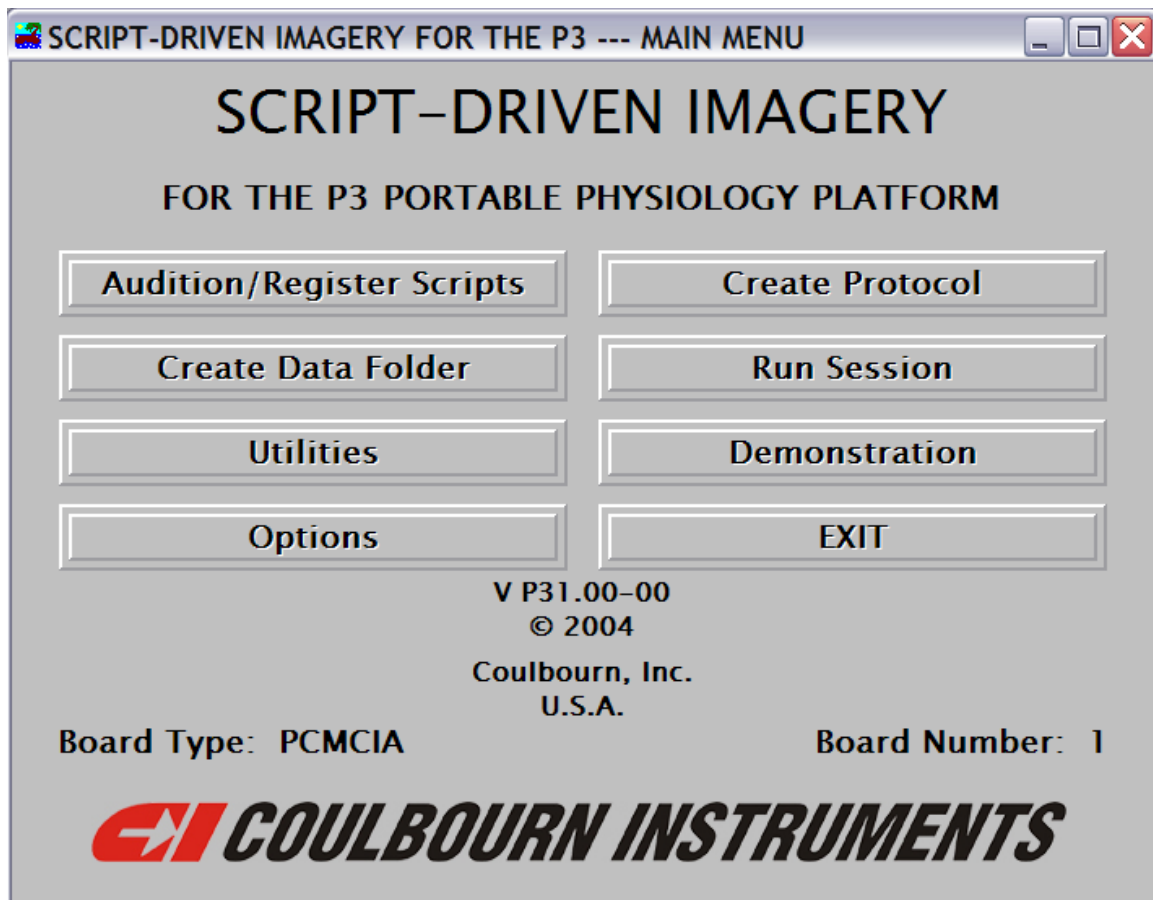


COULBOURN HUMAN MEASUREMENT SYSTEM

SCRIPT-DRIVEN IMAGERY SOFTWARE FOR THE PORTABLE PHYSIOLOGY PLATFORM



USERS' GUIDE (HMS-300-P3)

COULBOURN INSTRUMENTS



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Software Installation

Before installing the Script-Driven Imagery and the Human Measurement Utilities packages, be sure to install the PCMCIA (for laptop computers) or the PCI card (for desktop computers). Refer to the Interface Card Installation manual included with your interface card.

To Install the Script-Driven Imagery Software, insert the CD and from the Start menu select Run. Browse to your CD directory (e.g., [D:]), choose setup.exe, and then select RUN. The software will self-install.

If you are using a notebook computer, you will need to configure your PCMCIA card. With the PCMCIA card installed in your laptop, select the Start menu, choose All Programs, then the Measurement Computing Group, and then select Instacal. The list of boards should include a PCMCIA board. If you just installed your PCMCIA card, wait a few seconds for the software to recognize your PCMCIA board. If the board does not appear, you may need to reinstall the Instacal software. Right Click on the PCMCIA board and choose Configure. On the right of the new window, select Counter 2 under Counter 3, then select Counter 1 under Counter 2, and choose 10 MHz under Counter 1. You must have administrative rights on your computer for these changes to take effect. Now exit Instacal. If you are not sure that you have administrative rights, open Instacal again, right click on the PCMCIA board in the list of boards and select Configure. If the settings are not as you selected previously, you will need to log onto your computer with an administrator password.

Start the application by running P3IMGRY.EXE.

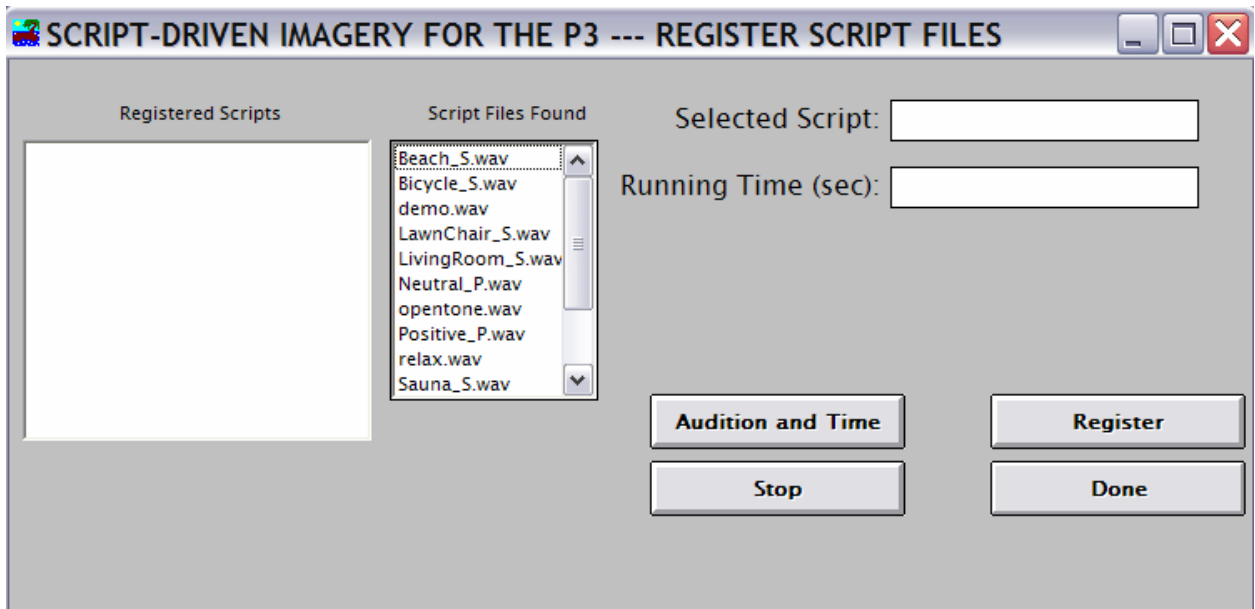
Utilities

This option loads and begins execution of the P3 Utilities software discussed in a separate manual.

