

## Chapter 9: Making Surveys with SurveyWiz

This chapter explains how to use surveyWiz, a Web page that makes it easy to put simple surveys and questionnaires on the Web (Birnbaum, submitted). The program embedded in the Web page is written in JavaScript. The program is included on the CD that comes with this book. SurveyWiz allows you to add questions with either text boxes for input or scales composed of a series of radio buttons, whose number and endpoint labels can be specified.

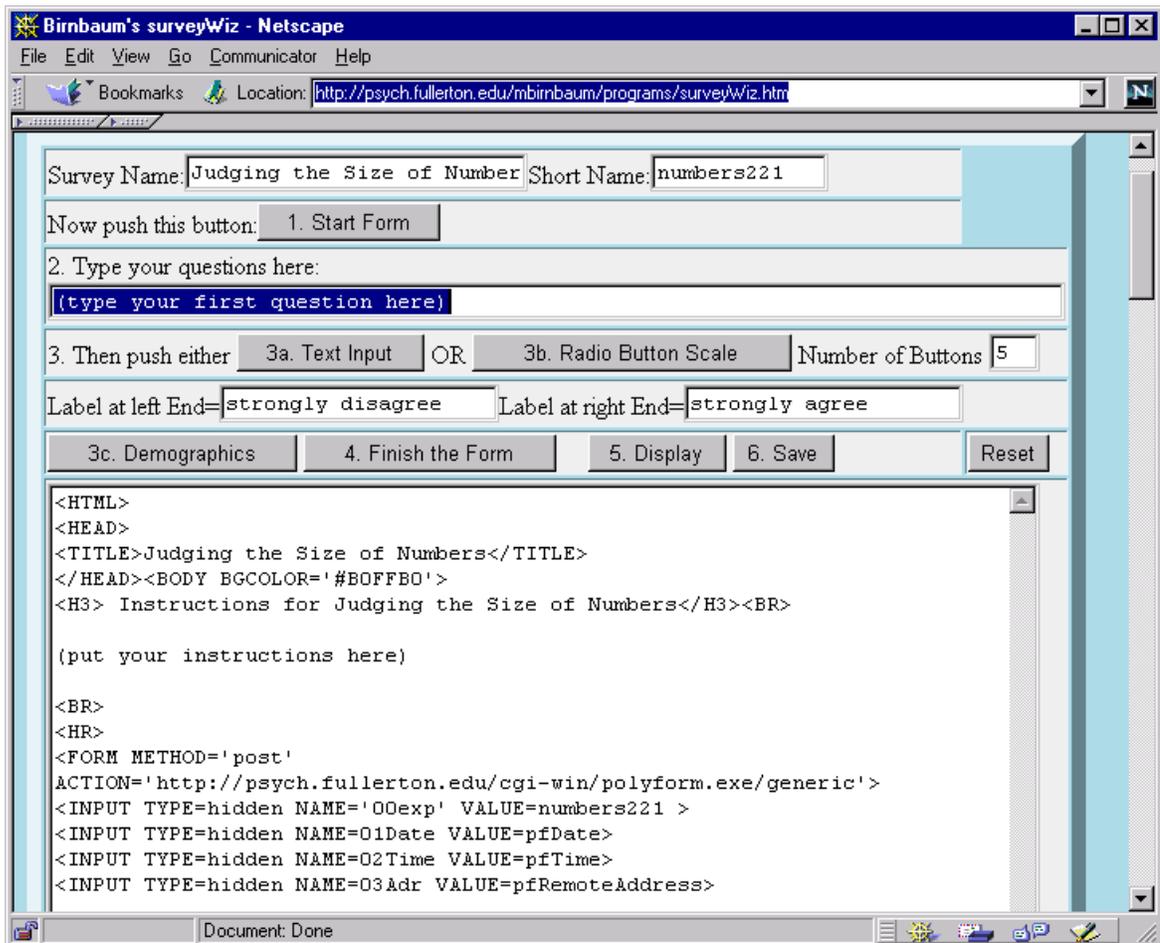
The use of this program will be illustrated by an example experiment on judgments of the “size” of numbers. How big a number is 221? How big is 9? The results will surprise you, because the data show that 9 is judged a significantly “bigger” number than 221! As you might guess, there is a trick. The trick is to collect ratings in a between-subjects design. As you will see, it can be tricky to interpret judgments collected from different groups of subjects who receive different treatments.

