Part 6 - The Word List: A Blaise 5 Conversion Challenge

Rhymney Weidner – Survey Research Center, University of Michigan

1. Abstract

The Health and Retirement Study is a longitudinal study with a wide variety of question types. Transferring those varied questions into Blaise 5 has provided several challenges especially in the area of template design. The cognition section in particular has encountered this issue quite frequently. Even in Blaise 4.8, the cognition section had to utilize alien procedures to develop the question series known as "the word list". For this question, a list of ten words are displayed on the screen for two seconds each. After they are displayed there are two "recall" screens where interviewers can enter the words that respondents remember. Both of these functions were achieved using alien procedures. With alien procedures for the MVC structure still a work in progress and a lack of development time, we had to develop a design for the word list series that could function entirely within the existing Blaise 5 structure. This paper will examine the challenges presented by this particular Blaise 4 to Blaise 5 conversion in three main areas: maintaining a similar look/feel to what was used in Blaise 4, maintaining data structure, and designing a suitable self-adminstered interface.

2. Introduction

The Health and Retirement Study went into the field with Blaise 5 for the first time in 2018. A massive redesign effort was undertaken prior to fielding the survey in Blaise 5. Blaise 5 presented many new functions as well as taking away some old ones. In addition to changes in the software itself, the survey had to be adjusted to work for both interviewer administrated and self-administrated surveys. All of these changes had to be considered and accommodated during the survey development process.
Each of the HRS survey sections presented unique challenges while programming in Blaise 5. The cognition section especially stretched the limits imposed by Blaise 5. Within this section there are several specialized questions that required special design considerations. While many of the other sections were able to use the templates designed for general use, the cognition section had some questions that required the design of a specialized template. Most important among these questions, and the most challenging in terms of design, was the word list. The word list displays a series of ten words on the screen for two seconds each. After the display there are "recall" screens where interviewers can enter the words that respondents remember. The recall screen design must allow for the interviewer to quickly and accurately enter words as the respondent recalls them. In Blaise 4.8 the word list recall was designed using alien procedures.

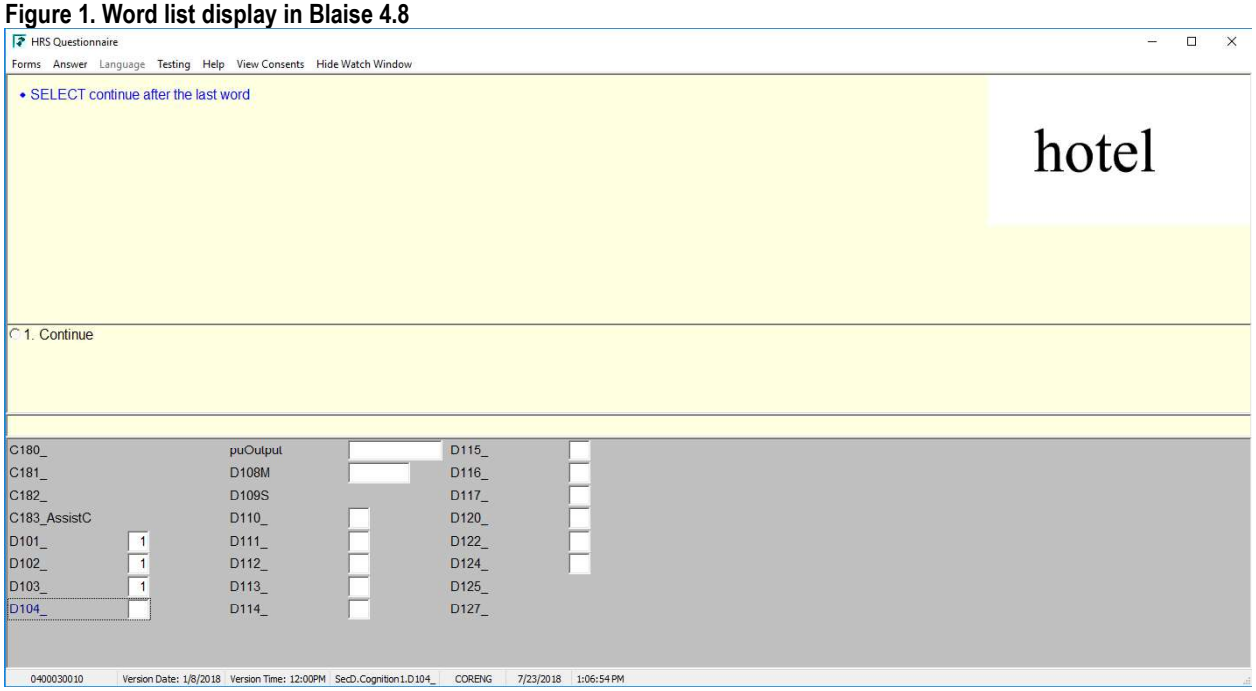
Due to a development time crunch, and the evolving nature of MVC Custom applications in Blaise 5, it was decided that the word lists would have to be developed using only Blaise 5 out of the box abilities. Thus began the whirlwind development of the word list.

