Remote Psychoacoustic Test Application

This document details the steps that will be taken by respondents Varied Advanced Air Mobility (AAM) Noise and Geographic Area Response Difference (VANGARD) remotely administered psychoacoustic test.

The flowchart in Figure 1 gives an overview of how respondents will be guided through the remote psychoacoustic test. The NASA remote psychoacoustic test platform is hosted on the NASA Amazon Web Services (AWS). The remote test platform is accessed through a web browser from respondents' computers. Respondents will sign into the test using NASA Launchpad Guest accounts. After watching an Introduction video, respondents will have the option to exit the test at any point. They will then enter their computer and audio device information if they choose to. A calibration session is then held where respondents adjust the volume on their computers. They then take a familiarization session where they just listen to a range of test sounds without responding to the sounds. After familiarization, respondents will be requested not to change the volume on their computers for the remainder of the test. Respondents then practice the mechanics of taking the psychoacoustic test with the help of a practice video. They then take the main test, which will be divided into sessions with breaks between each session. Respondents will exit the test after taking the post-test survey.

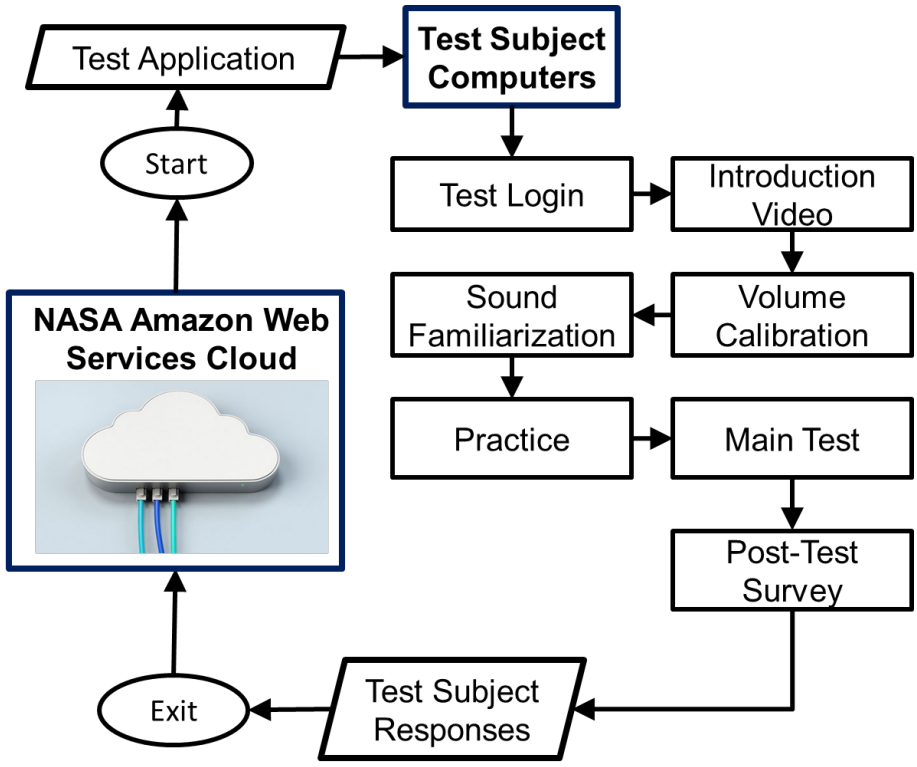

Figure 1. Flowchart of Remote Psychoacoustic Test.

The remainder of this document shows screenshots of the test application as the respondent navigates the test through the steps in Figure 1.

When respondents click on an email link sent to them by test administrators to take the VANGARD test, the test application will open on a web browser on their computer (Figure 2). They will sign into the test

using NASA Launchpad Guest accounts that have been set up before the test begins. The Launchpad Guest accounts use the respondent email address and respondent-selected password. Figure 3 is the screen that appears after a successful sign in.