### A. How to use SurveyWiz

Load *surveyWiz.htm* in your browser; see Figure 9.1. Type in a title for the study in the box labeled *Survey Name*. For the first example, type, *Judging the Size of Numbers*. This title will be placed both as the title of the page and it will also be printed as a heading in the file. Press *Tab* and give the experiment a *Short Name*. In the first example, the short name will be *numbers221*. The *Short Name* will be the first variable in the data file, included as a hidden variable, 00exp. Next, push the button labeled “*I. Start Form,*” which starts the HTML form. The screen appears as in Figure 9.1.

Insert Figure 9.1 about here.

Figure 9.1. Appearance of the Web page, *surveyWiz.htm*, after the first step. Note the HTML that the program inserted into the window within the text area. The text for the second step is automatically selected, so that you can type each question without another keystroke.



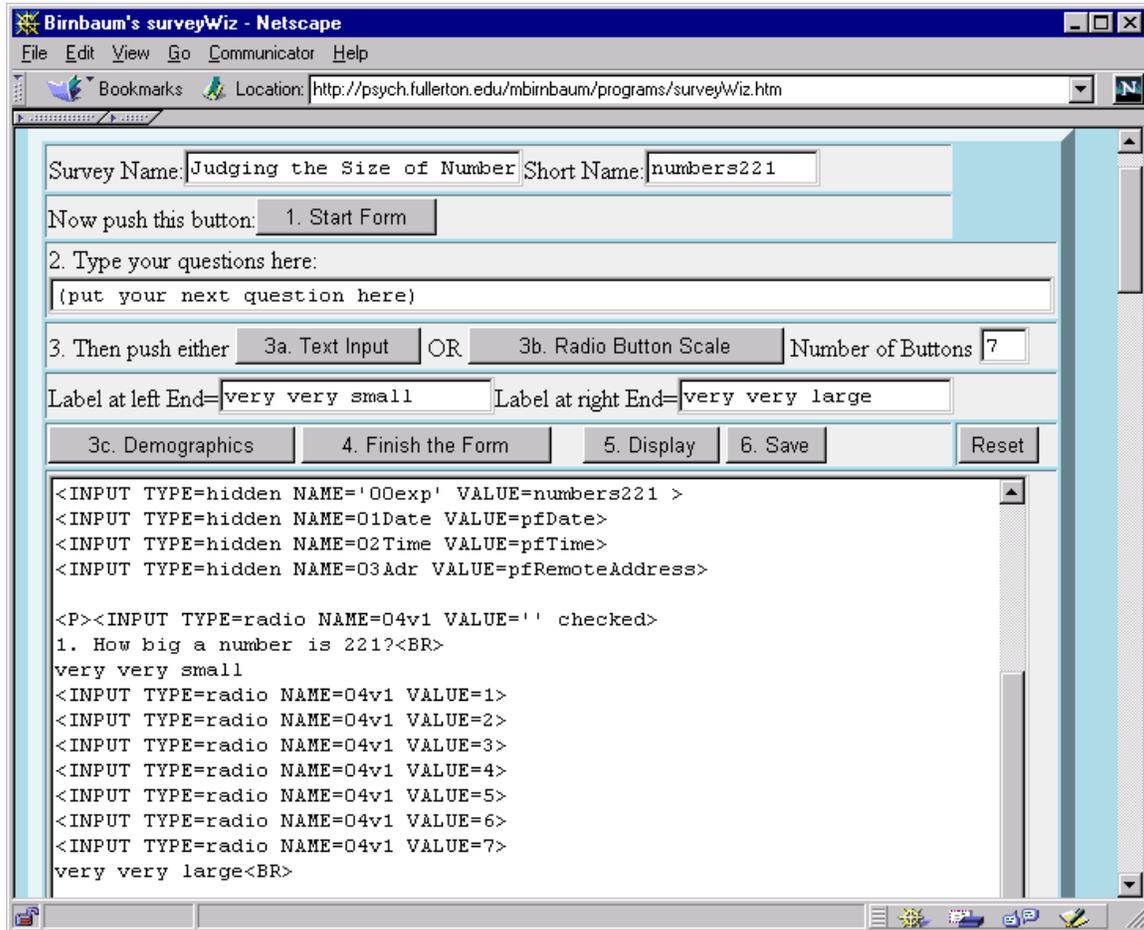
Note that the HTML includes the usual tags to start an HTML page, and it also starts a FORM whose ACTION is the URL of the generic script that you have used before. This script sends the data to the file, *data.csv*, which you can download by FTP. When you have your own script, you can replace that URL with the address of your own script. Hidden variables are also created, including the study's condition name (i.e. the short name, *numbers221*), the *date*, *time*, and *remote address*. The remote address is useful for detecting multiple submissions by the same person—if two lines of data come in on the same day from the same remote address, they are probably multiple submissions by the same person.