3. Maintaining Blaise 4 Functionality/Appearance

As mentioned previously, the word list consists of two equally important parts. First, the actual display of the word list. Second, the screen where respondents have the option to recall the words presented.

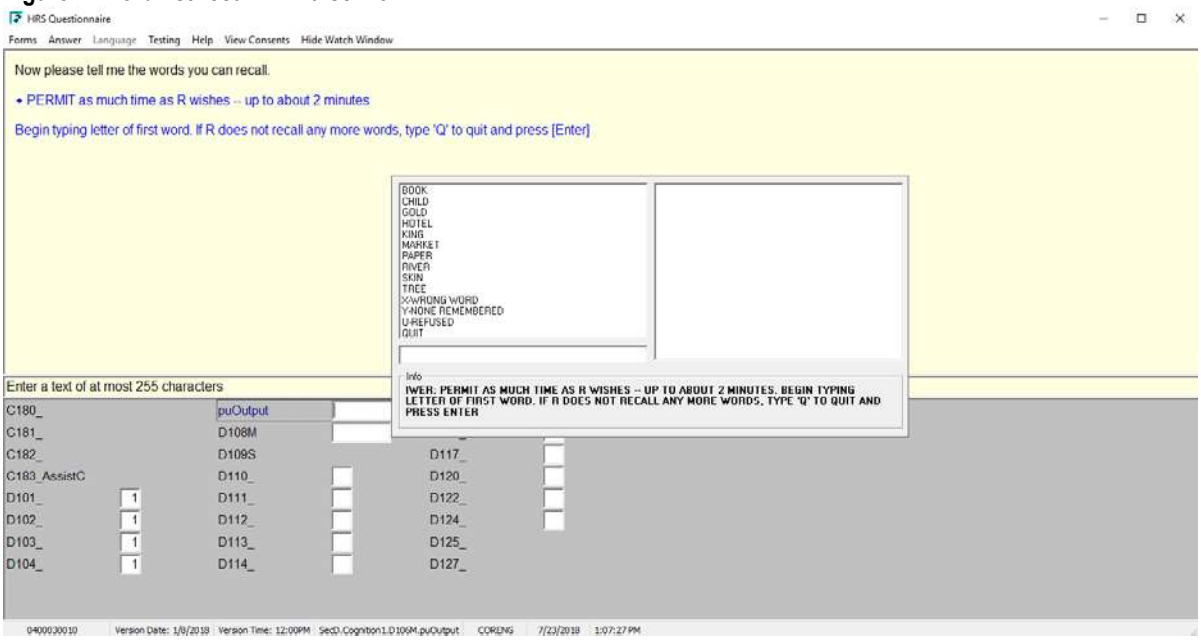
In Blaise 4.8 the list of words was displayed using an AVI file (Figure 1).

Figure 1. Word list display in Blaise 4.8



The recall portion of the word list was achieved through an alien procedure programmed in Visual Basic. It created a list of the words that allowed the interviewer to either make a selection by double clicking on a word using the mouse, or by typing the first letter of the word and pressing "enter". Selected words were moved to the right hand side of the screen (Figure 2).

