



Preparing For Participation a Study Towards Enhancing Meditation with Focused Ultrasound Neuromodulation in Novice Meditators

****Please review these materials prior to your arrival****

If you have any questions, please email nicco@advancedconsciousness.org

About This Experiment

You were selected for this study because you are a naïve meditator and do not have any prior experience in mediation. Your main task will be to complete four remotely guided meditation sessions to introduce yourself to meditation techniques. You will then complete four onsite meditation sessions, where you will be asked to rate the depth and intensity of a 1 hour long meditation session. We will also ask you to complete several questionnaires after completing the remote meditation sessions, as well as before and after your onsite meditation sessions.

This study will take place over 4 remote meditation sessions and 5 onsite visits. The remote sessions will take 45 minutes to 1 hour and 15 minutes. The onsite visits will take 2 to 3 hours each.

Getting Started

Day 1

You will arrive at the Medical Imaging Center of Southern California, located on the first floor of our building at 2811 Wilshire Blvd Suite 510 Santa Monica, California 90403.

Your head and brain will be imaged in an Open (Large Bore) MRI scanner, in face-up position, with a total scanning time of about 30 minutes. Avoid wearing any metal or jewelry on your body for this appointment. Following your scan, you will be brought back to our research suite to fill out some behavioral surveys and be introduced to the following experimental room and set-up.

Beside the MRI, a key goal of the Day 1 visit will be to familiarize you with our study room and ensure your comfort meditating in the experimental setup.

Meditation Sessions

Day 2, 3, 4, and 5

Upon arriving at our research site (Suite 510), our team of research scientists will readily answer any questions. They're specifically trained to ensure that you understand the process; please don't hesitate to ask questions as we proceed through the setup.

First, you will complete a short pre-experimental questionnaire and then be fitted with an array of biosensors (e.g. Heart rate monitor).

Comfort

Day 2, 3, 4, 5 (continued)

During the main meditation experiment, it will be important to eliminate any and all body or head movement.

We will ask you to recline in a specially designed chair, and to take your time finding a comfortable position. This is the same chair you experienced and practiced meditating on during Day 1. We want you to take your comfort seriously and we encourage you to request accommodations such as cushions for your legs, lower back, and/or neck.

Precision

Day 2, 3, 4, 5 (continued)

As we set up around you, we will be matching your exact postural position to a real-time 3D model based on your MRI. This cutting-edge technique allows us to precisely target where in the brain you will be receiving stimulation. That is why it is essential to minimize movement during neuromodulatory induction.

Moreover, we will carefully configure a chin mount to help you maintain your fixed position. This is also the same chin mount you will have tried on during Day 1. We'll be constantly attentive to your comfort and encourage you to communicate any discomfort during this setup process.

Gel

Day 2, 3, 4, 5 (continued)

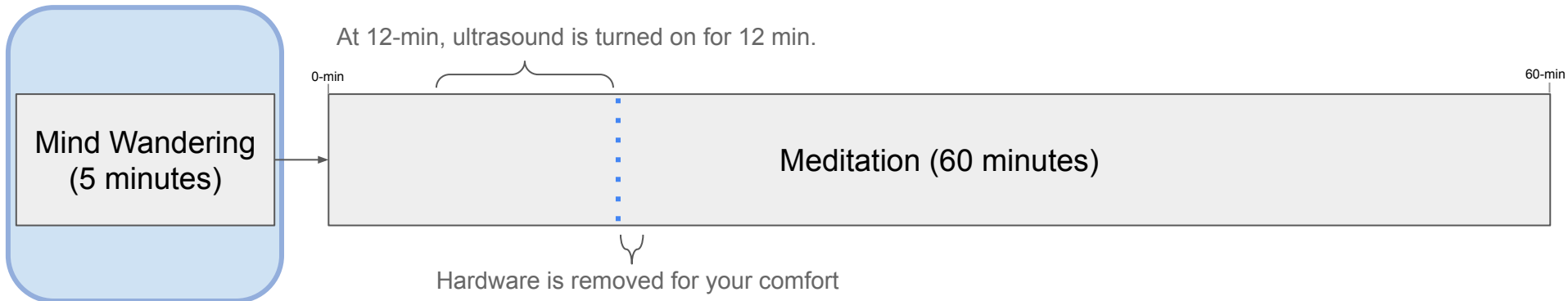
As the team mounts the ultrasound transducers (before the start of the main experiment) we will apply ultrasound gel, as well as a gel pad to your scalp. This gel is applied to improve the transmission of focused ultrasound waves. There will be large amounts of gel applied to your head, but it easily washes out.

Starting the Tasks

Day 2, 3, 4, 5 (continued)

When the setup is completed, you will have a wireless clicker placed on the index finger of your dominant hand.