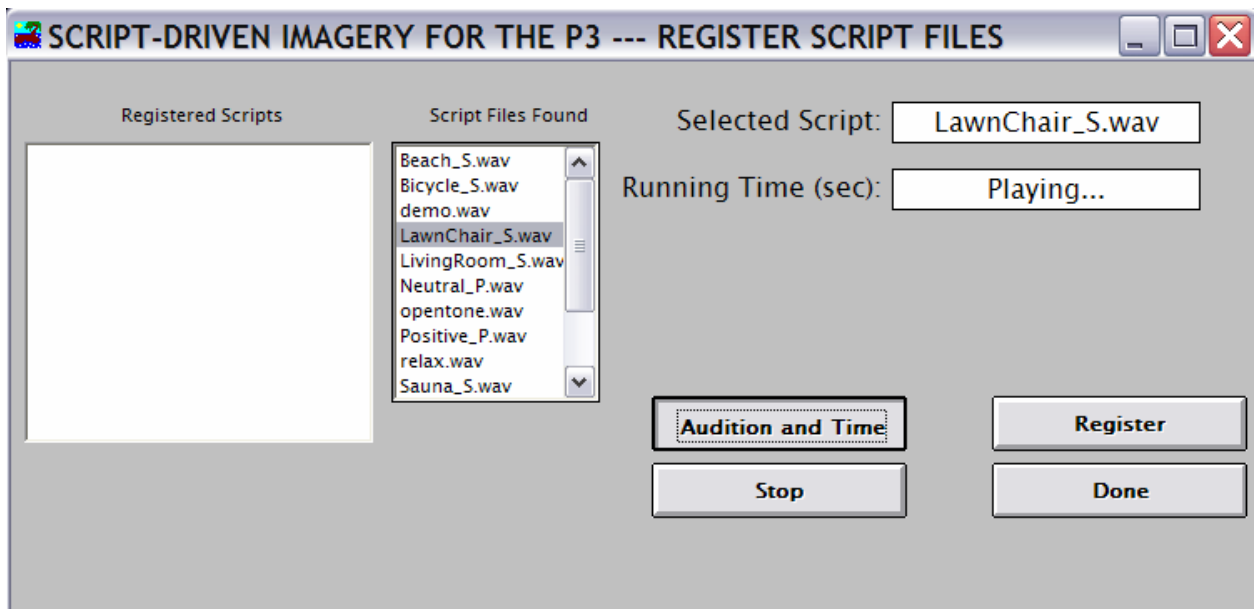
Audition/Register Scripts

Before a script can be used as part of a protocol, the script must be registered in order to determine its length. This information is required in order to synchronize data acquisition with the end of script presentation. Note that all scripts must be saved in a subfolder of the root folder named *scripts* (if the hard drive is drive C:, the path to the scripts is C:\scripts); the scripts must be saved as wave audio files.

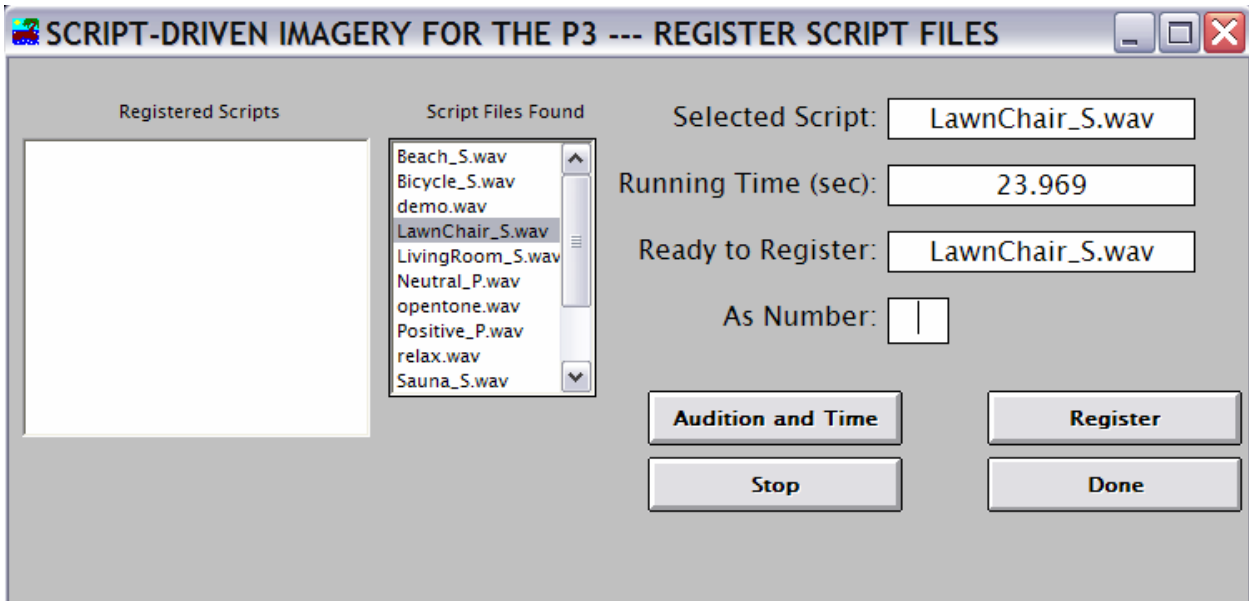
When the *Audition/Register Scripts* option is selected, the program will show the screen illustrated below.



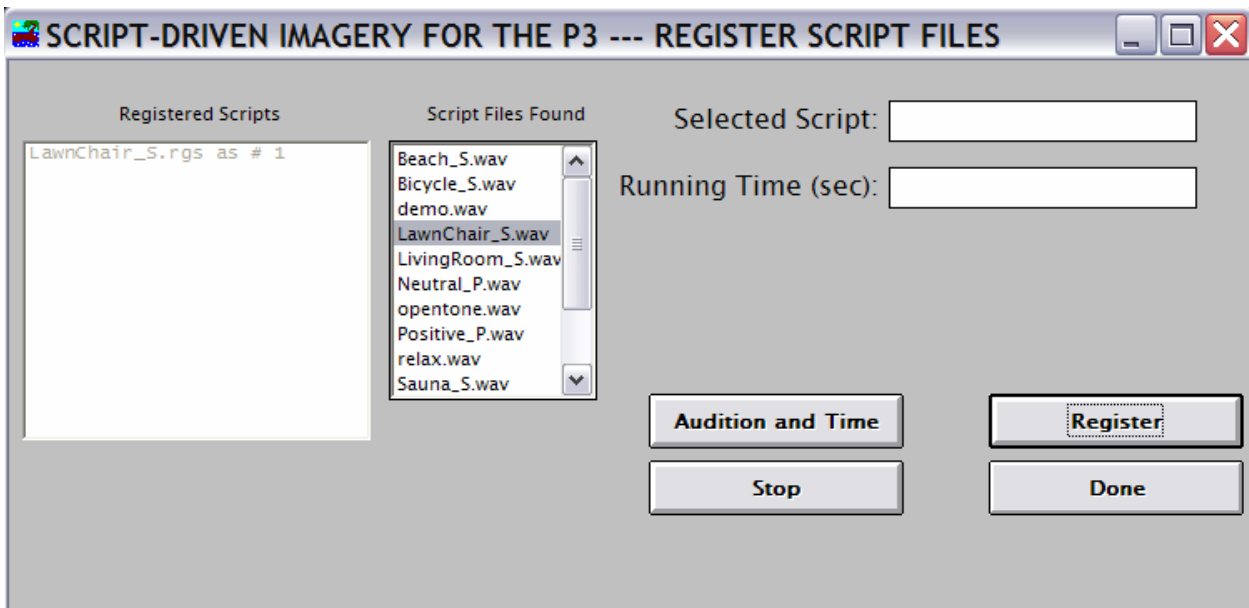
The *Script Files Found* box will contain a listing of all *.wav* files in the *scripts* folder. Select a file by clicking on its name. The file name will be highlighted. Then click on the *Audition and Time* control. The program will play and time the script.