Figure 2. Word list recall in Blaise 4.8



Rather than go through the process of creating another AVI file for use in Blaise 5, it was decided to go in a direction that would provide more flexibility in the event of changes to the word list. A special template was created that made use of a timer and the ability to map to fields. One field was assigned an enumerated type where each code frame's text was a fill, with ten enumerated options. A procedure

assigned the fills for each code frame based on which word list should be shown. The cognition section has four different possibilities for the word list and the fills allow all of them to use the same template. Using fills also made it so the word list can easily be updated or changed by simply updating the procedure that does the assigning. The template is automatically assigned only to the field where the word list should be displayed by using a template role that contains specific trigger text. Figure 3 shows an example of the timer and one label used to display the first word in the list. When the timer ticks it sets the first word to collapsed, the second word to visible, and reset itself for another two second display time. By utilizing these Blaise 5 features it was possible not only to recreate the functionality of the word list from Blaise 4.8, but to also improve upon it. The final word list appearance in the DEP can be seen in Figure 4.

Figure 3. Word list display template in Blaise 5

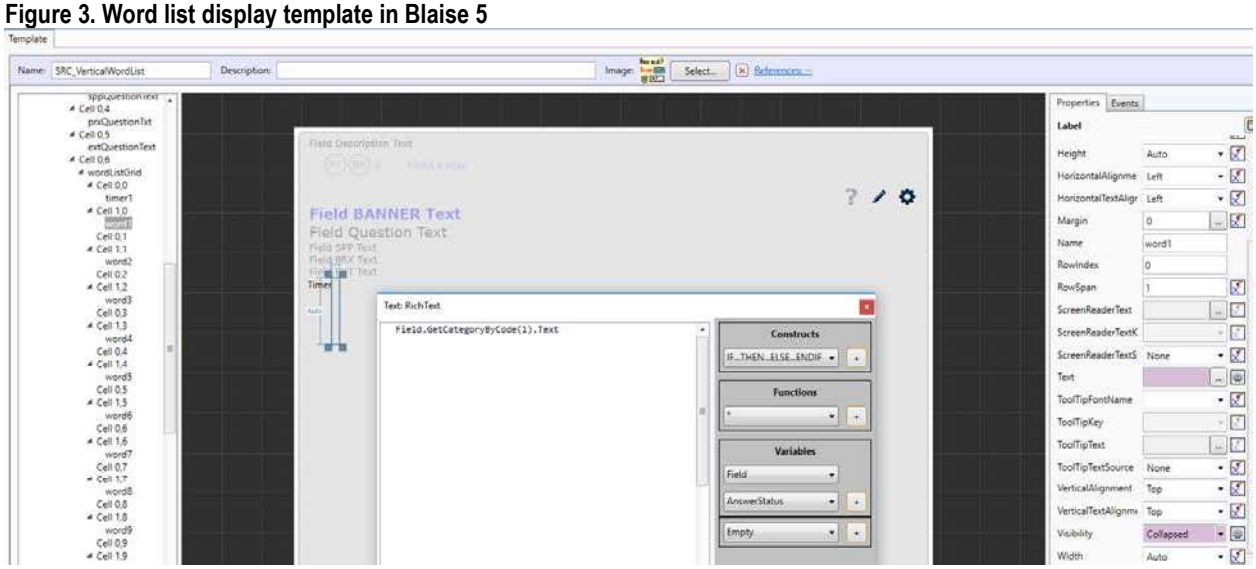
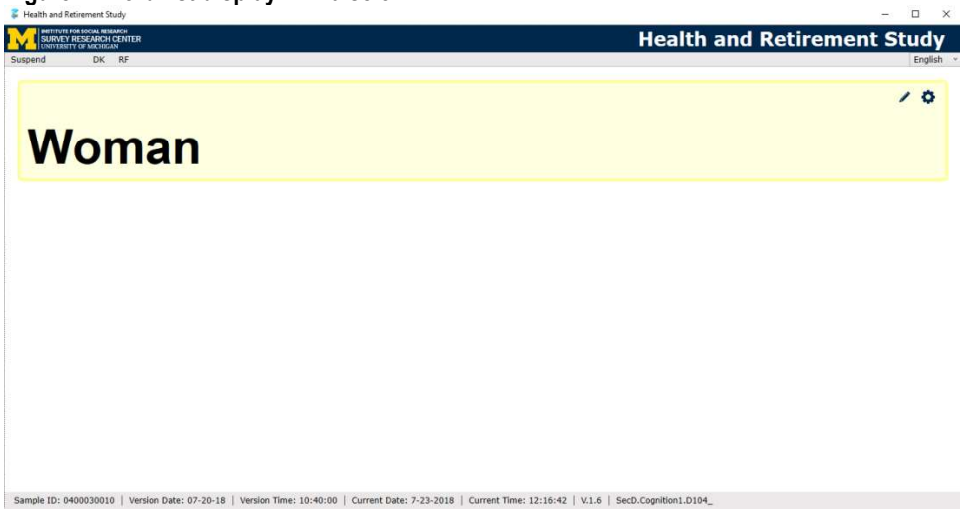