The next line after 2. *Type your questions here:* says, “(put your first question here)”. It will be selected after you press button 1. If it is not selected, then select it, and replace it with the following question,

*How big a number is 221?*

Now define the radio button response scale. First, enter 7 for the *Number of Button choices*. Next, change the *Label at left End* to “very very small” and the *Label at right End* to “very very large.” Then push the button labeled, *3b. Radio Button Scale*. The screen will now appear as in Figure 9.2. Insert Figure 9.2 about here.

Figure 9.2. In this step, a series of radio buttons has just been created, as shown in the HTML. The new question line is automatically selected, and you are ready to enter the next question.



You could now continue to add questions in this way, up to 90 questions. You can mix items with a text box response field, instead of a scale of radio buttons. After you entered each question, you would press the button for either *3a. Text Input* or *3b. Radio Button Scale*. For this example, however, the next step will be to add demographic questions.

To add preset demographic questions, push the button labeled *3c. Demographics*. The demographics might be placed in the beginning, middle, or end of the form. Finally, push the button labeled *4. Finish the form*, and the final HTML tags will be added to close the form and the HTML page.

Scroll through the HTML to the beginning, and replace (*put your instructions here*) with "This is a study of the psychological size of numbers." That editing can be done directly in the text area within the window, or it can be done later in a text editor such as NotePad. You can change the color of the background, by changing `BGCOLOR="B0FFB0"` to another color, which might be "teal", "cyan", or whatever. In Chapter 14, you will learn more about specifying colors.

You can now push the *5. Display* button to view the file in the browser. The *Display* button works with Netscape 3 and above for Mac or PC, and with Internet Explorer 4.0 and above for PC and 4.5 and above for Mac. If you do not have Netscape Navigator for Mac, you may have to proceed to the next step to view and save the new page.

## **B. Copy HTML to a Text Editor and Save**

The next step is to scroll to the bottom of the text area window of HTML, and use the mouse to select upwards until you have selected the entire contents of the window.

Be sure to select everything from `<HTML>` to `</HTML>`. Select *Copy* from the **Edit** menu.

The screen will appear as in Figure 9.3. Now open a text editor such as NotePad or SimpleText, and paste the HTML into a new file. Save it with the name, *numbersA.htm*, to indicate that this is Condition A. The appearance of the HTML in NotePad is shown in Figure 9.4.

Insert Figures 9.3 and 9.4 about here.

Figure 9.3. Appearance of surveyWiz window after completing third step. The entire window of HTML has been selected, and it is pasted into a text editor and saved.

Pressing the *Save* button will not save it, but it will remind you of this step. In some browsers, you can also press *Display* and save the source HTML from the browser.

