Yellow highlight = needs a definition
Blue highlight = dell/eprime computer
Green highlight = mac/net station computer

Some pictures would be helpful:
-Top down view of a participant's head with red wax markings
-Testing chamber and arm piece
Testing chamber with chair in correct position

Lab Manual

Preparing the Solution (before participant arrives)

1. Fill the plastic bucket with one liter of warm water (first line)
2. Add one scoop of potassium chloride with the designated measuring spoon (this spoon should not touch the water)
3. Add one scoop of baby shampoo with the spoon labeled "EGI Shampoo"
4. Mix this solution together until the KCl is dissolved (with "EGI Shampoo spoon")

Computer Set-up (before participant arrives)

1. Complete *steps 1-3 from computer setup* while the net is in the solution:
    a. *Turn the computer on.*
    b. *On the dell computer, open the iconicity folder (do NOT erase any files)*
    c. *Is your participant doing iconicity 1,2,3,4 (keep a file of this)--(iconicity_#). It is the blue square icon with three smaller squares within it*

Introduction

1. First, introduce yourself to the participant
    For example: Hi my name is Mara and I am a psychology major and rising senior. I'm Kiana and I am a neuroscience major and rising junior.
2. Thank the student for agreeing to participate in the study.
3. Next, ask the participant if they have been in an EEG study before. If the student is unfamiliar with the process, explain this component in greater detail.
    Basic explanation: We will be placing a net that contains a bunch of sponges over your head. This will allow us to measure your brain activity. We have done this before so feel free to ask any questions.
4. Once the participant understands the study, they will receive two consent forms. Ask them to look it over and answer any questions that they may have.
5. If the student agrees to the conditions, ask them to sign both pieces of paper. Save one of the consent forms (in the *completed consent* folder). The second consent form is for the student to keep.
6. Finally, make sure that the student understands that they are free to leave the study at any point in time.

Measuring head for net

1. Explain to the participant that you will be taking a few measurements of their head. This is to ensure that the right sized net is used. (all measurements in cm)
    a. Circumference (between eyebrows to top of inion)
    b. Based on the measurements below, choose the appropriate net.
        i. Small → 53.5-55
        ii. Medium → 55.5-58
        iii. Large → 58.5-above
2. Wrap the square hydrocell connector in a towel "to protect the pins inside"

a top view of the participant's head showing the positioning of the markings would be helpful

3. Place the net into the prepared solution and let it soak for 5 minutes
4. Continue measuring
   a. Back to front (top of inion to eyebrow) -~~mark half of the measurement~~ with ~~red~~ "red wax pencil"
   b. Ear to ear -mark half of the measurement with red

"Eyebrow" = "naseon" and needs a definition

"mark the midpoint of the measurement"

Instead of "ear to ear" specify which point on the ear. Bruce uses the dent right above the tragus (I forget the name)

5. Finally, ~~use the back red dot as the center measurement~~ and lightly scrub away the other red dots on the head

"extend the markings you made so they intersect at a right angle in the center of the participant's head. Make a dot at the intersection - this is where the most important electrode needs to go."

Preparing the participant

"on the participant's shoulders"

1. Place a few towels ~~around the participant~~ to ensure that they remain dry once the net is placed on their head
2. Give the participant the connector wrapped in the towel and gently tap the net side to side against the insides of the bucket before removing it

Placing the net

"outside the testing chamber"

1. Set up study from ~~the outside~~ (*Steps 7-18 from computer setup)*
   a. *Log into the mac computer (password:geodesic)*
   b. *Open netstation acquisition*
   c. *Enter the participant id (~~iconicity_idnumber_1 or 2~~)--make sure all labels are uniform* in formatting
   d. *Click enter*
   e. *Click "on" (to turn on the amplifier). The waves will start showing.*
   f. *Move the DVI setting to the Mac (this will ensure that the participant is looking at the appropriate screen)*

"iconicity_idnumber_1 for the first session, and iconicity_idnumber_2 for the second session"

2. Place both hands inside the net and hold them as if you were holding a basketball
3. Place both thumbs two sponges away from #17

"Locate electrode #17, and place your thumbs 2 sponges away on either side. They should sit right behind the bands connecting the 2nd and 3rd sponges away from #17. This part goes right over the participant's forehead."

4. Have somebody else help place the net from the back
   a. The person in the back will ~~use their index fingers~~ to slide the back of the net onto the participant

"hook their index fingers in the net from inside out"

5. Make sure that 'ref and com' are in the correct location ~~(red wax dot)~~ and that the horizontal piece of plastic is on the naseon.
6. If any large net adjustments need to be made, use all ten fingers to gently scrunch the net forwards or backwards
7. Adjust the strings to have a comfortable, but snug fit on the participants face. It is very important for the chin strap to be tight (if it is not, bad data will be collected)
8. Use the curved pipettes to part the hair around each sponge to ensure that each sponge is on the scalp

"Make sure 'ref and com'"

"This is called seeding."

9. Give each sponge a light scrub in a circular motion, but make sure to not do it too hard
10. Once you feel this has been done to the best of your ability, ~~hand the participant the square box~~ and walk them to the chamber

"make sure participant is still holding the square box in the towel"

11. Make sure that the front of the chair is directly behind the pink tape on the floor.
12. Carefully attach connector to the arm piece (inside the chamber)

don't you also need to tighten a knob once the connector is attached?