Figure 4. Word list display in Blaise 5 DEP

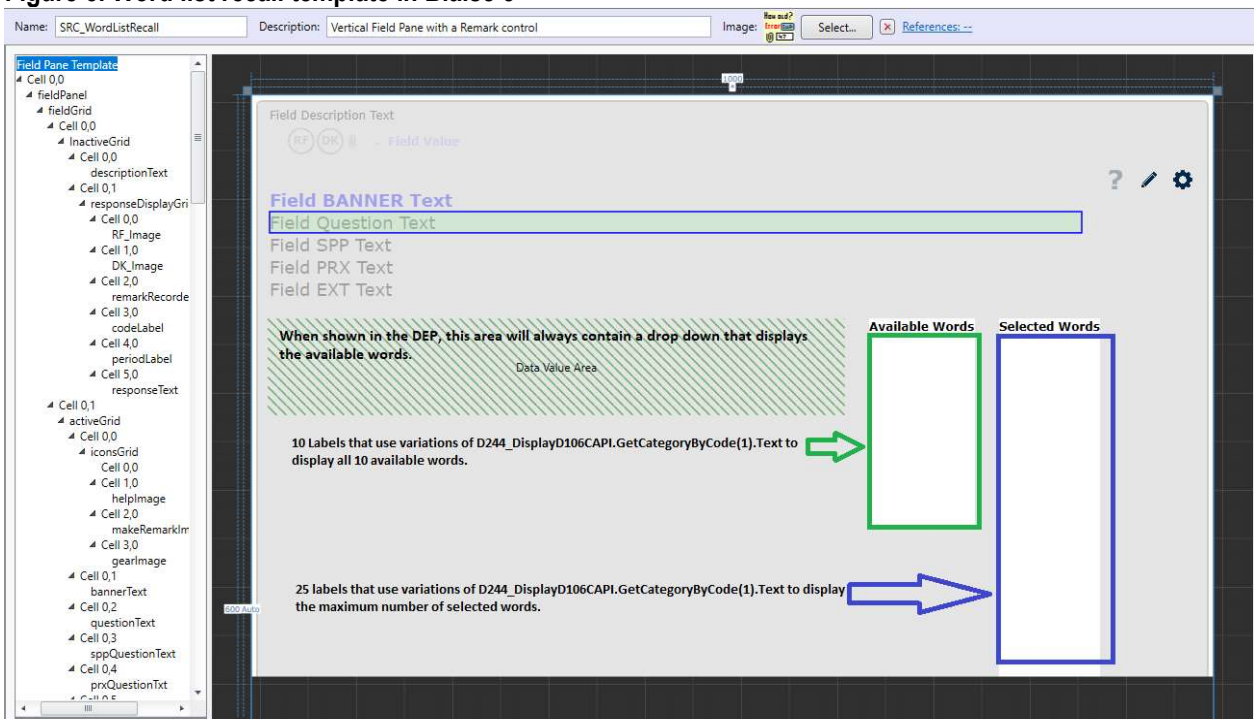


With only a two week time frame to develop the word list in Blaise 5, using MVC custom applications was not an option for creating the word list recall. Fortunately, Blaise 5 had some very handy out of the box features that could be implemented to recreate a similar functionality. As with the word list display screen, a specialized template was created that would be used only for the word list recall screen. Due to the heavy use of mapped fields in the templates, two separate word list recall templates were created. The

word list recall is shown to respondents twice, and each time different fields had to be mapped to record results, hence the need for two templates.