When the script has been completely played, the program will display timing data and offer the opportunity to register it.



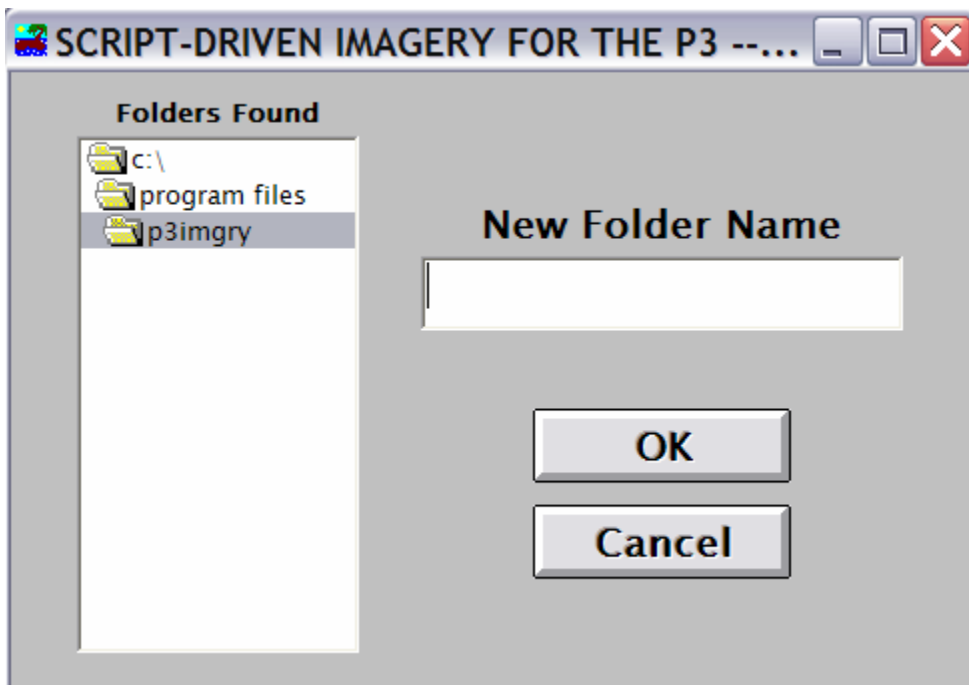
Enter the script number (this is strictly used for identification and any integer is acceptable) and click on the *Register* control. The program will create a file with the root name of the script file and the extension *.rgs*; only scripts that have these corresponding files will be available when protocols are created.



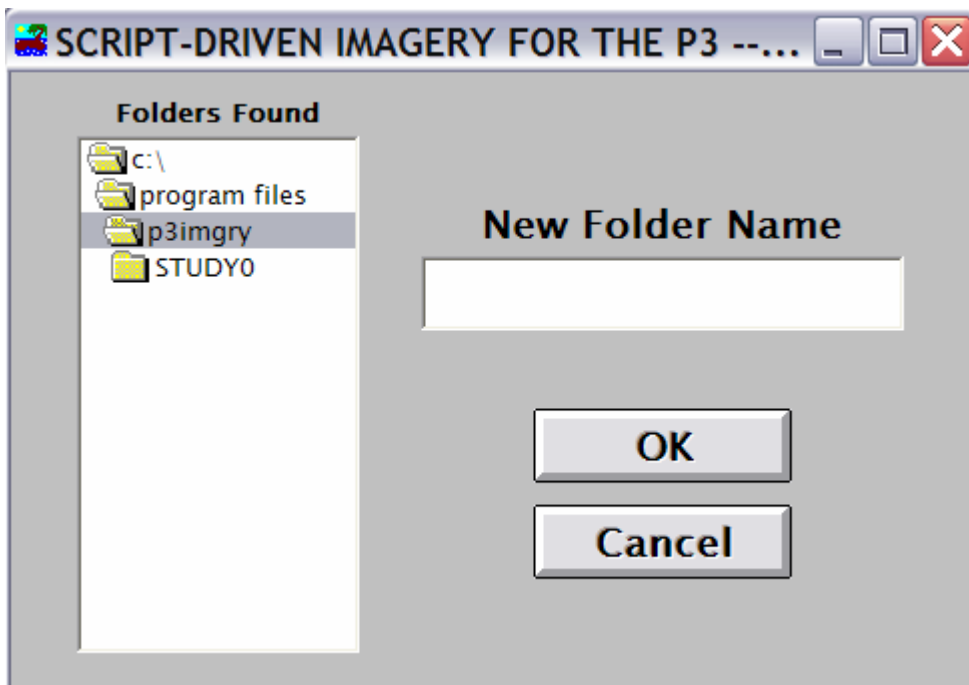
When script registration is complete, click *Done* to return to the main menu.

Create Data Folder

Use this option if data are to be stored in separate folders. These will be subfolders of the *p3imagery* folder. (Note that the *p3imagery* folder is a subfolder of *program files*.) When this option is selected, the program will display this screen.



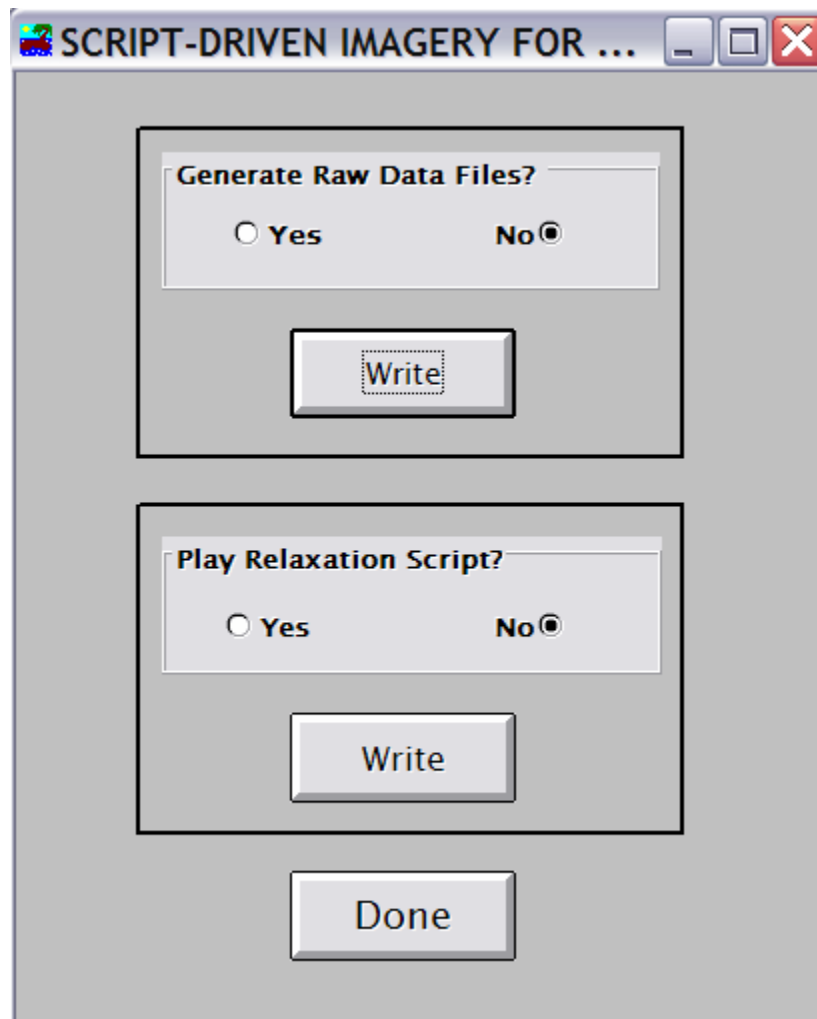
Enter the name for the new folder, and click *OK*. The program will create the new folder and its name will be added to the *Folders Found* list box.