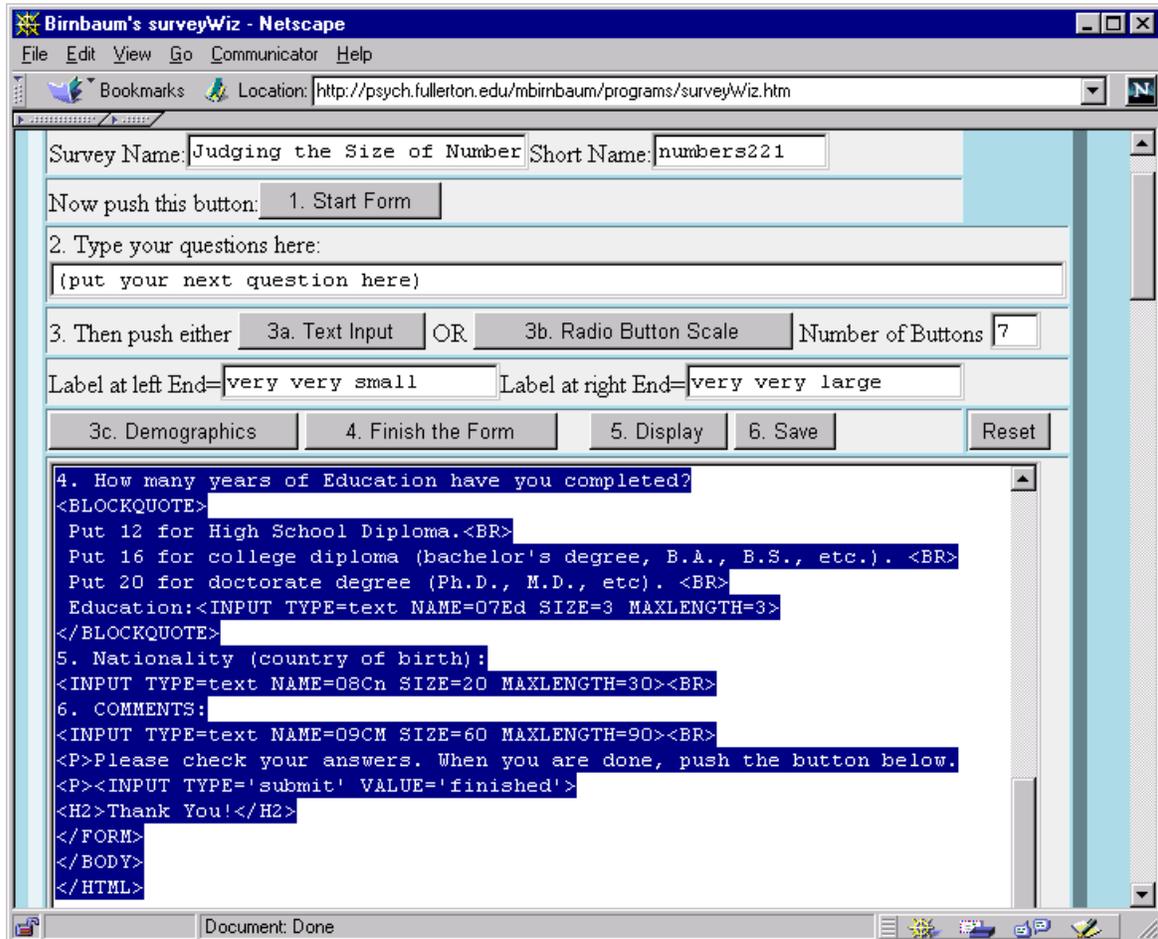
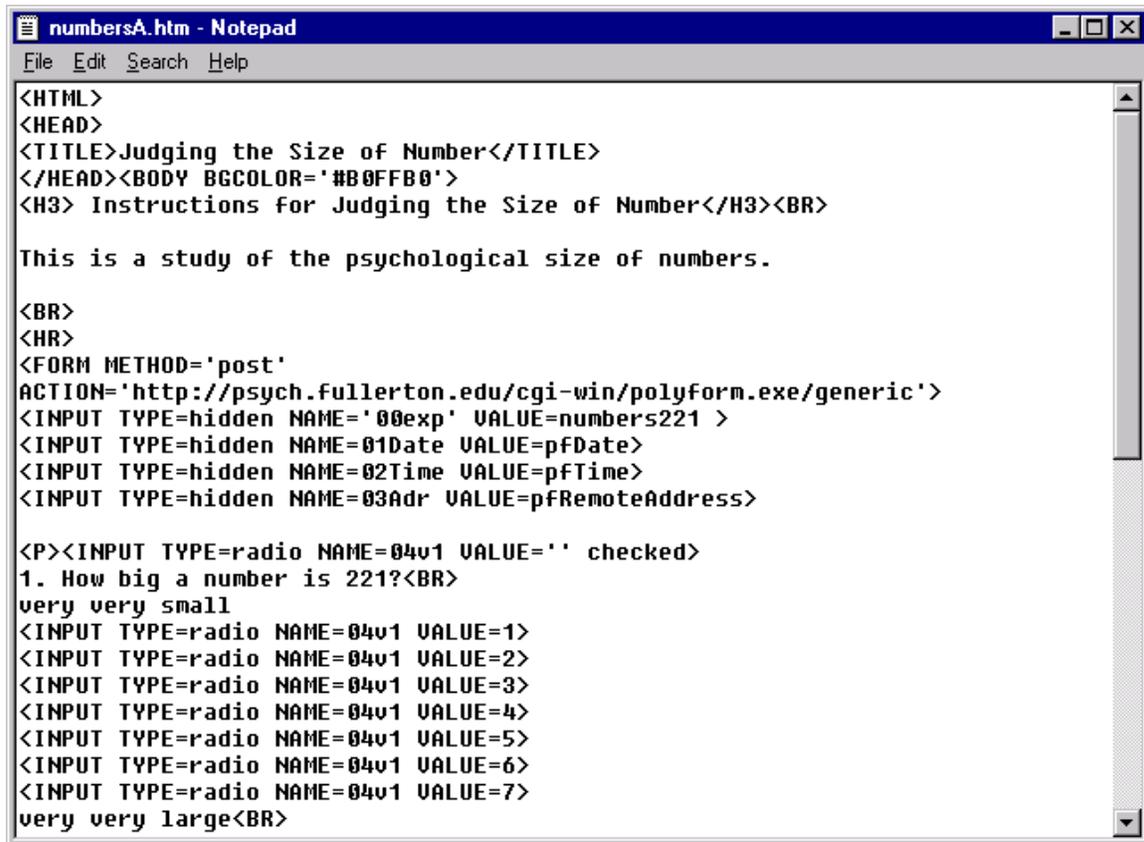