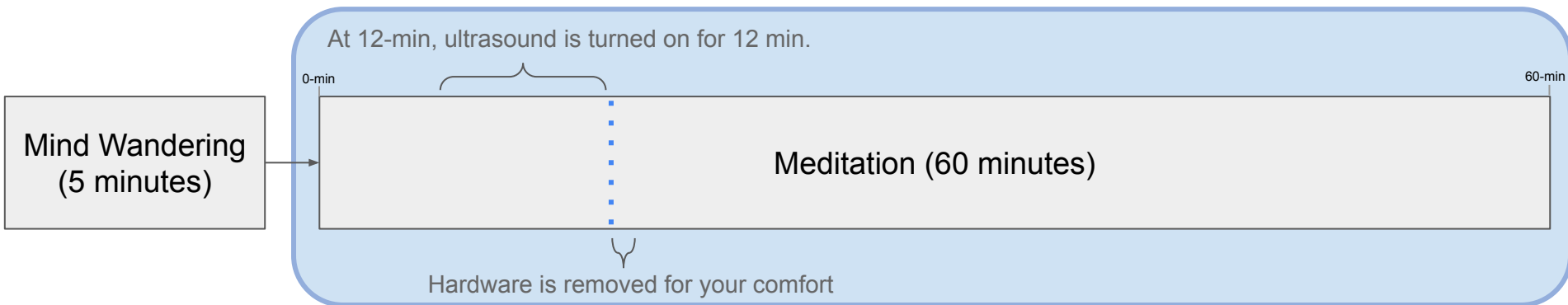
You will be asked to close your eyes and to rest for 5 minutes, and are encouraged to “mind wander” of your own accord. Please ensure that you do not engage in meditative practice during this time.



Task Instructions

Afterward, you will be asked to close your eyes, remain still, and engage in your standard meditation practice for a period of 60 minutes.

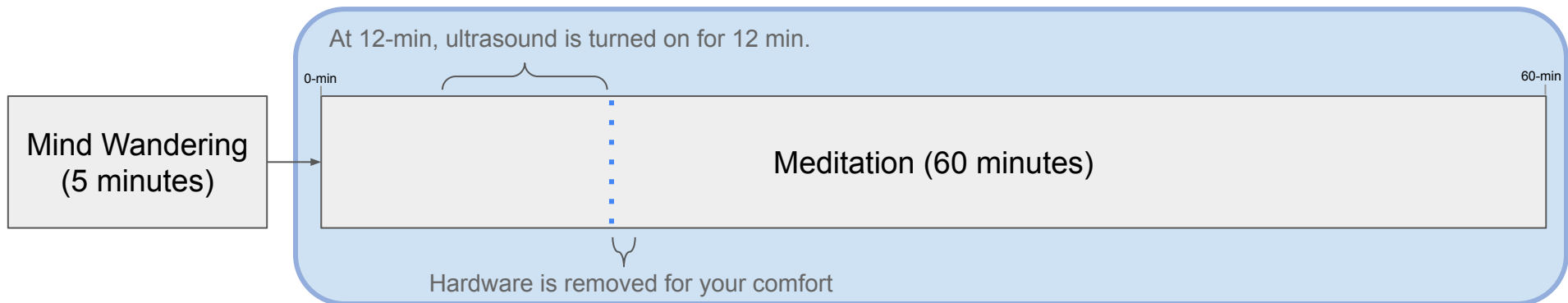
After 12 minutes, the ultrasound device will be activated for a 12-minute period, while you continue your meditation. **You are likely to hear a soft “buzzing” noise as the ultrasound is applied and this “buzzing” will appear and disappear at 10-second intervals. We ask that you either ignore or “use” this noise during your meditation as you would treat any other noise which appears during your normal meditative process.**



Task Instructions

Throughout the 1 hour period, a female voice will periodically prompt you to answer two questions by responding with 1 to 5 button presses on the clicker:

- 1) “Please rate the depth of your meditation since your last response on a scale from 1 to 5”;
- 2) “Please rate the intensity of your experience since your last response on a scale from 1 to 5”.



How to Respond: Meditation Depth

For the first probe, the number of button presses you make should indicate the depth of your meditation prior to this most recent probe. Please use the following scale to help you determine how many button presses, between 1 and 5, you should make. You will have from the beginning of this auditory prompt, to 5 seconds following it, to respond.

- 1 press - extremely shallow
- 2 presses - very shallow
- 3 presses - neither shallow nor deep
- 4 presses - very deep
- 5 presses - extremely deep



You may use either of these buttons to indicate your response.