Click *OK* to return to the main menu after all new folders have been created.

Options

Two features of the software are available as options. The user may decide whether or not raw data files are written to disk (the nature of these files will be discussed in a later section of this manual), and whether or not a relaxation script is played to the subject prior to the first trial.



Select the appropriate option buttons, and click on the two *Write* objects to save these selections.

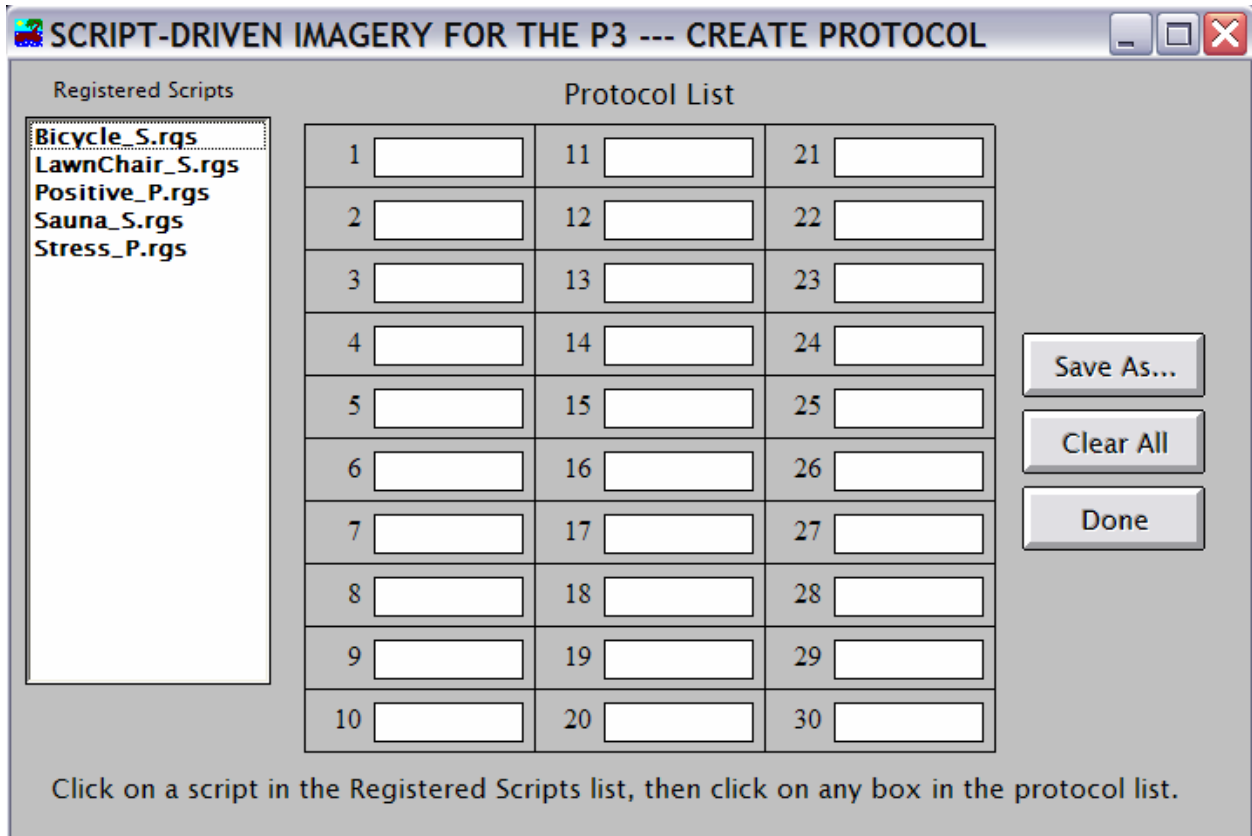
The raw data files (two will be written if this option is enabled) will include samples taken at 10 Hz from the skin conductance channel and from each of the EMG channels as well as each interbeat interval which meets the criteria set in the Human Measurement Utilities program (this is described in another manual.)

If a relaxation script is to be included, the script must be named *relax.wav* and must be written to the *scripts* folder. This script need not be registered. The relaxation script, if included, will be played prior to the intertrial interval preceding Trial 1.

Click on *Done* to return to the main menu.

Create Protocol

The program will display this screen when the *Create Protocol* object is selected.



Registered Scripts		Protocol List					
Bicycle_S.rgs		1		11		21	
LawnChair_S.rgs		2		12		22	
Positive_P.rgs		3		13		23	
Sauna_S.rgs		4		14		24	
Stress_P.rgs		5		15		25	
		6		16		26	
		7		17		27	
		8		18		28	
		9		19		29	
		10		20		30	

Click on a script in the Registered Scripts list, then click on any box in the protocol list.

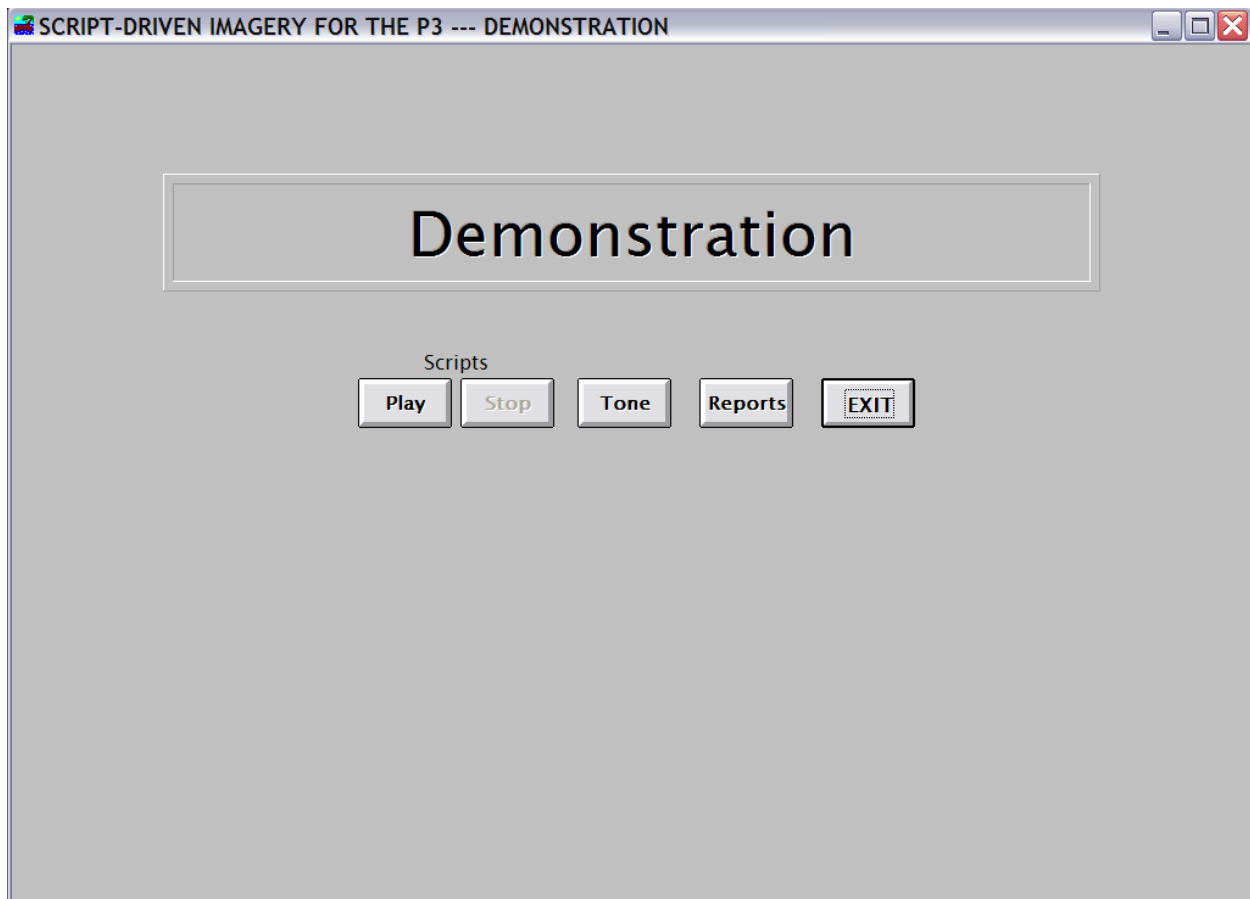
The *Registered Scripts* list box will show all scripts in the *scripts* folder which have been registered. Click on a script in the *Registered Scripts* list, and then click on any box in the *Protocol List*. After the *Protocol List* is complete, click on the *Save As...* object. The program will open a *Save As* dialog box. **The protocol file must be written to the *p3imgry* folder**; if this is not shown as the *Save In:* destination, use the pull-down arrow to scroll to the correct location.