Figure 9.4. HTML created by surveyWiz has been copied to the text editor, NotePad, and saved as *numbersA.htm*.



```
numbersA.htm - Notepad
File Edit Search Help
<HTML>
<HEAD>
<TITLE>Judging the Size of Number</TITLE>
</HEAD><BODY BGCOLOR='#B0FFB0'>
<H3> Instructions for Judging the Size of Number</H3><BR>

This is a study of the psychological size of numbers.

<BR>
<HR>
<FORM METHOD='post'
ACTION='http://psych.fullerton.edu/cgi-win/polyform.exe/generic'>
<INPUT TYPE=hidden NAME='00exp' VALUE=numbers221 >
<INPUT TYPE=hidden NAME=01Date VALUE=pfDate>
<INPUT TYPE=hidden NAME=02Time VALUE=pfTime>
<INPUT TYPE=hidden NAME=03Adr VALUE=pfRemoteAddress>

<P><INPUT TYPE=radio NAME=04v1 VALUE='' checked>
1. How big a number is 221?<BR>
very very small
<INPUT TYPE=radio NAME=04v1 VALUE=1>
<INPUT TYPE=radio NAME=04v1 VALUE=2>
<INPUT TYPE=radio NAME=04v1 VALUE=3>
<INPUT TYPE=radio NAME=04v1 VALUE=4>
<INPUT TYPE=radio NAME=04v1 VALUE=5>
<INPUT TYPE=radio NAME=04v1 VALUE=6>
<INPUT TYPE=radio NAME=04v1 VALUE=7>
very very large<BR>
```

NotePad may try to add a *.txt* ending to your filename. In the *Save As* dialog box, for *Files of type*, be sure to select *All files (\*.\*)*, and give the filename an ending of *.htm* or *.html*. Keep the text editor open until you are finished with the editing. After you have saved the file in the text editor, you can also load the same file in the browser. If you see an error, or if you see an adjustment you want to make to the appearance of the page, make your changes in the text editor, save it in the editor, then reload the page in the browser. Recall that you must save your changes *and* reload the page in the browser in order to see the changes. Figure 9.5 shows the appearance in the browser of the page created.

Insert Figure 9.5 about here.

Figure 9.5. Appearance of the page, *numbersA.htm*, created by surveyWiz.

**Judging the Size of Numbers - Netscape**

File Edit View Go Communicator Help

Bookmarks Location: <http://psych.fullerton.edu/mbirnbaum/web/numbersA.htm>

1. How big a number is 221?  
very very small       very very large

---

2. Are you Male or Female?

Female  
 Male

3. What is your age?  years.

4. How many years of Education have you completed?

Put 12 for High School Diploma  
Put 16 for college diploma (bachelor's degree, B.A., B.S., etc.).  
Put 20 for doctorate degree (Ph.D., M.D., etc).

Education:

5. Nationality (country of birth):

6. COMMENTS:

Please check your answers. When you are done, push the button below.

