest income, investment income, or royalties?' and a prompt to 'ENTER dollar amount'. Below the question are three inactive question cards: 'Last Month Income Other', 'Individual Income', and 'Household Income 11'. A legend at the bottom identifies the numbered callouts: 1. Current project and organization/project logo, 2. Task bar, 3. Active question & response, 4. Inactive question & response, and 5. Status bar.

1 GIT 2018 - The American Study of Interesting People
2 Suspend DK RF
3 (In the last month, how much did you receive in...)
Any dividend or interest income, investment income, or royalties?
• ENTER dollar amount
4 Last Month Income Other
Individual Income
Household Income 11
5 Sample ID: 2398011 | Version Date: 21-3-2018 | Version Time: 13:00:00 | Current Date: 31-8-2018 | Current Time: 11:25:59 | V.1.6 | Section C.C41

1. Current project and organization/project logo
2. Task bar
3. Active question & response
4. Inactive question & response
5. Status bar

The prototype screen design retains the following basic elements from the Blaise 4.8 design -

- Light background color and dark text to provide sufficient contrast and allow the question to be the dominant element on the screen.
- Interviewer instructions are still presented in blue text and question (or 'read aloud') text in Black. Although we have increased the text size and change the fonts.
- On screen text is still displayed to mirror the required interviewer tasks.
- Task related action verbs are displayed in bold blue text.

The following global changes were introduced -

- The screen is no longer split into sections – questions, instructions and the corresponding response categories are all displayed in a single 'active question' pane. Once a question has been answered this question pane collapses – a short variable description and response is still visible.
- The data entry field is positioned to the left of the response categories.
- Responses are no longer displayed in the lower half of the screen. They are still available for the interviewer to refer to within the box that displays the 'inactive' question.
- Interviewers are provided a mouse-driven alternative for all actions that were previously just controlled by short cut keys. These include suspending an interview, referencing additional question level guidance or entering a 'don't know' or 'refusal' in the data entry field (Figure 6).
- The study title is clearly shown in the top right hand side of the header banner. Any additional organization level logos can be shown on the left hand side (Figure 6).
- The additional question level help is displayed below the question and response categories but within the question pane – rather than in a pop-up text box.
- Bold is now used to indicate if text should be emphasized when read (underline was used previously).
- Checks and signals appear on screen in a pop-up box, the box for a check is shaded in red and signals shaded blue (Figure 7).

Figure.7 Example signal at a question level

Health and Retirement Study
INSTITUTE FOR SOCIAL RESEARCH
SURVEY RESEARCH CENTER
UNIVERSITY OF MICHIGAN

Health and Retirement Study

Suspend DK RF English

• Is R living in a nursing home or other health care facility?
(Are you living in a nursing home or other long-term health care facility?)

DEF: By "nursing home or other health facility" we mean a facility that provides all of the following services for its residents: 24-hour nursing assistance and supervision, dispensing of medication, personal assistance, and room & meals.

1 1. Yes
 5. No

Active Signal
You have reported that this R (is/was) living in a nursing home (or hospice).
If this is NOT correct, suppress this message and select "No".
If R (is/was) living in a nursing home (or hospice), suppress this message and proceed with the interview.

Suppress Close

TYPE OF HEALTH CARE FACILITY

The new design allows easy implementation of each of the additional suggestions that were raised during the stakeholder interviews. Specifically, it is now possible to display all questions in a two (or more) part question or related questions on one screen (figure 9).

Figure 8 – example multi-part question

SRC Screen Design Guidelines (V.1)
INSTITUTE FOR SOCIAL RESEARCH
SURVEY RESEARCH CENTER
UNIVERSITY OF MICHIGAN

SRC Screen Design Guidelines (V.1)

Exit DK RF

How much do you earn now from this job?