The *Clear All* control is provided as a convenient method for deleting all scripts in the *Protocol List*. To clear a single entry in the list, double-click on the entry to be deleted.

Click on the *Done* control to return to the main menu.

Demonstration

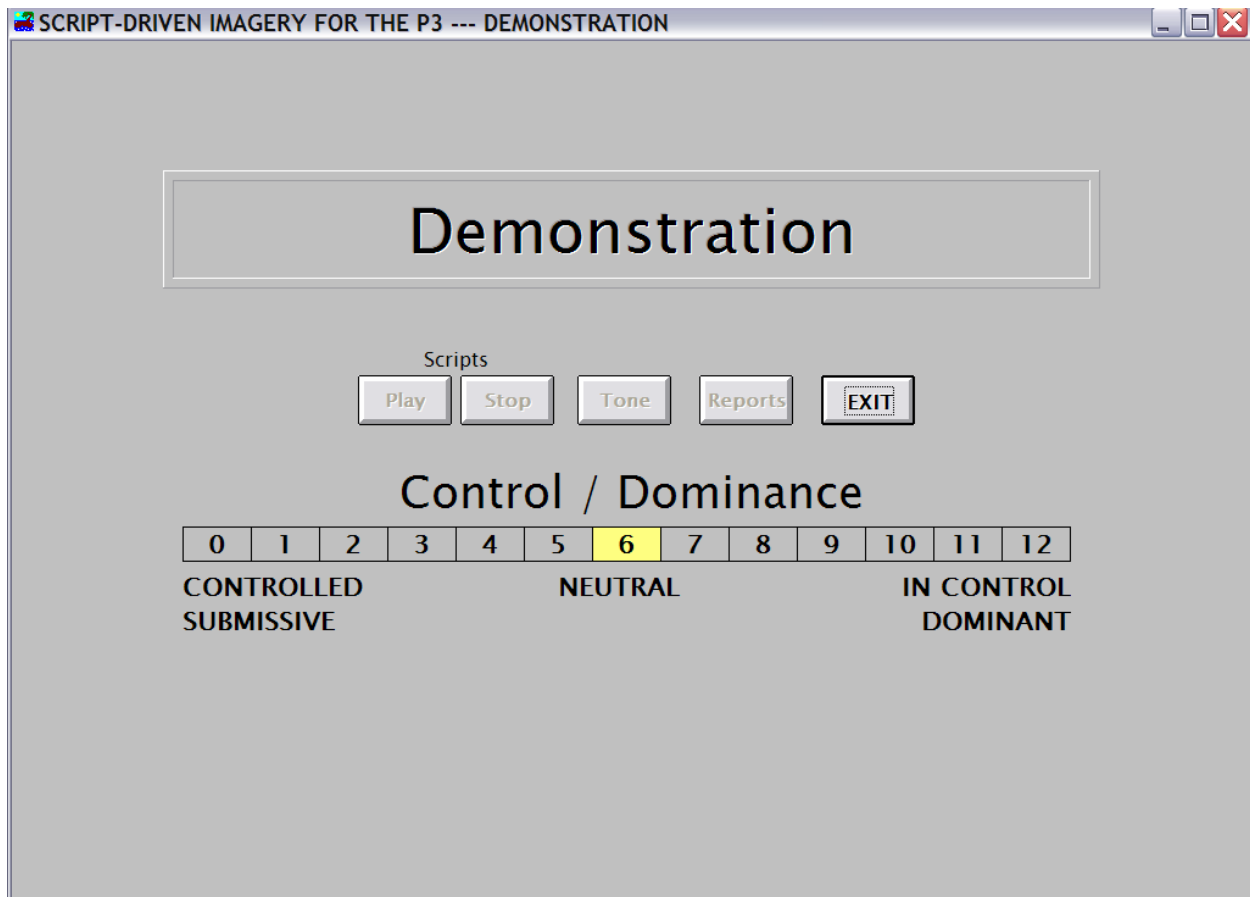
This option provides the capability of demonstrating to the subject what will occur during each of the trials in a test session. When the *Demonstration* control is selected, the subject monitor will be turned on, the subject mouse will be enabled (see the Appendix for hardware configuration), and the screen below will be displayed on both monitors.



Using the subject mouse, click on the *Play* object to play a demonstration script. The user prepares this script. It must be named *demo.wav*, and must be saved in the *scripts* folder. (Registration is not required for the demonstration script.) While the script is playing, the *Stop* control will be enabled; use this control to abort script presentation.

Clicking the *Tone* control will play the tone which is used to signal the various phases of each trial. The file played by this control is *opentone.wav*, it is supplied on the distribution disk and is saved in the *p3imgry* folder. The user may provide another file for this purpose as long as the naming and storage location conventions are observed.

At the end of each trial, the subject is asked to rate twelve aspects of the imagery. Clicking the *Reports* object will demonstrate this rating procedure. The screen shown below will be displayed (with all numbered boxes in gray), and the subject will select a rating for each labeled aspect.