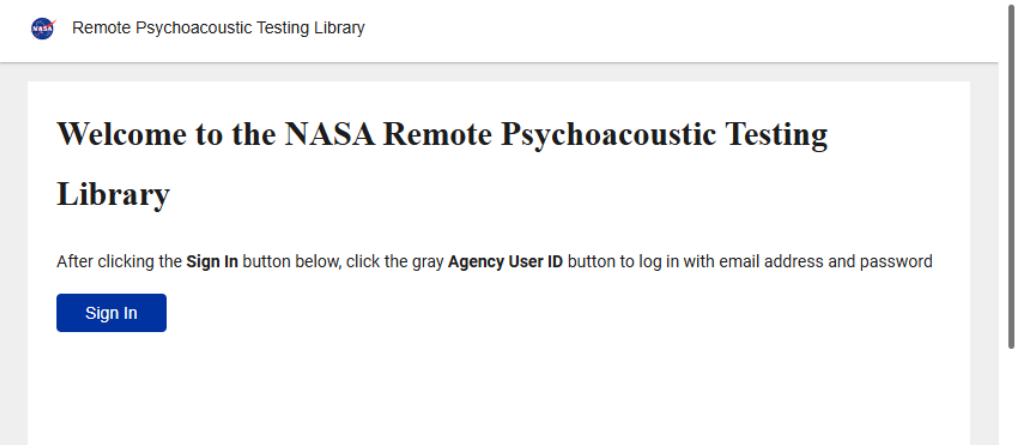

Figure 2. Sign in screen for remote test application.

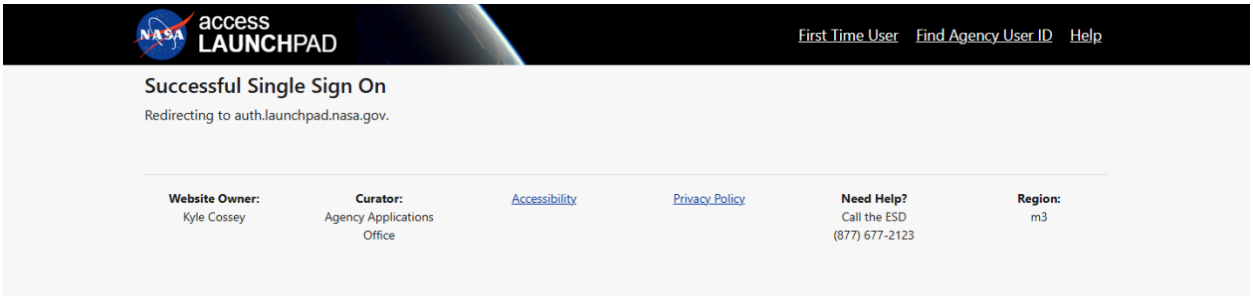

Figure 3. After signing in to test application using NASA Launchpad.

After signing in, respondents will be taken to the main remote test application page (Figure 4). The respondent username, which is the email address, will be displayed at the top of the screen. In Figure 4, the email address has been blacked out. To proceed, respondents, select the "Studies" button, but they may contact support if needed.

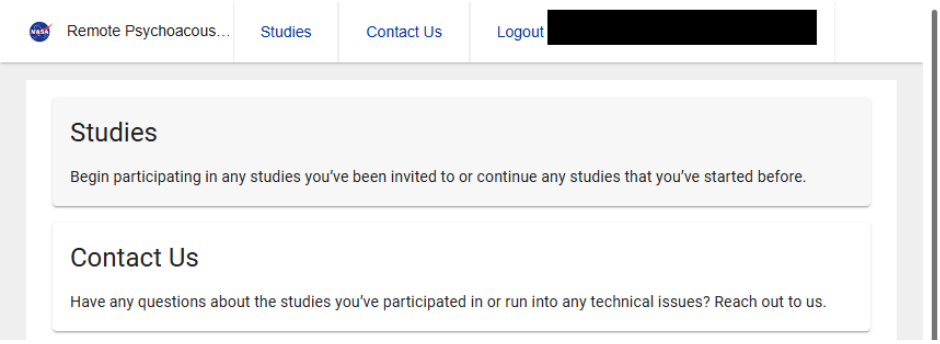

Figure 4. Main remote test application page.

