Experiment HP-22: Anticipation Anxiety

Equipment Required

PC or Mac Computer

IXTA, USB cable, IXTA power supply

PPG-320 Pulse plethysmograph

RM-220 Nasal Cannula

Optional equipment – GSR electrode cable, TM-100 temperature sensor

ECG Cable and Pulse Transducer Setup

1. Locate the PPG-320 pulse plethysmographand the RM-220 nasal cannula.
2. Plug the PTPG-320 into the PT port, plug the RM-220 into the white port of Channel A1.
3. Position the cannula so the prongs are just resting under the subject's nose, very close to the nostrils. Wrap the tubing behind the subject's ears, as shown below.

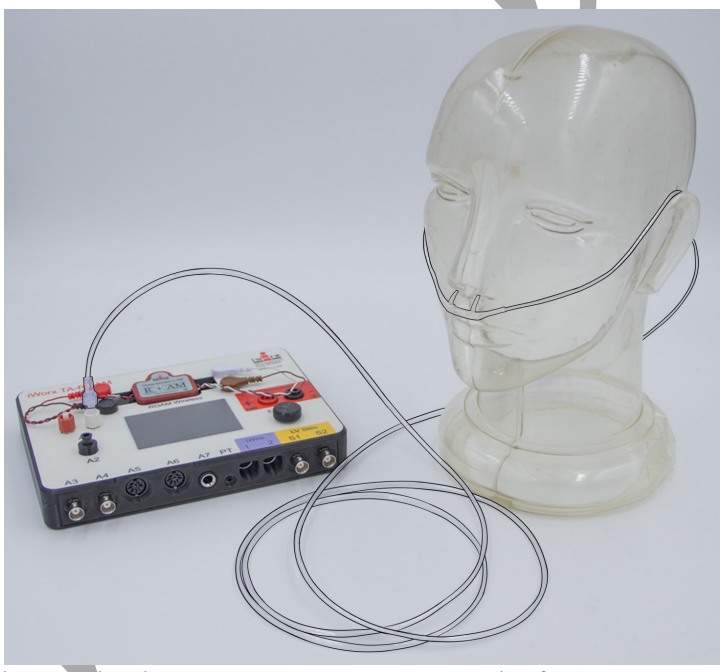

Figure HP-22-S1: Nasal cannula showing proper position on the face.

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Figure HP-22-S2: TA showing the pulse/temperature sensor and nasal cannula set up.

1. Select one person from your group to be the subject. Ask the subject to go to the sink, wash their hands with soap and water, and dry them thoroughly.
2. Connect the Pulse sensor to channel A5.
    - Strap the sensor to the volar (fleshy) surface of the left thumb. Make sure it is not too tight or too loose. The general rule is for the subject to barely be able to feel the pulse in the finger.
3. Connect the temperature sensor and attach the temperature sensor to the back of the subject's hand with a small piece of paper tape.
4. Connect the respiration monitor and strap the belt snugly around the chest of the subject. The subject should be able to breathe easily with no restrictions. The monitor can be worn over a light t-shirt, but if heavier clothing is being worn, have the subject put the belt on underneath their shirt.

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Experiment HP-22: Anticipation Anxiety

This lab is meant to be a "hypothesis-driven" lab where students will come up with a method for testing the "Anticipation Anxiety" levels from their subject. They can look at a variety of physiological parameters. This can include: heart rate, body temperature and/or breathing rate. Other parameters can also be tested including ECG and GSR. The settings file for this lab is currently set up to record: Pulse, Respiration, Skin Temperature, Heart Rate and Breathing Rate. Parameters can be added or removed based on what the goal of the hypothesis is.

Sample Exercise: Measuring "Anticipation Anxiety" levels for 3 sample situations.

Aim: To measure the subject's heart rate, breathing rate and skin temperature before, during and after "waiting for something to happen".

Approximate Time: 30 minutes or more

Procedure

1. The subject should rest their hand with the sensors attached comfortably. Instruct the subject not to move the hand during the recording process; movement may introduce artifacts into the recording.
2. Click Record. Type **the subject's name** in the Mark box and click the mark button. Record the subject's baseline heart rate, breathing rate and skin temperature for at least 1 minute.
3. Click Stop.
4. Click File → Save As to save your data.
5. Click the Video, from the Sequences list, that you want the subject to watch.

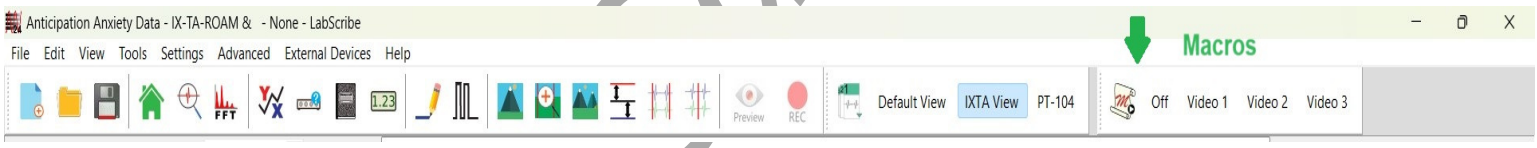

Figure HP-22-L1: Choosing the video.