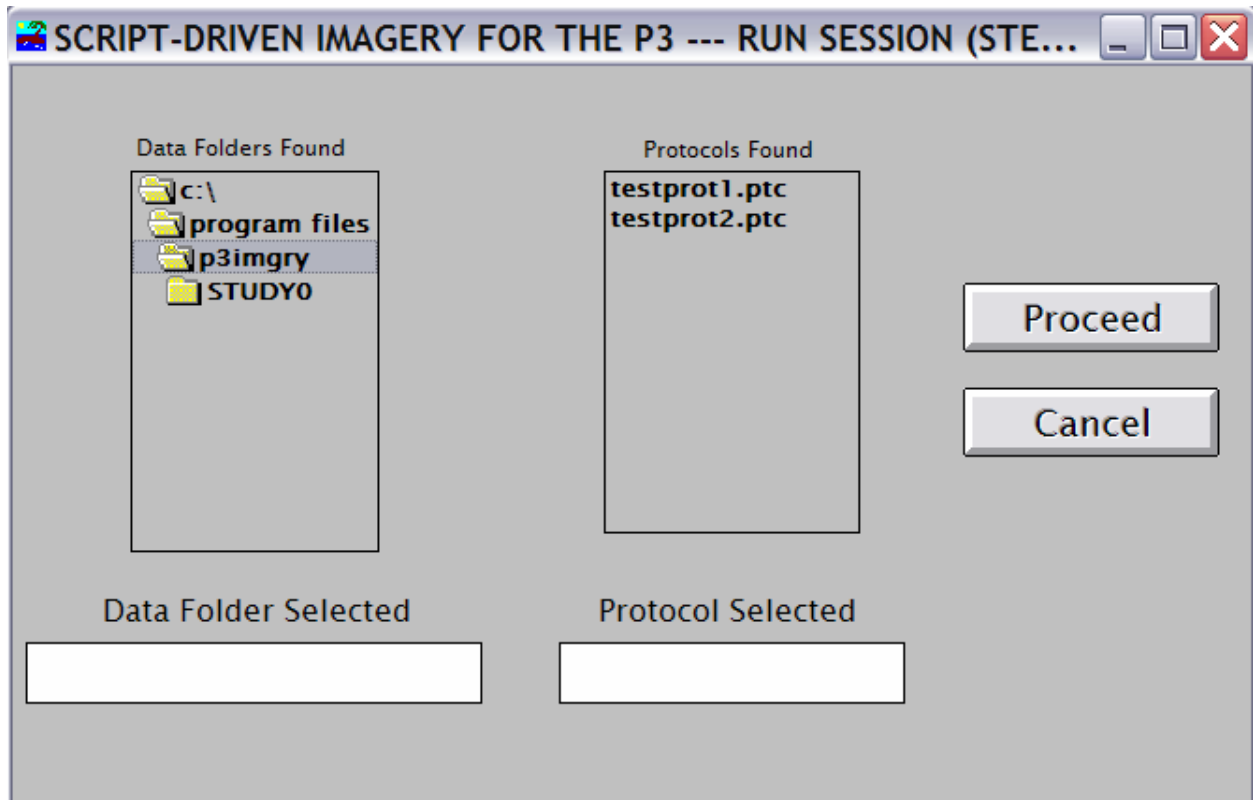


As the subject mouse is moved onto one of the numbered rating boxes, its color will change. Clicking on that box will record the rating, and the next labeled aspect will be presented.

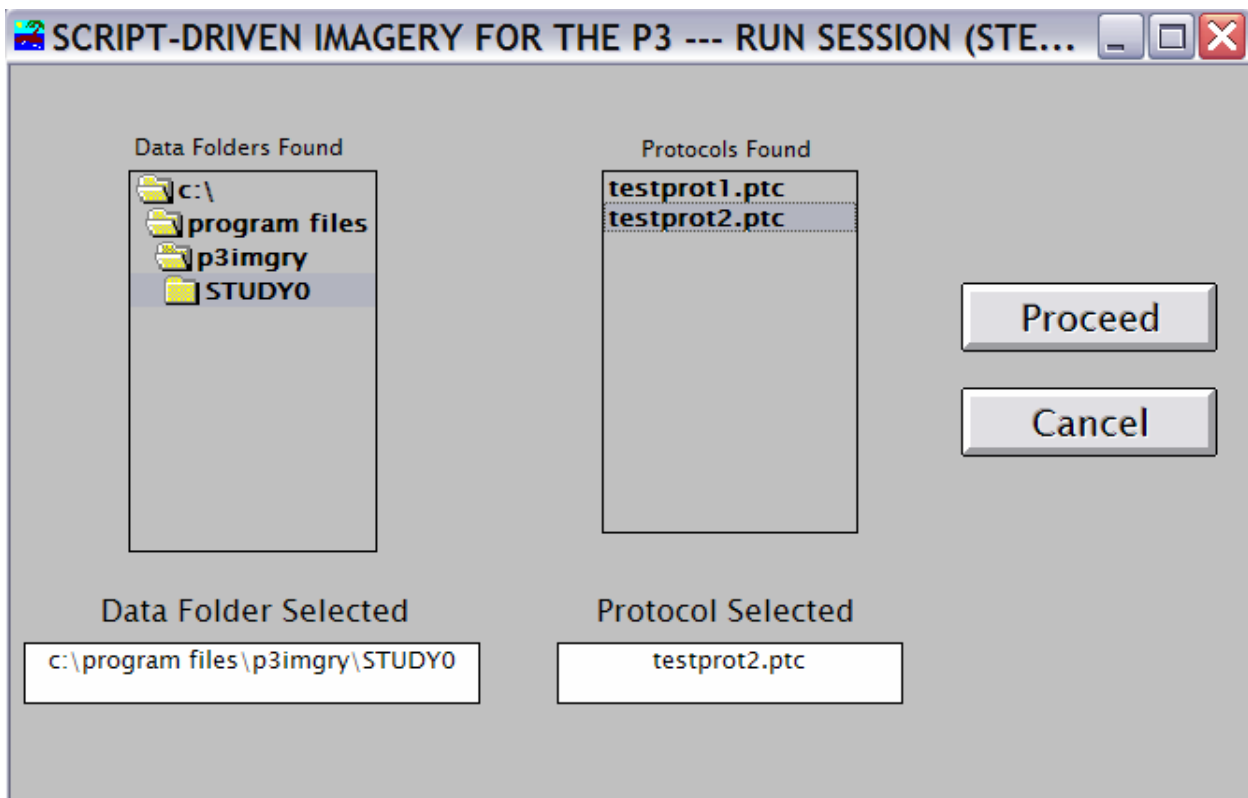
The *Exit* control can be used at any time to return to the main menu.

Run Session

When the *Run Session* object is clicked, the program will display the screen shown below as the first step in preparing to run a data collection session.



Select a data folder from the *Data Folders Found* list, and one of the protocols from the *Protocols Found* list. These choices will be displayed in the text boxes below the list boxes.



Click the *Proceed* object to advance to the next preparatory step.

SCRIPT-DRIVEN IMAGERY FOR THE P3 --- RUN SESSION (STEP 2)

Data Files Found

- j0.sdf
- j1.sdf

Data Files Root Name:

Text Line 1:

Text Line 2:

Text Line 3:

Text Line 4:

Text Line 5:

The only entry required on this screen is the name of the data file to be written by the program. Enter only the root portion of the file name; the program will supply the appropriate extension (or extensions if raw data are to be written). A list of the data files found in the target folder is displayed in the *Data Files Found* list box. If the new data file name is a duplicate of a name already in use, the program will request permission to overwrite the older file. The data file structure allows for five lines of text. The five text boxes on this screen are used for entering this text information. Click *Proceed* to begin timing of the first intertrial interval (ITI).