Upon entering the "Studies" page, only the VANGARD remote test will be available, but the remote test platform has been designed to allow for other studies to be selected in the future. In Figure 5, an Example Test is given for illustration purposes.

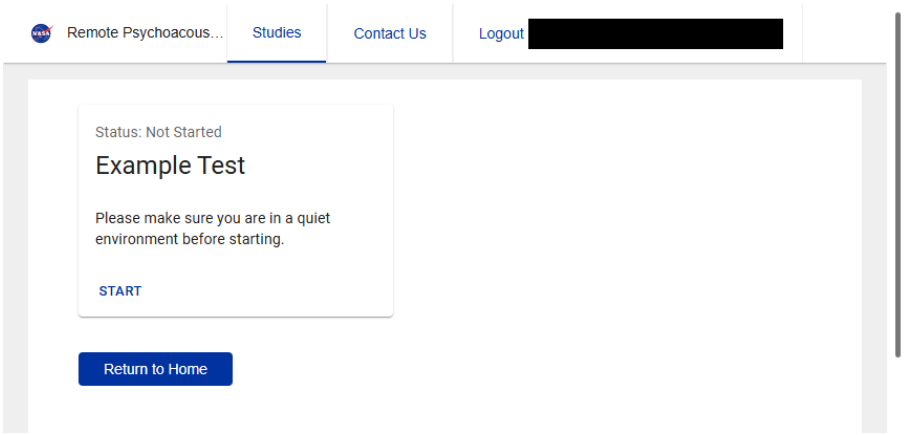

Figure 5. Tests available in Studies page.

After entering the test, respondents consent to taking the test through the "Consent Request and Privacy Notice" screen, which is shown in Figure 6. In the screen, respondents acknowledge that they separately have received a copy of the Informed Consent and Privacy Act Notice documents. They also read through the Paperwork Reduction Act statement. The Informed Consent and Privacy Act Notice documents will be sent separately by email to the respondents before they access the test application. A copy of the Informed Consent and Privacy Act Notice documents are submitted with this information collection approval request.

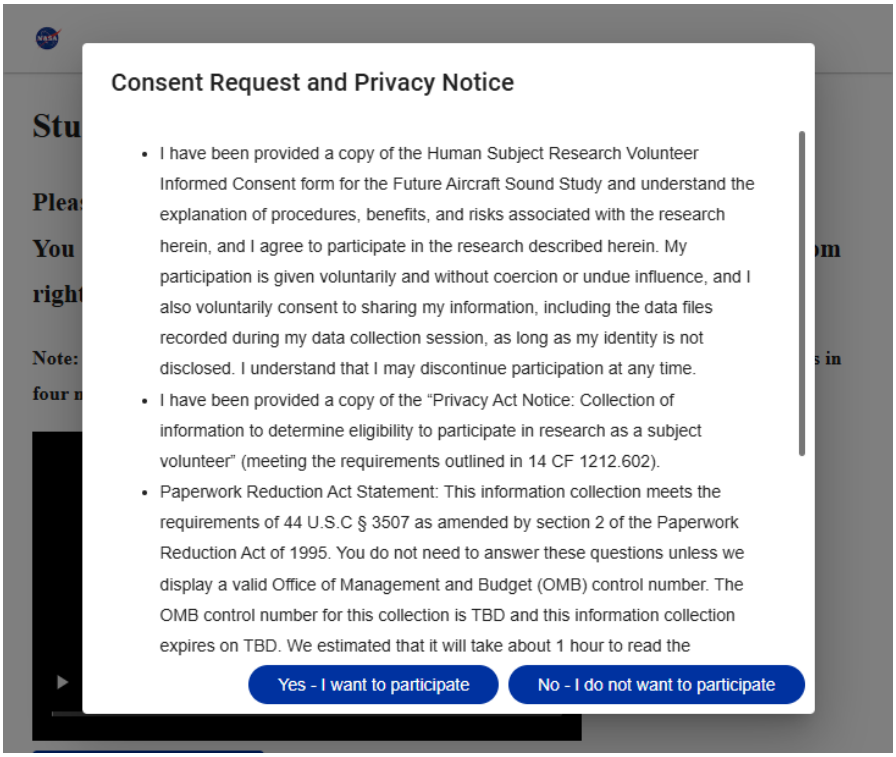

Figure 6. Consent to take test.