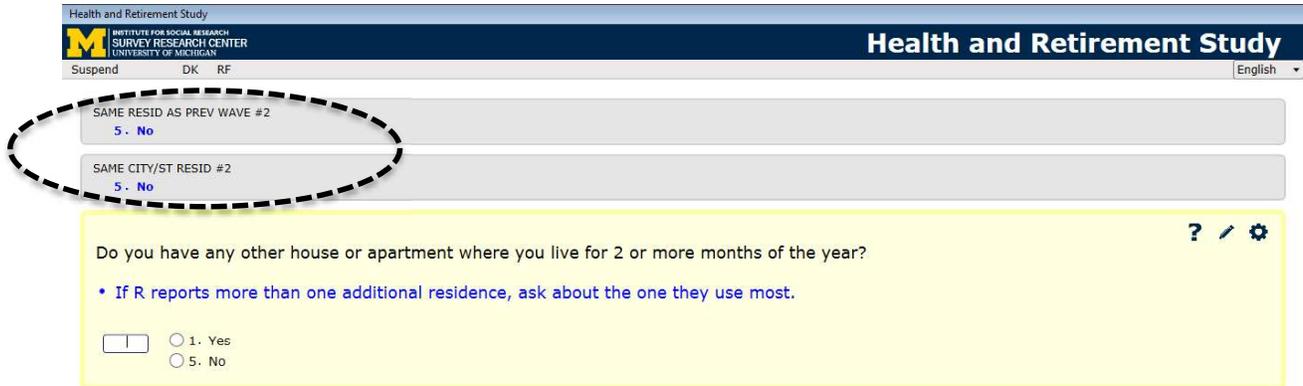
7.25

Per:

1 1. Hour
 2. Week
 3. Two weeks
 4. Month
 5. Year
 6. Other -- specify

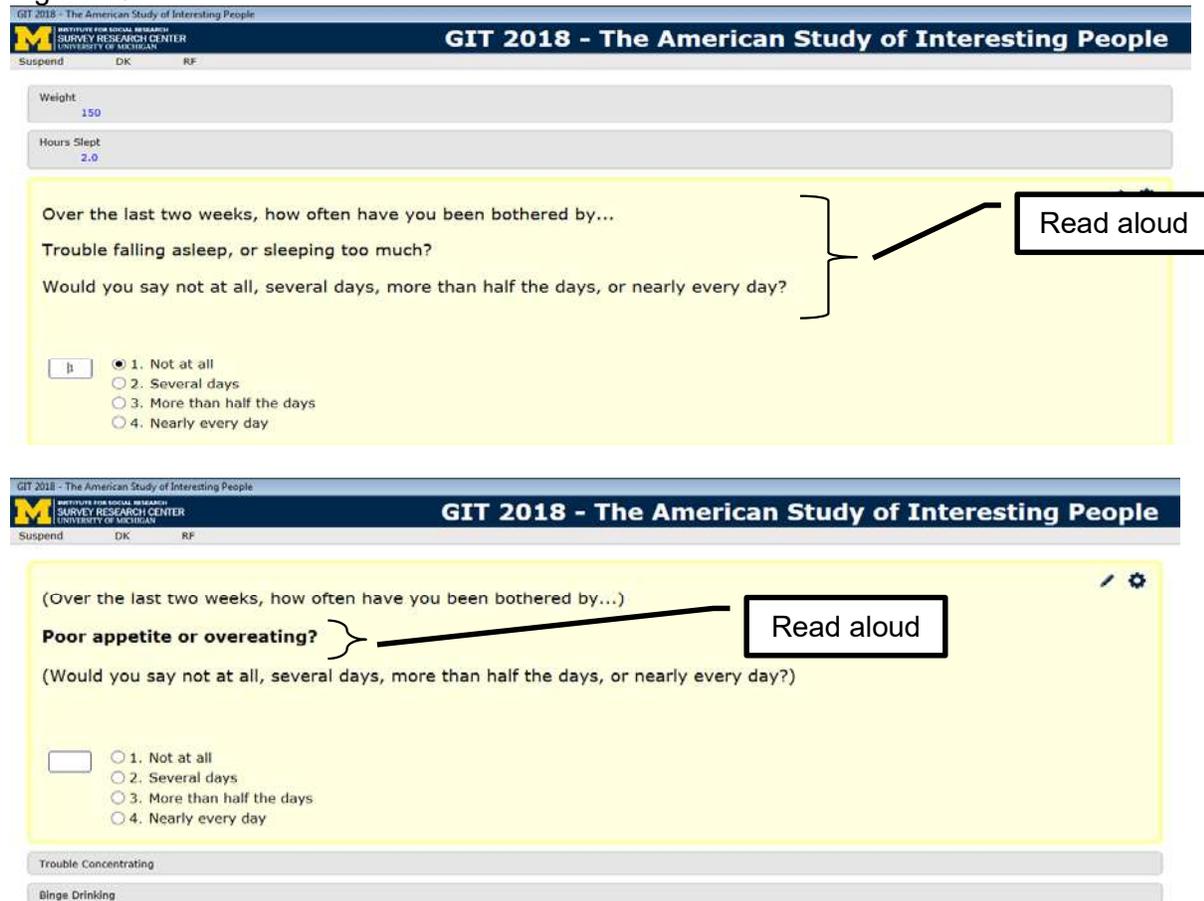
The active/inactive design naturally focuses the interviewer on the question text they should read (Figure 9) by graying out the inactive panes and displaying previously recorded responses in blue.