Prev Mean

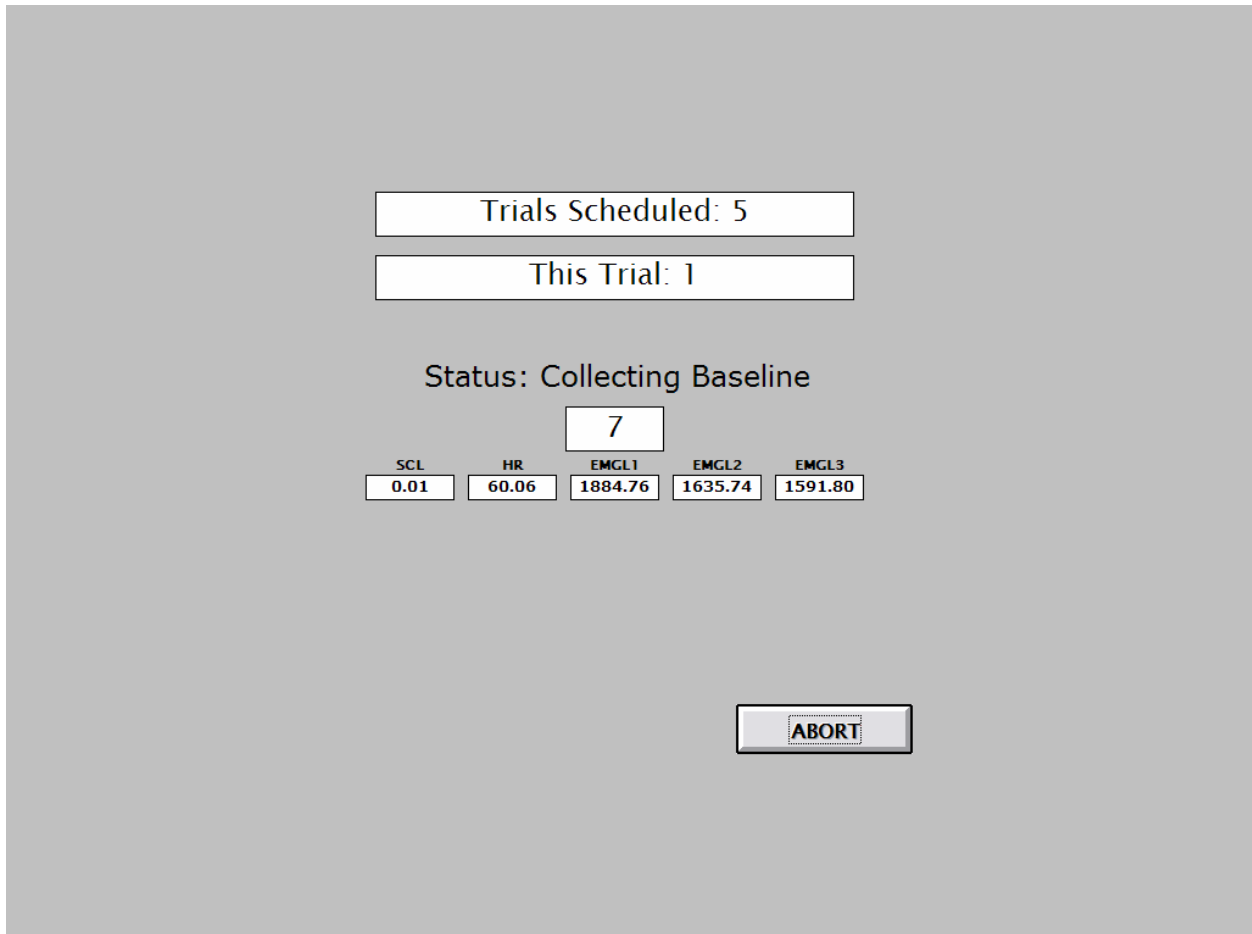
	Current Samples					Current Mean
IBI	1000	1000	1000	1000	1000	1000
HR (bpm)	60.00	60.00	60.00	60.00	60.00	60.00
SCL	0.010	1738.28	1625.98	1572.26		

Status: Timing ITI

During the ITI, the central text box will be updated each second to indicate the elapsed time. The uppermost row of five text boxes will show the most recent five interbeat intervals (IBIs, in msec), and the lower five will show the conversion of these IBIs to heart rate (HR, in beats per minute [BPM]). The four text boxes below these will show the most recent samples for skin conductance (SCL, in microSiemens [μ S]), and for each of up to three EMG sites (in microvolts [μ V]). The two text boxes shown with black backgrounds display the current mean IBI and HR. Note that during the first ITI the foreground color of the HR display is green, and that the text box labeled *Prev Mean* is blank.

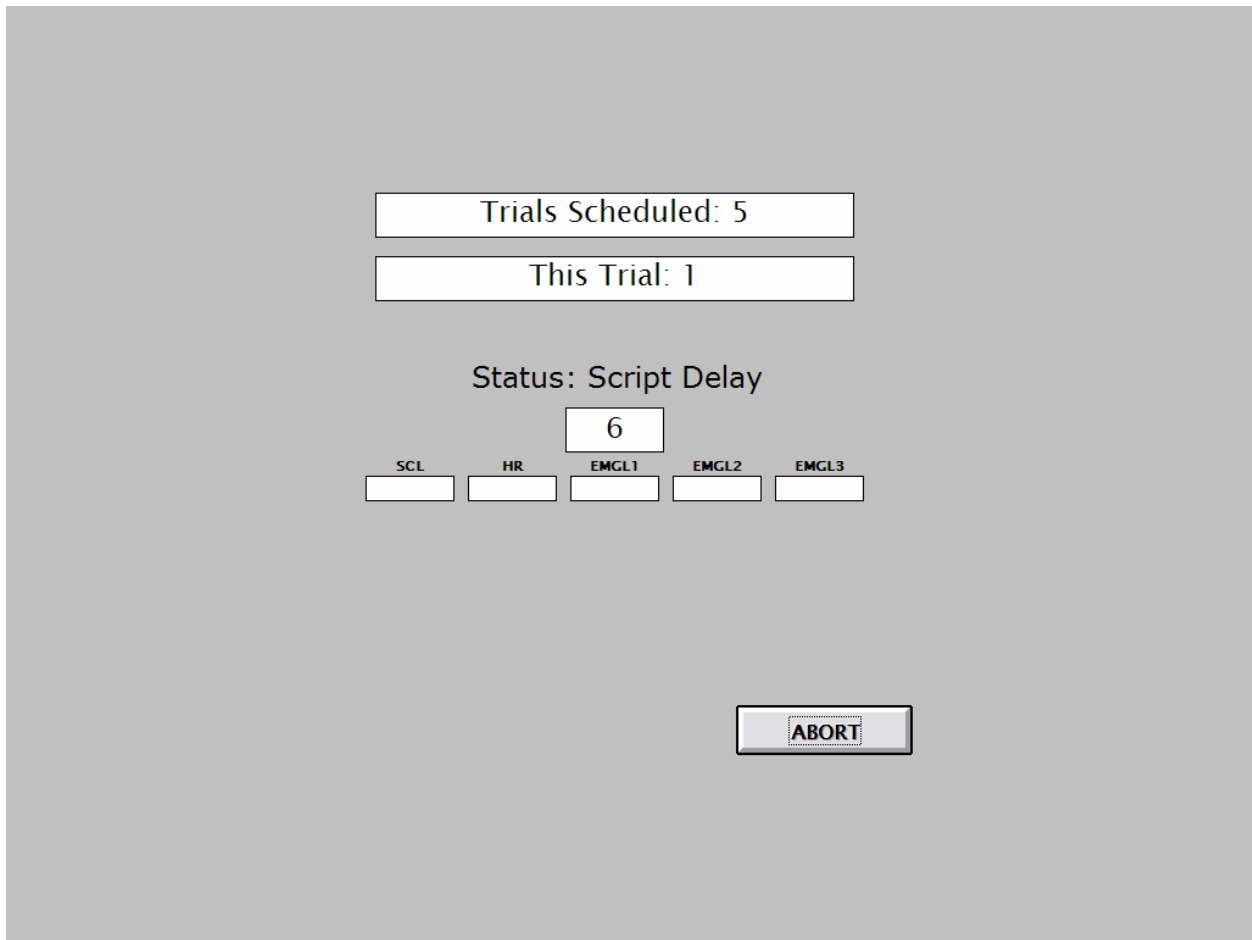
Clicking on the *Utilities* control will load and run the Human Measurement Utilities software described in another manual. The *Abort* control will end program execution.

Each trial in this procedure is initiated manually. Click on the *Start Trial* control to begin the first trial.



The trial begins with a 30-second baseline data collection period. During this time the program will display the most recent samples for SCL, HR, and the three EMG sites.