How to Respond: Intensity

For the second probe, the number of button presses you make should indicate the intensity of your experience prior to this most recent probe. **“Intensity” refers to any subjective experience which differs from your normal waking experience.** For instance, you may feel an atypically high emotion (e.g., euphoria) or an atypically strong sensation (e.g., feelings of moving in space, feeling light, or heavy). Please use the following scale to help you determine how many button presses, between 1 and 5, you should make. You will have from the beginning of this auditory prompt, to 5 seconds following it, to respond.

1 press - Much less intensity than my normal waking experience.

2 presses - Less intensity than my normal waking experience.

3 presses - No difference in intensity than my normal waking experience.

4 presses - More intense than my normal waking experience.

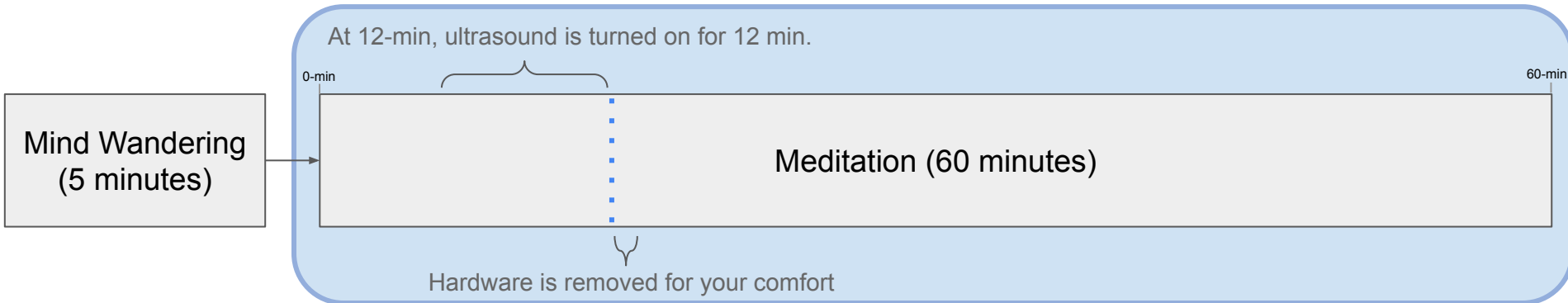
5 presses - Much more intense than my normal waking experience.



You may use either of these buttons to indicate your response.

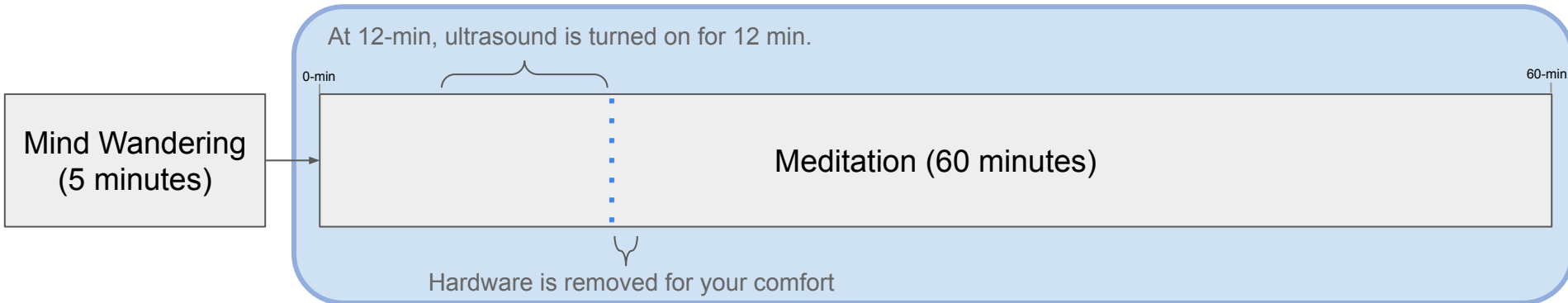
After Responding:

After making your reports to the two probes, please immediately try and “re-submerge”, attempting to attain more ideal and deeper meditative states.



Distractions

After the stimulation period is complete, the experimenters will disassemble the chin rest and transducers for your comfort. Please try to maintain your meditation to the best of your ability.



Wrapping up

When your 60-minute meditation is finished, you may use the restroom and rinse the gel from your hair if you wish.

To finish your session, you will complete one last, longer questionnaire, which asks more in-depth questions about the particular subjective sensations that you experienced during your session.

We will pay you for your time (\$30/hr, rounding up each 15 minutes) and validate your parking, while also confirming that any subsequent sessions have been scheduled.

THANK YOU!

Your participation in this study is genuinely appreciated. You are helping to advance the scientific understanding of the brain during the meditative experience.

If you have any questions you may contact our Lab Manager, Ninette Simonian at ninette@advancedconsciousness.org or our Principal Investigator, Nicco Reggente at nicco@advancedconsciousness.org

We appreciate it if you share our sign up link (<https://newmeditator.studyenrollment.com/>) with anyone you feel would also qualify.

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