Figure 9 – example of an active question



In an attempt to make it easier for interviewers to identify which text they should be reading when they arrive at one of a series of questions with the same stem question, we have highlighted, in bold, the ‘read aloud’ text (Figure 10), retaining the use of parentheses for the stem question or response options, which the Respondent has already heard.

Figure 10



6. Implementation

The guidelines were operationalized by creating a series of templates for question types. These were created and stored as a resource set in the Blaise Resource Database (BLRD). Initially, the templates were assigned to fields using role text or applied based on question type. When the LAYOUT function was added to a newer version of Blaise 5, these were used to assign templates to questions.

Many of the challenges we faced as we created and applied the screen templates were due to project schedules; we found ourselves developing the templates in parallel with Blaise 5 development. The project schedule did often not allow us the time to wait for necessary bug fixes or additional planned functionality to arrive, so it was sometimes necessary to create 'workarounds'. Developing expertise in screen design using Blaise 5 also required dedicated time - often a luxury when a project is in the preproduction stage.

The following are some specific examples of issues we faced -

- **Look up lists vs Drop downs** - Our preference was to use look-up lists for long code frames (like, US States) for Interviewer administered modes and Drop down lists for equivalent lists presented in self-administered modes. We encountered a couple issues with the look-up lists - firstly, entering data on the screen triggered an on screen error which disappeared after a few moments, but gave the impression to the interviewer that they had made a data entry error. The second issue was found in the data - in some cases the name of the state had been saved but the corresponding code had not, and vice versa.
- **Number of questions on a page** - Interviewers faced considerable performance issues as they worked through some sections of the first production project. The slower transition between questions is a general issue but is more noticeable on questions that have more complex routing or where more items are displayed on screen. For this reason we were hesitant to add more complexity to some questions or display more questions on one screen.

7. Next steps

The new screen design has been well received by Interviewers. Keeping key elements of the screen unchanged has meant it was a straightforward transition for interviewers working on questionnaires programmed using Blaise 4.8 and Blaise 5. There were some items that required focus at training - for example, using a different key combination to back up through the questionnaire and placing 'dashes' between responses in multi responses question rather than using the space bar. We will continue collecting and reviewing feedback from interviewers about the new designs.

There are some question types that we have not yet tackled. These include 'Roster' or 'Grid' type questions. The first of the SRC projects to adapt to Blaise 5 redesigned these type of questions, however before this design is adopted as the preferred design and recommended in the guidelines, we need to review interviewer feedback and the data collected during the first months of data collection on this project. (This new design is described in a paper by *Ostergren, J. (2018)* to be presented at this conference)

As the new guidelines are applied to more surveys we will learn more about the process and how to make this process more efficient through instructions and enhancements to the method used.

Finally, as Blaise 5 continues to develop and new versions are released, we will need to review these new versions for additional functionality.

8. References

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