Respondents then proceed to the Introduction video (Figure 7). The Introduction video will be narrated PowerPoint slides that have been converted to an *.mp4 video, and the slides, along with the narration text, are given on "NASA_Introduction_Video_VANGARD.pptx."

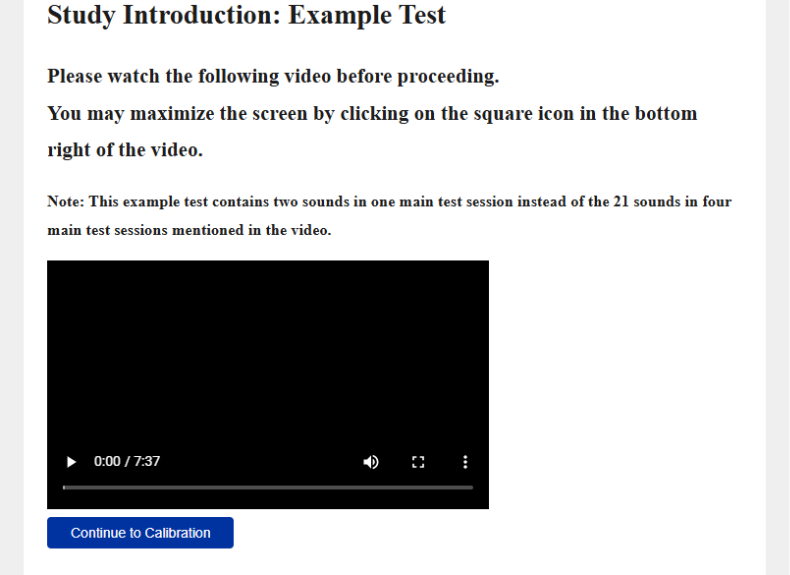

Figure 7. Introduction Video.

The beginning of the calibration session is given in Figure 8. Respondents are requested to be in a quiet environment. They are the asked to provide the manufacturer and model of their computer and headphone (Figure 9). They may choose to not provide this information by checking "I don't know." Note: prior to the VANGARD test, language that prohibits use of speakers or earbuds, which currently appears in Figure 9 will be removed. Instructions are provided on how to adjust volume on computers for both Windows (Figure 10) and MacOS (Figure 11) users. The main calibration step then commences, which asks respondents to rub their hands together (Figure 12) and compare the sound they hear with a recorded sound of hands being rubbed together (Figure 13). Respondents are to adjust the volume on their computers until the sound they make with their hands closely matches the recorded sound. The computer volume level is then entered into the test application (Figure 13). After this calibration step, respondents are asked not to adjust the volume on their computers for the remainder of the test (Figure 14).