When the baseline period is complete, the script presentation phase is begun. The time allowed for script presentation is 50 seconds. Since script presentation should end just prior to imagery data collection, the start time of script presentation is adjusted to accommodate its duration. Typically, some delay will be required to properly coordinate script presentation and imagery data collection.



The central text box will be updated to show the elapsed time in the delay. Note that no data are collected during the script delay. Data are collected during the final 30 seconds of the 50 seconds allowed for script presentation. If the script is less than 30 seconds long, data collection will begin prior to script presentation. If the script is longer than 30 seconds, data collection will begin while the script is being read. During script presentation, the screen will show elapsed time and the most recent samples on each of the data channels.

When the script is completed, the 30-second imagery period will begin. The screen will show elapsed time and the most recent samples on each of the data channels.

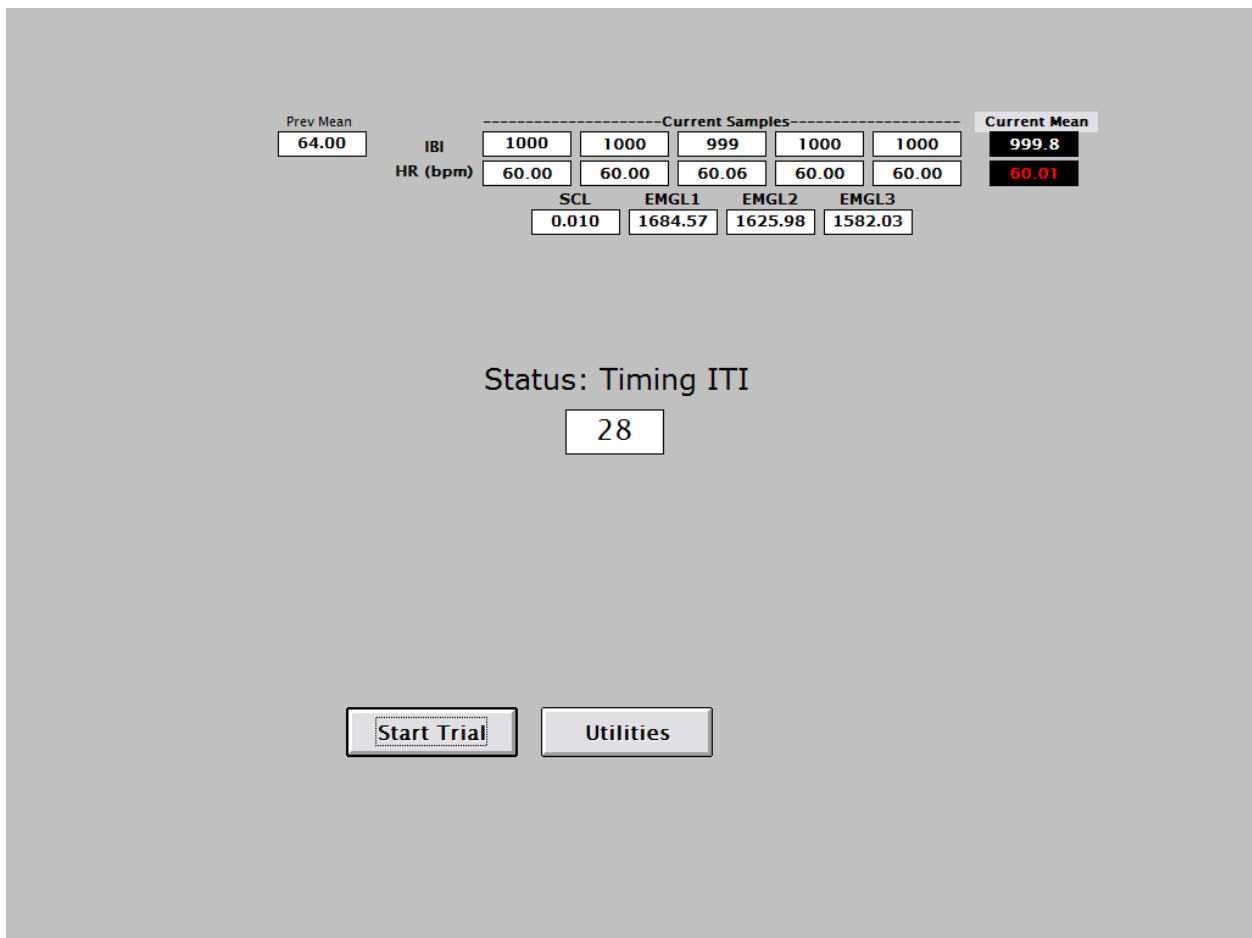
At the end of the imagery period, a tone will be played to the subject (see the description above in the Demonstration section), and the 30-second recovery period will begin. The screen will show elapsed time and the most recent samples on each of the data channels.

At the end of the recovery period, the tone will be played again, the subject's monitor and mouse will be activated, and the self-report data will be collected. This procedure is described in the Demonstration section of this manual.

Eleven scales are included in the self-report. The labels beneath the numbered boxes are adjusted for relevance to the scale. Self-reports are collected for the following.

- Control/Dominance
- Happiness/Pleasure
- Excitement/Arousal
- Vividness of Your Image
- Happiness
- Sadness
- Anger
- Fear
- Disgust
- Surprise
- Guilt

When the self-report data have been collected, the subject's monitor and mouse will be disabled, and the next ITI will be initiated. The screen for the second (and all subsequent) inter-trial intervals is different from the first in two significant aspects.



Note that the *Previous Mean* text box is no longer blank, but rather shows the mean HR for the recovery period of the most recent trial. Second, the *Current Mean* HR is displayed in red if it differs from the *Previous Mean* by more than $\pm 3\%$. If the current mean is within this range, it is shown in green.

Clicking on the *Start Trial* control will start the next trial and the events described above will be repeated until all scheduled trials have been completed.

Data Files

A file containing scored data (.sdf extension) is written for all sessions. The first record of this file contains only the file name. The second record contains the date and time at which the file was created. Following this record are five records containing the text information provided by the user. For each trial, six records will be written to the .sdf file. The first of these will contain the trial number, the script number (assigned at script registration), and the script name. The next record contains baseline data: SCR level, mean HR, EMG1 level, EMG2 level, and EMG3 level. The next record contains data from the final 30 seconds of the script-reading period. A response score (i.e., the signed difference between the baseline measure and observed activity during the script-reading period) is written to the file. The same procedure is followed for the next two records – one for the imagery period and one for the recovery period. The final record for each trial contains the eleven self-report scores (0 through 12).

If raw data are written, two data files (.rd1 and .rd2 extensions) are created. The first record of the .rd1 file contains only the file name. The second contains the SCR coupler sensitivity, the SCR subject offset, and the gains for the three EMG amplifiers. Following these two records, for each trial, the file will contain records each of which contains the trial number and data from each channel digitized at 10 Hz. (Note: the data are originally acquired at 1 KHz, but only each 100th sample is written to the .rd1 file.) These data include an SCR sample (in μ Siemens) and raw data from each of the three EMG channels.

The .rd2 file contains interbeat interval data. The first record contains only the file name. Subsequent records contain the trial number, the IBI (in msec), and the trial phase during which the IBI was acquired (1 for baseline, 2 for script-presentation period, 3 for imagery, 4 for recovery).

APPENDIX

Hardware Considerations

The P3 must be set to device address 0. Check the pushwheel switch on the front panel of the P3 to check its address.

The video splitter used to enable and disable the subject's monitor is controlled by stimulus output 1. The mouse splitter used to enable and disable the subject's mouse is controlled by stimulus output 2. Both stimulus outputs are available on the back panel of the P3 as 2-pin blue jacks.

Conditioned and unconditioned data are available on the rear panel of the P3 to enable data acquisition in parallel by other hardware.