Each of the recall templates displayed a list of the words that allowed the interviewer to either make a selection by double clicking a word using the mouse, or by typing the first letter of the word and pressing "enter". This template was far more complicated than the word list display and contained a multitude of parts.

Figure 5. Word list recall template in Blaise 5



To recreate the appearance of moving available words to a list of selected words, two groups of labels were added to the template. One column, "Available Words", displayed all of the ten possible words in alphabetical order. The ability to map to fields was again utilized so that the labels reflected the code frame text for a given field. Rather than using the same field as the one that displayed the initial list, another field had to be used. This second field used the same idea, ten code frames with code frame text that was a fill populated through a procedure, but the word list had to be displayed in alphabetical order to make it easy for interviewers to locate words as the respondent listed them. As shown in Figure 5, there were ten labels on the template to display the ten enumerated responses for this 'alphabetical field'.
A second column, "Selected Words", displayed words as they were selected. Words could be selected either by clicking on them in the "Available Words" list or by typing the first letter of a word to highlight it in the dropdown and pressing enter. The latter option is the one that interviewers were most likely to use, since they were trained to avoid using the mouse. Much like the original display of the word list, the text for each "Selected Word" came from mapping to a field and using the code frame text. A slightly complicated expression on the visibility for each of the "Selected Words" controlled whether they were displayed.

```
IF RemovedWords.ValueAsText = '' THEN
        IF POSITION('-' +
        TOSTRING(D244_DisplayD106CAPI.GetCategoryByCode(1).Code) + '-',
        D334_.ValueAsText) > 0 THEN
```

```
            'Visible'
        ELSE
            'Collapsed'
        ENDIF
ELSE
        IF POSITION('-' +
        TOSTRING(D244_DisplayD106CAPI.GetCategoryByCode(1).Code) + '-',
        D334_.ValueAsText) > 0 AND POSITION('-' +
        TOSTRING(D244_DisplayD106CAPI.GetCategoryByCode(1).Code) + '-',
        RemovedWords.ValueAsText) = 0 THEN
            'Visible'
        ELSE
            'Collapsed'
        ENDIF
ENDIF
```

Translated simply, if no words have been chosen and removed (the code is in a field called RemovedWords), the given label is shown if the word displayed in that label has been chosen (if the code is present in the final chosen values field, which is D334_ in this case). If there have been words removed, then the label is only shown if its code is chosen (in D334_) and *not* present in the removed words field (RemovedWords). This same expression is modified to reflect the appropriate code (1-25) for all of the possible selected words. Within the Blaise source code, there is a very long, complicated set of FOR loops and IF statements to control the addition of codes to the fields used by these statements in the resource database. Clearly, this complicated method of display is not ideal in terms of maintenance or when adjustments are required, but it does allow for the replication of the function achieved in Blaise 4.8 through alien routers.

The final result is a screen that echoes the important functionalities from Blaise 4.8, while also making some improvements (Figure 6).

Figure 6. The final word list recall screen in Blaise 5 DEP

The drop down recreates the ability to type the first letter of a word and press enter. The template and background code makes sure that the screen updates with the newly selected word listed in the "Selected Words" column. Prior to settling on the drop down, a look up was considered for this part of the template. However, after much consideration and testing, it was decided that the look up didn't function with the speed required for an interviewer to be able to enter the words as quickly as they were given by the respondent.

As in Blaise 4.8, the only selection that can be made more than once is "X – Wrong word", which allows the interviewer to enter if the respondent has said multiple words that were not really on the list (Figure 7). Signals prevent the interviewer from making conflicting selections or leaving the page without making any selections (Figure 8).