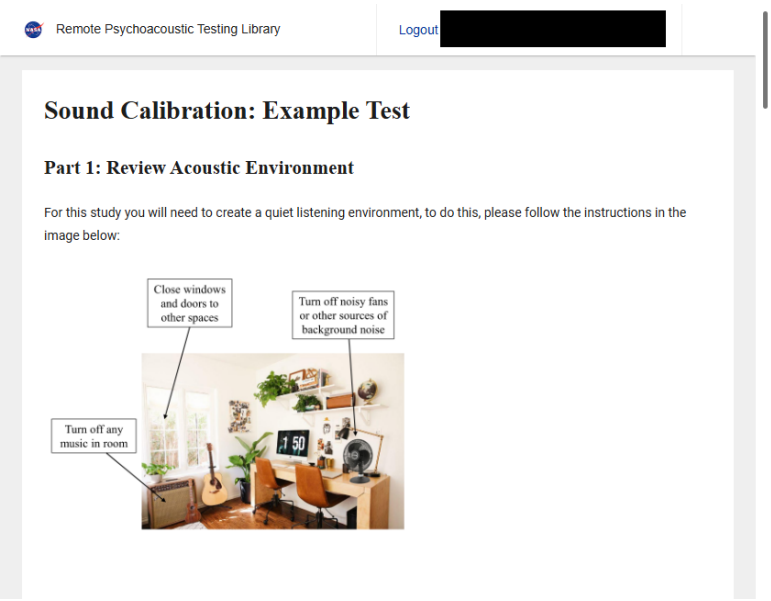

Figure 8. Beginning of Calibration session.

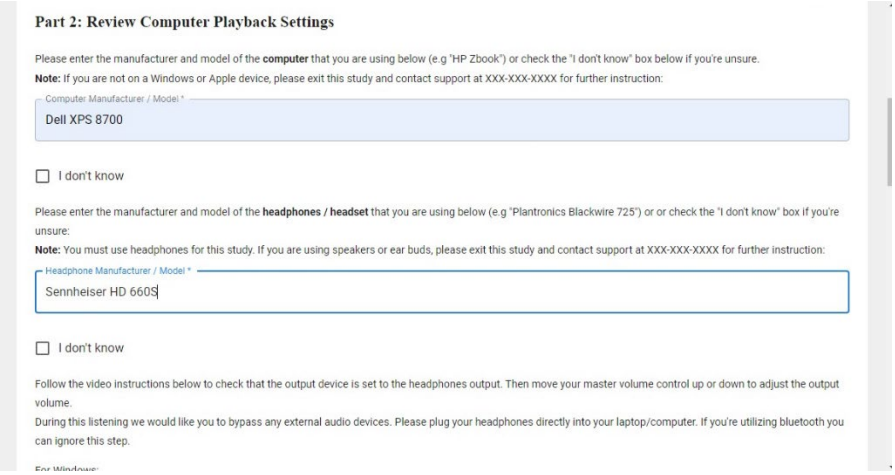

Figure 9. Calibration session, entering computer and headphone information.

Follow the video instructions below to check that the output device is set to the headphones output. Then move your computer's master volume control up or down to adjust the output volume.
During this test, we would like you to bypass any external audio devices. Please plug your headphones directly into your laptop/computer. If you're utilizing bluetooth you can ignore this step.
Note: the video below has no sound. It is meant to only show you how to adjust the volume.

For Windows:

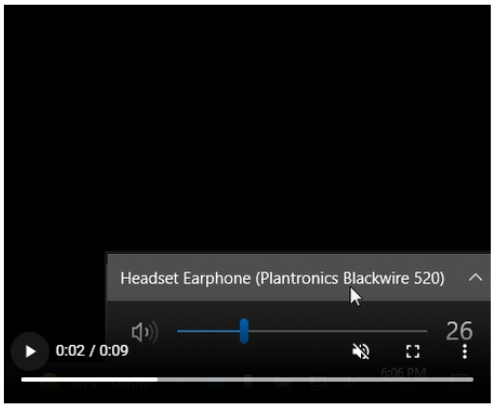

Figure 10. Instruction to adjust computer volume, Windows.

For Mac:

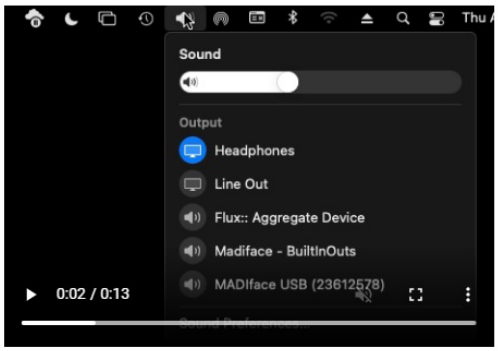

Figure 11. Instructions to adjust volume, MacOS.