13. *Next, click the ohm symbol at the bottom left to view impedances*
    a. *A bunch of colored impedances will popup*

Spencer, did you mention shooting for under 40 kilo-ohms?

b. *You do not want to start the study until all impedances are blue*
   i. *To help make them blue, continue using curved pipettes to part the hair and get sponges closer to the scalp*
   ii. *You can also use a pipette to add a small amount of the solution to the sponges*
   iii. *Make sure to not add too much solution, to avoid the formation of salt bridges and solution dripping onto their face*

Add: "The kilo-ohm value associated with each impedance can be found on the right side of the screen. You want the numbers to be as low as possible."

Make sure this an earlier mention of what "seeding" is

c. *Next, click save at the bottom right (after you reseed and adjust)*
d. *Tell the participant to blink or clench their jaw so that they can see what happens to the brain waves when they do so. Ask them to be as still as possible during the study.*
e. *Move the DVI setting back to the dell*

Pre-study instructions

1. Prepare the participant for the study and let them know the following:
   "Now you will watch videos of Japanese words and translations, your task is to try to lean as many of the words as possible. You will hear a japanese word repeated two times. Next, you will see a fixation cross, followed by an English word. These steps will be repeated throughout the study. You can click any one of the buttons in front of you and the videos will begin."
   a. Please only blink between the videos or while watching the video of the speaker saying the Japanese words
   b. Do not blink when the fixation cross or the English word is presented on the screen
   c. Tell the participant that both experimenters have sat through this study and that it can be difficult, but that it is important to try their best
   d. Ask them to sit as still as possible and to not cross their legs during the study
   e. Encourage them to learn the words since they will be receiving a post study quiz
   f. **Note to experimenter → if the participant is blinking at inappropriate times, go in and try to emphasize importance of the instructions**

"Blink anytime except for when the fixation cross and English word come up, and try to not to blink immediately after you see the English word."

Running the study First step should be clicking the button of the running man without the yellow arrow on it

1. The subject number id will be asked
2. Enter session 1.
3. Demo video will start (the mac screen will turn pink)
4. The next part of the experiment resumes when the experimenter clicks the keyboard
5. Everything saves automatically
6. Measure the impedances one more time before the second half of the study.
   a. Only focus on readjusting the red/yellow impedances
7. For the second half of the study, click the running man again and input the correct information (i.e. session 2)
8. After the second part of the study is completed, click 'quit net station' ~~which is the center option~~ 'Quit net station' is the option on the left. DO NOT shut down the amp; only quit Net Station.

9. NEVER click the other two

Post Study

1. When both of the studies are completed, walk into the chamber and let the participant know that they are done with the study and that you will be taking the net off
    a. Gently roll the net backwards
    b. Be careful to not pull the participants hair or yank the sponges off, as they might be tangled in the participants hair
2. Let the participant know that they will be taking a post test This test is on another mac in the larger lab room
3. Inform the participant that they will be hearing each word three times and that they cannot listen to the audio clip more than once. The experimenter will play the next clip once the participant is ready.
4. Once the test is completed, hand the participant a debrief form to read over and sign (1 copy for experimenter and 1 copy for participant)
5. Give the participant 10 dollars and have them sign a money form to confirm they received compensation (1 copy for experimenter and 1 copy for participant)
6. Thank the participant and ask if they have any last questions before they leave.

Disinfecting the Net

Instructions on the inside of black cabinet, Geodesic Sensor Net: Rinsing/Disinfecting Tips"

Analyzing data

This should be the first step: "First, find the iconicity folder, and then click the Experimental Data folder. Create a new folder for the participant and name it the same way you named the trial on NetStation."

1. Go to Finder in the main Mac in the larger lab room
2. Search for file name "in the Sessions folder - e.g., iconicity_idnumber_1"
3. Move ~~the file into the iconicity file~~ "Move sessions 1 and 2 into the folder you just created"
4. Open "Net station tools"
5. Go to the iconicity folder in tool sets
6. Drag the 2 sessions into left top corner INPUT FILES, click iconicity script under "tools", and click RUN
7. Open brain waves by pressing file with "ave." from folder
8. Set amplitude to 1 microvolt
9. Set "time to be fit"
10. Under categories you can choose the conditions for viewing

files?
Opening segmented giles to look at individual trials

Backing up data

(nothing here)

All steps together

Computer set up

1. Turn the computer on.
2. On the dell computer, open the iconicity folder (do NOT erase any files)
3. Is your participant doing iconicity 1,2,3,4 (keep a file of this)--its the bluish square one-the one that three smaller squares within it
4. Click the running guy (NOT THE ONE WITH THE ARROW) can't be on without net station being on
5. Enter the subject number (id or the number)
6. Next, enter session number (always 1 first)
7. The mac does have a password (geodesic). Log in
8. Open netstation acquisition
9. Enter your patient id (iconicity_idnumber_1 or 2)--make sure all are uniform
10. Click enter
11. Click "on" (to turn on the amplifier). The waves will start showing
12. Next, the ohm symbol at the bottom left for impedances
13. A bunch of colors will popup (blue is ideal)
14. Next, click save at the bottom right (after you reseed and adjust)
15. Tell the participant to blink or clench their jaw to see what happens
16. The general section stay in the default 2 mode
17. Also whatever is on the DV screen is what the participant is seeing. DVI?
18. After you fix the net, move the DVI to the dell
19. The subject number id will be asked
20. Enter session 1.
21. Demo video will start (the mac screen will turn pink)
22. The next part of the experiment resumes when the experimenter clicks the keyboard
23. Everything saves automatically
24. For second half of the study, click the running man again and input the correct information (i.e. session 2)
25. After the second part of the study is completed, click 'quit net station' ~~which is the center option~~ it's the leftmost option

Tags:
Bgin:beginning of exp
resp: response
TRSP: trial ending