6. Click on the Record button. The video that was chosen will automatically begin after approximately 2 seconds.
   - Note – one video is *scary, one video is exciting and scary*, and one video is *exciting*.
7. Continue recording during the entire video and for 5 minutes after the video has finished. Type **Finished** in the Mark box and click the mark button as soon as the video has stopped.
8. After 5 minutes, click Stop to halt the recording. Click Save to save your data.

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Figure HP-22-L2: Sample data showing pulse, heart rate, respiration and breathing rate.

13. If desired, repeat this exercise on other subjects in your lab group.

Data Analysis

1. Scroll through the data file and locate the recording of the subject's baseline prior to showing the video.
2. Use the Display Time icons to adjust the Display Time of the Main window to display the one minute recording of the subject's baseline on the Main window. This section of data can also be selected by:
    - Placing the cursors on either side of the one minute recording, and
    - Clicking the Zoom between Cursors button on the LabScribe toolbar to expand or contract the one minute recording to the width of the Main window.
3. On the right hand margin of the Heart Rate, Breathing Rate and Skin Temperature channels, the mathematical function, Mean, should appear. The value for mean baseline of these parameters are shown here.

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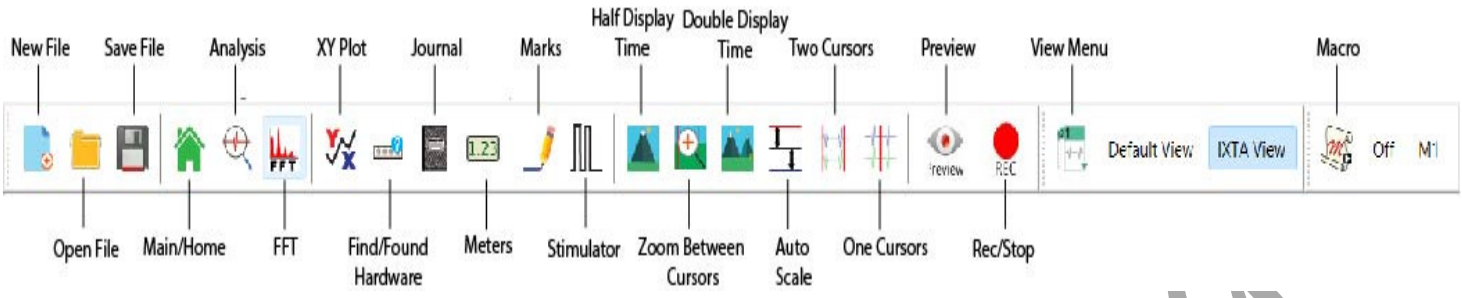

Figure HP-22-L2: The LabScribe toolbar.

4. Move the cursors to the start of the recording where the video was being shown. Position the cursors to have at the entire anticipatory/wait period selected.
5. Once the cursors are placed in the correct positions for determining the mean baseline for heart rate, breathing rate and skin temperature, the values can be recorded in the on-line notebook of LabScribe by typing the name and value of the parameter directly into the Journal.

NOTE – one person in the group will need to watch the videos in order to know how much data should be between the cursors; or, you can choose to have the entire video be the anticipation period.

6. Repeat the procedure above and measure the heart rate, breathing rate and skin temperature while the subject was waiting for the "occurrence".
7. Enter the value for the mean values for the subject's baseline and anticipation period in Table 1.
8. Repeat the procedure above and measure the heart rate, breathing rate and skin temperature for at least 1 minute after the video has been watched.
9. If other data, such as Pulse and Heart Rate are being recorded, the data can be selected and analyzed in the same way.

Table HP-22-L1: HR, BR, and Skin Temp - Baseline, During and Post – Anticipation Video

Name	Baseline	Video 1	Video 2	Video 3	Post
Mean HR (bpm)					
Mean BR (bpm)					
Mean Temp (deg C)					

Work Sample Lab

Questions

1. Is there a difference between the "anticipatory" reaction between the 3 different types of videos?
2. Did one video induce more anxiety than others?
3. Was this anxiety different between participants, or did all participants react the same way?
4. If there were differences, what could be the cause of those differences?

Hypothesis Testing:

Students can test a variety of hypotheses about ways to lessen anxiety. These will need to be tested while placing the subject in a stressful situation, like taking an anatomy or a math test, or being told that they have 15 minutes to research a subject and then talk about it in front of the class….

Research has been done about the following:

- Strong taste flavors (wintergreen, peppermint, sour lemon drops, etc…)
- Yoga
- Meditation
- Mindfulness Breathing
- Grounding Techniques

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