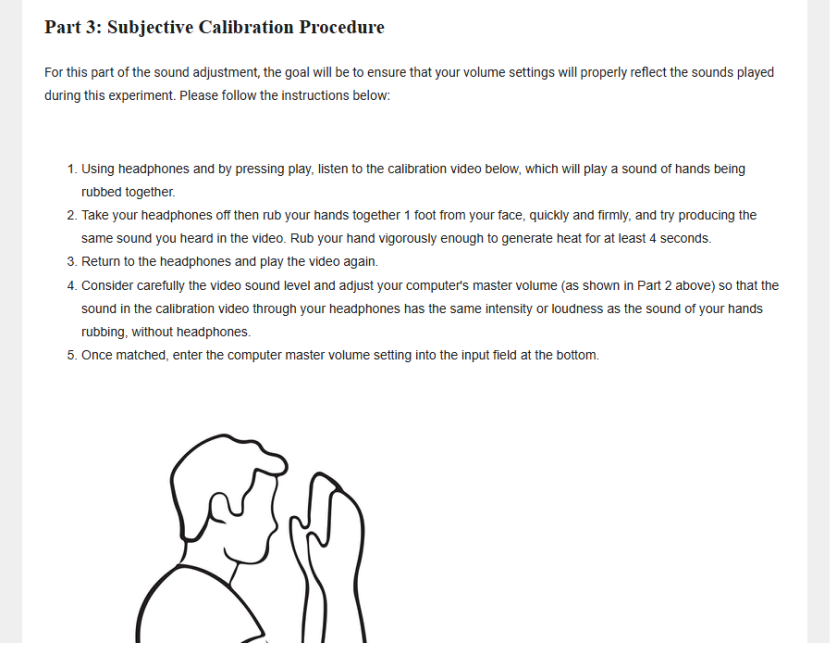

Figure 12. Main calibration step.

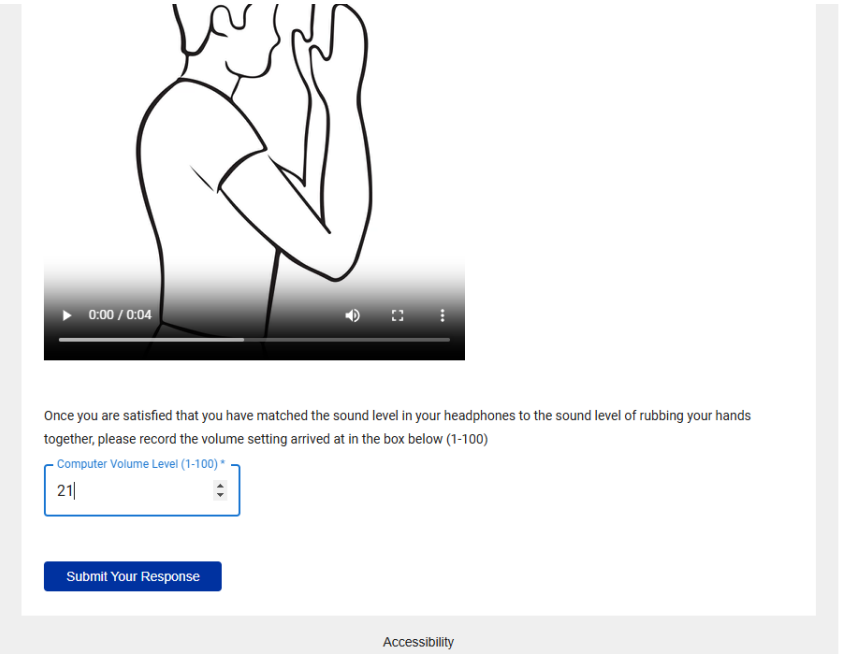

Figure 13. Finalizing calibration.