Document: Done

The next task is to make another experimental page, *numbersB.htm*, which will be identical to *numbersA.htm*, except that it will ask for a judgment of the number 9. Press the reset button. Repeat the steps used to make *numbersA.htm*, except the question should be, “how big is the number 9?” Give this one the same *Survey Name*, but give it a *Short Name* of *number9*, and save the HTML as *numbersB.htm*. Make another experiment, which will be called *numbersC.htm* with two items, which asks for judgments of the sizes of both 221 and of 9.

Finally, create a page that asks the participant to click on his or her month of birth, as was done in the St. Petersburg experiment in Chapter 5. Set it up so that four months are assigned to Condition A, four to Condition B, and four to Condition C. This assignment page is on the CD as *Ch9\_exp1.htm*. (A random assignment page in JavaScript from Chapter 17 is also included on the CD, which assigns people to Condition A or B by a computer generated random number.)

### **C. Results of Numbers Study: Between-Subjects and Within-Subjects Designs**

Whenever you set up a new survey or experiment, it is a good idea for you to complete the task yourself, to be sure that you understand how the survey or experiment feels, and also to be certain you know how the data will return in the file.

The variables will appear in the order in which they were entered to the questionnaire. You can, however, cut and paste to rearrange them in the HTML page. If you do so, the data will still return in the order in which they were entered in surveyWiz, because the script places them in the file in the order of the numbers that precede the variable names (i.e., 00exp, 01date, 02time, etc.).

When this simple experiment is done in a *between-subjects* design (i.e., different subjects serve in the 9 and 221 conditions, as in Conditions A and B), 9 receives a

significantly higher mean judgment than 221 (Birnbaum, in press). That probably surprises you since it is pretty obvious that 221 is actually bigger than 9!

Why would the results show that 9 is rated higher than 221? In a *between-subjects* design, each subject only experiences one treatment and makes judgments in the context of the stimuli presented. Judgments are always made in some context (Parducci, 1968). The experiment provided “no” context other than the number presented for judgment, so our judges supplied their own contexts. In this case, when the judges do not know of the other possible numbers, the context is *confounded* with the stimulus. When people are asked to judge the number 221, people apparently think of bigger numbers, perhaps as high as 999, among which the number 221 seems “small.” However, when judging the number 9, people think of smaller numbers, among which 9 seems “average” or even “large.”

In the *within-subjects* design, *numbersC.htm*, judges receive a context that includes both the numbers 9 and 221, so they will give larger judgments for larger numbers. In Condition C, where each person judges both numbers, 221 will be judged larger than 9.

This experiment illustrates that every numerical judgment is made with respect to some context, and that in a between-subjects design, the context for judgment may be confounded with the stimulus. One must be very cautious when trying to interpret judgments obtained in between-subjects experiments.

#### **D. Range-Frequency Theory of Contextual Effects**

Parducci (1968; 1995) has developed a theory that gives a good account of contextual effects judgments of magnitude of psychophysical, social, and hedonic stimuli. He believes that happiness is also determined by the same principles that

determine judgments of magnitude, so to Parducci, understanding the principles of judgment is the key to understanding how to lead a happy life. According to his theory, known as range-frequency theory, happiness is a negatively skewed distribution.

Range-frequency theory asserts that people compare stimuli to two standards. First, where does the stimulus fall with respect to the endpoints? The relative position of a stimulus to the endpoints is known as the *range* effect. Second, what is the relative position of the stimulus compared to the frequency distribution of the stimuli? In other words, what is the percentile rank of the stimulus compared to all stimuli in the person's context? That position is the *frequency* effect. Range-frequency theory says that people judge stimuli by a compromise between these two systems of relative judgment.

For example, to determine the stimulus that would be judged "average," the result would be the stimulus that falls between the psychological midpoint (range) and the median (frequency). In a negatively skewed distribution, more than half of the stimuli exceeds the mean; in a positively skewed distribution, most stimuli fall below the mean. To be happy, one should arrange one's life so that most experiences are better than the midpoint experience. If you have an opportunity to experience a unique, rare and wonderful event *once*, you should avoid it, because it will make the rest of your life dull and mundane, if not unpleasant. A rare and wonderful experience will cause the midpoint to increase, which might cause the rest of your experiences to seem poor in comparison to that one moment of ecstasy.