Figure 7. The final word list recall screen with words selected in Blaise 5 DEP

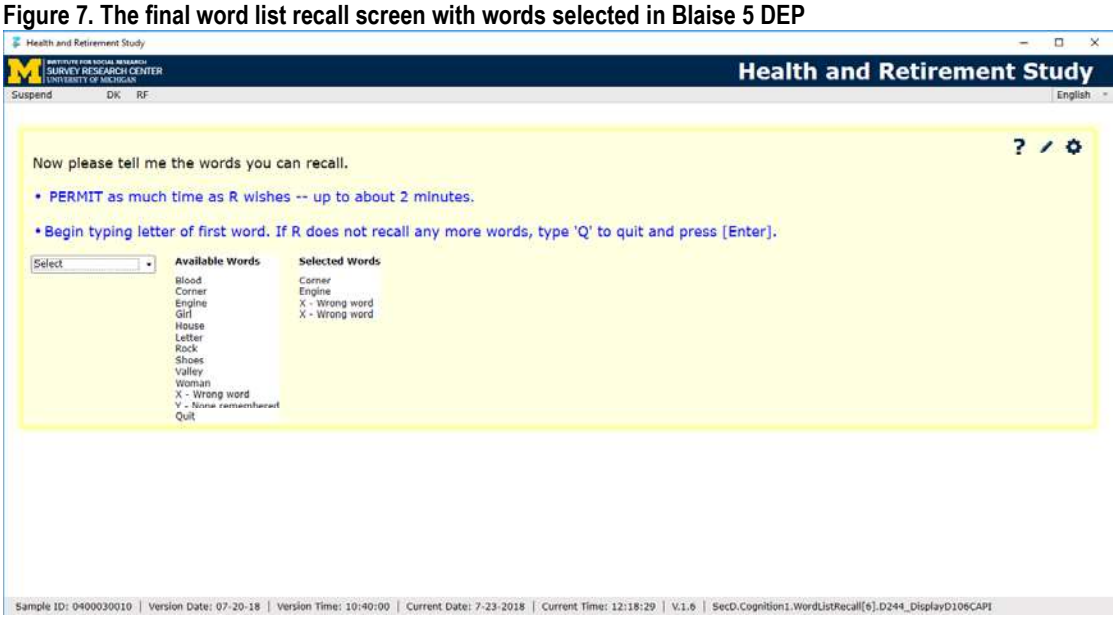
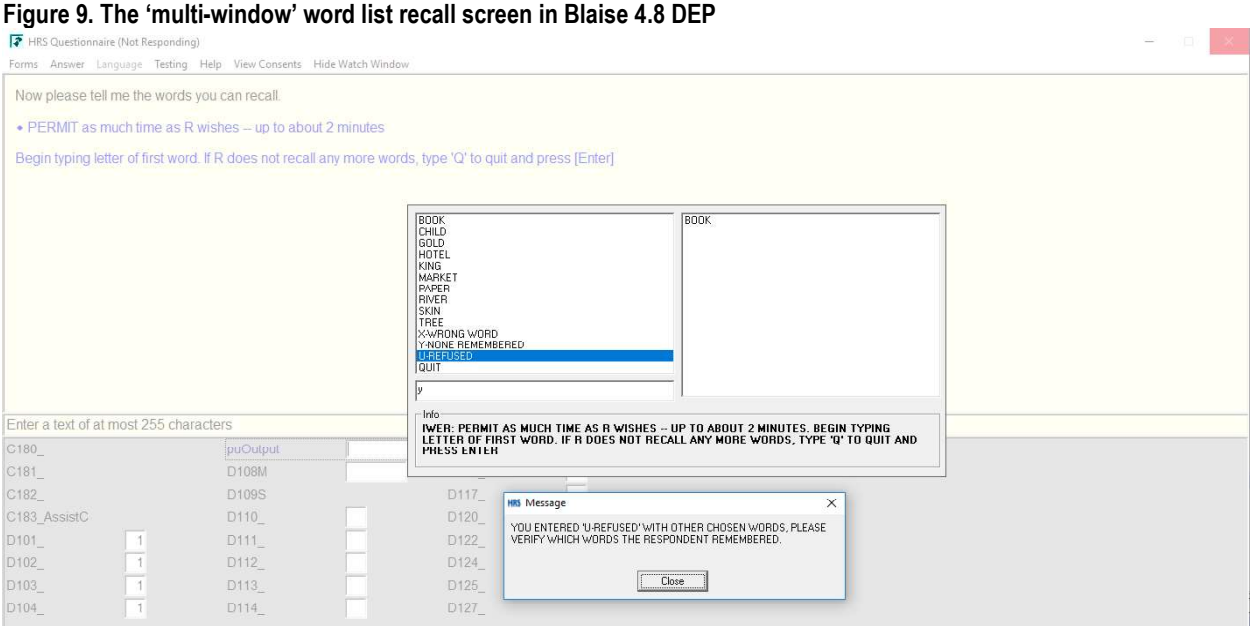