Numbers experiments D and E contain two contexts such as have been used by Parducci to investigate contextual effects in judgments of the size of numbers. The experiment labeled *numbersD.htm* has numbers from 108 to 992 in a positively skewed distribution. The experiment labeled *numbersE.htm* has numbers that are negatively

skewed with the same endpoints. According to range-frequency theory, judgments of the same numbers (108, 257, 324, 435, 550, 621, 776, 833, and 992 are common to both conditions) should be higher in the positively skewed distribution (D) than in the negatively skewed distribution. It will take a larger number to be judged “average” in the negatively skewed distribution.

If you use different groups of subjects in each context, you are using a systematic design in which the context of the experimental design has been systematically manipulated (Birnbaum, 1974). Draw a graph that shows the mean judgment of the common numbers with a separate curve for each between-subjects context. Compare judgments obtained with conditions D and E. You will see that within groups (within each curve), people give higher judgments to bigger numbers. However, between groups, a smaller number will receive larger judgments in the positively skewed context than does a larger number in the negatively skewed context.

## **F. Discussion and Summary**

This chapter explained how to use surveyWiz to make simple tests and surveys. This program can save time in creating the HTML for a simple survey, questionnaire, or test, especially if you have many items with the same type of scale of radio buttons. You should understand the HTML created by surveyWiz, even if you do not yet understand the JavaScript program that makes the HTML. This chapter also discussed the problem of comparing judgements obtained in between-subjects designs. An introduction to range-frequency theory was presented to help understand how context can be manipulated between subjects.

SurveyWiz makes it easy to make simple surveys, questionnaires, and tests. Now that you know HTML, you can also modify the survey to change its appearance, or to add something (e.g., a TEXTAREA) that surveyWiz does not make for you.

SurveyWiz is also available on-line at the following URL:

<http://psych.fullerton.edu/mbirnbaum/programs/surveyWiz.htm>

You can check the above site for the latest version of the program. The program is entirely self-contained in one file. To download the latest version, visit the above Web site and select *View Source* from your browser. Then copy and paste the source into a text editor and save it. SurveyWiz may be freely copied and used for noncommercial, scholarly purposes without charge. As you should with any resource (published in a journal or on the Web) that benefits your papers, you should acknowledge credit for the help.

Another program that has a similar purpose is WWW Survey Assistant by Schmidt (1997). That product can also be used freely by noncommercial, educational users. It is available on-line from the following URL:

<http://or.psychology.dal.ca/~wcs/hidden/home.html>

Survey Assistant has advantages over commercial programs. You may find the program harder to use than surveyWiz for making a simple questionnaire, but the program supports a greater variety of question formats, and it also supports development of server-side scripts that allow pre-processing of the data.

## **F. Exercises**

1. Use surveyWiz to make a 10 item true-false test of knowledge of some situation. Use 2 radio buttons for “True” and “False.”

2. Use surveyWiz to make a 10 item short-answer questionnaire or quiz. If the answers will exceed the defaults, you may need to increase the `SIZE` and `MAXLENGTH` attributes of the text boxes, from `SIZE=8 MAXLENGTH=25` to `SIZE=60 MAXLENGTH=100`.
3. Use surveyWiz to make a 5-item, multiple choice quiz of questions for Introductory Psychology. Use the scales of radio buttons, and after the form is complete, edit the HTML to place each button (except the one in the margin) on a separate line (use `<BR>`). You will need to add the multiple choice alternatives in the editing stage. For example, create the following item:

Pavlov conditioned his dogs to salivate when they heard the sound of a bell.

In Pavlov's terminology, the bell is:

- a. A conditioned stimulus
- b. An unconditioned stimulus
- c. A conditioned response
- d. An unconditioned response
- e. Both a and b.

To create the item, type in the first line of the question, and use a 5-point scale with blank endpoint labels. Then edit the item to complete the question, to add the response choices, and to put `<BR>` at the end of each line. As you edit, you can use the Display key to see how the item will look. You can also add `<BLOCKQUOTE></BLOCKQUOTE>` tags to indent the choices.

4. Project idea: Collect data for the numbers experiments, D, and E. Set up a page that assigns people to one of these conditions. See if you can explain why the same number gets different judgments in the different conditions. If you understand range-frequency theory, you can understand what numbers to present people so that you maximize (or

minimize) the judgments of size. What numbers would you present people so that the average of all judgments is as large as possible. Relate this problem to Parducci's goal of arranging one's life to maximize happiness.