Figure 8. The final word list recall screen with an entry error in Blaise 5 DEP

To exit, the interviewer simply types “Q” and presses “Enter” on the keyboard or clicks on “Quit” under “Available Words”.
There were a few advantages to creating a screen with out of the box Blaise 5 features. The primary advantage was that the word list no longer opened in a new screen/window. This improvement created a more seamless survey experience for the interviewers and eliminated the focus issues experienced with such an arrangement (Figure 9).

Figure 9. The ‘multi-window’ word list recall screen in Blaise 4.8 DEP



Another advantage to using out of the box functionality was that it reduced maintenance requirements. Rather than having to modify an alien procedure, now the entire word list can be maintained within the data model. The new design also allowed for the use of signals/checks, rather than having to program signal like warnings in a custom application.

4. Maintaining Data Structure

The Health and Retirement Study is a longitudinal study, which made it essential that the data structure was maintained with the redesign. One requirement was that the final data needed to be stored in a string. Since the template gathers data in a drop down (an enumerated field), a special sequence of code had to be created to transfer the data to a string. This sequence also had to correctly translate the potential for multiple occurrences of the “X – Wrong Word” selection into only codes of “11”. These selections could have values of 11 or 14-25 as they were recorded in the drop down.

In the Blaise 4.8 alien procedure, the “Refusal” option for the word list was recorded as ‘99’. In Blaise 5, a refusal is recorded as ‘98’ by default. To negate this difference the value was back assigned to the final field as ‘99’ whenever “Refusal” was selected.
An additional challenge, in terms of data structure, was what to do about changes required to make the word list friendly to users taking it via the web, our self-administered surveys. The selected solution was to create a separate field that is only shown to the self-administered interviews, so that it was possible to gather two different types of data for essentially the same question.

5. Designing the Self-Administered Interface

Designing the self-administered interface for the word list was actually easier than designing the interviewer administered interface. A self-administered version of the survey had never been done, so designers were less opposed to trying new layouts.

The display of the word list for self-administered was essentially the same as the interviewer administered version. Both show the words in a large font, again making use of labels and timers to display each word for an interval of two seconds (Figure 10).

Figure 10. Word List Display in Firefox for a self-administered interview in Blaise 5

The recall portion of the word list was much simpler for self-administered surveys. Since the question is testing if respondents can remember the words they were shown, the design could not include the original word list as the interviewer administered version did. Self-administered respondents were given an open text box where they could type the words they remembered, separating each word with a space. Within the Blaise source, a procedure evaluated how many correct words they entered. While the procedure could eliminate case differences by using the UPPERCASE function, it could not correct for typos or misspellings. The procedure then assigned the self-administered values back to the string used for interviewer administered data so that the final data was a string of numbers corresponding to the codes for each word typed. Writing the values back in this manner kept the data as it had been for many waves, rather than the entered string of words (Figure 11).

Figure 11. Word List Recall in Firefox for a self-administered interview in Blaise 5

6. Conclusion

The HRS conversion to Blaise 5 was and continues to be a process filled with challenges. Massive changes to the design of screens provided some of the biggest hurdles and required creative thinking to devise solutions. While these design obstacles were difficult, the results sometimes provided opportunities for improvement over Blaise 4.8 designs. The word list is one such example. The Blaise 4.8 word list design required the use of alien routers, which complicated code maintenance and created an interrupted feel to the survey with the word list appearing in another window. While the Blaise 5 design is quite complex, it took advantage of out of the box Blaise 5 features to eliminate the need for an alien router. This change eased code maintenance requirements as well as provided interviewers and respondents a smoother survey experience in the cognition section. In conclusion, a transition to Blaise 5 may require some resourceful programming, but the capabilities of the new Blaise holds a great potential for improvements over its Blaise 4.8 counterpart.