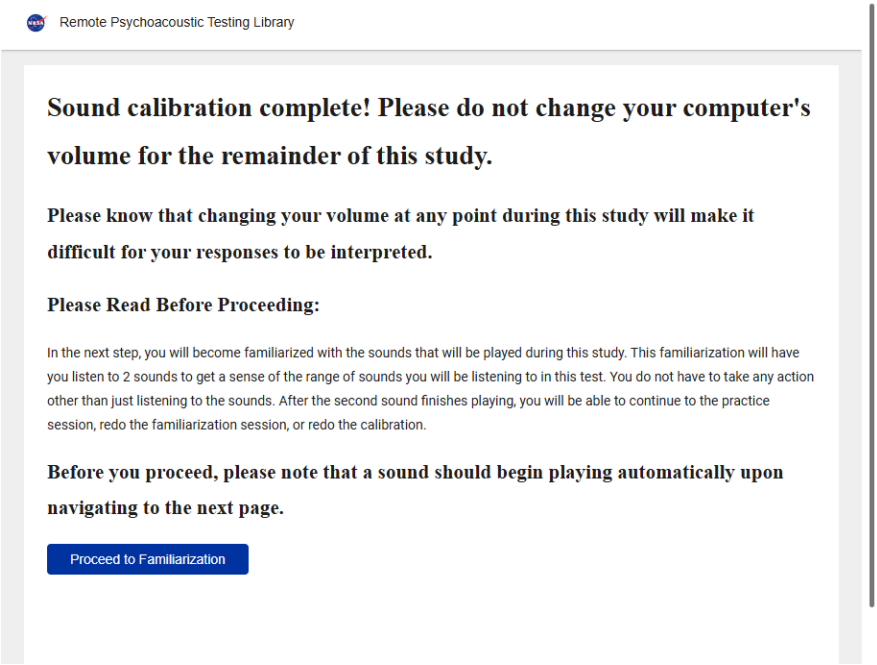

Figure 14. End of calibration.

After calibration, the Familiarization session lets respondents listen to a variety of sounds that will be played in the main psychoacoustic test (Figure 15). Its purpose is to let respondents understand the different types of sounds they will encounter, which helps them begin to form an individual method by which they choose to react to sounds instead of forming this method during the main test. After Familiarization, respondents may redo the calibration, but if they choose to proceed, a reminder message is displayed during Familiarization, as seen in Figure 15, to not adjust the volume on their computers and audio devices.

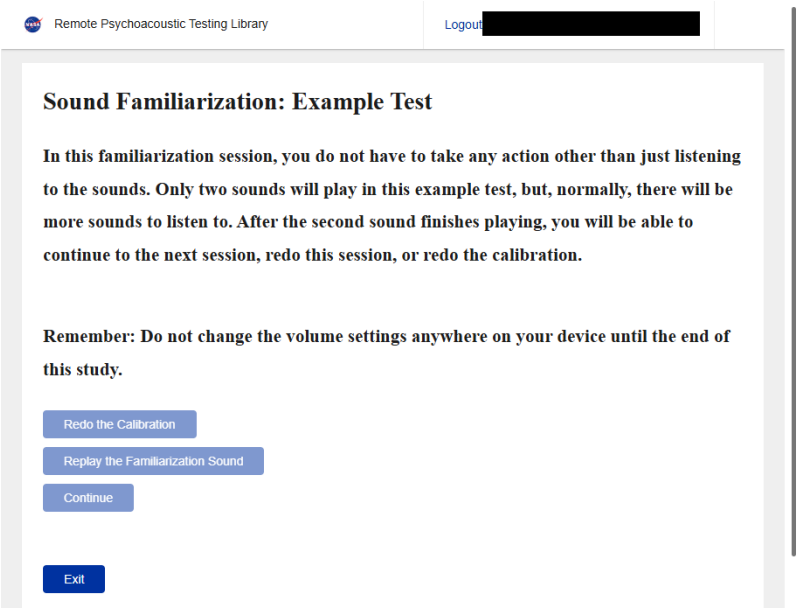

Figure 15. Familiarization session.

Respondents proceed to the Practice session, where they first watch a video on the mechanics of taking the remote psychoacoustic test (Figure 16). Just like the Introduction video, the Practice video will be narrated PowerPoint slides converted into an *.mp4 video. The PowerPoint slides, "NASA_Practice_Session_Tutorial_Video_VANGARD.pptx," give the Practice video slides that will be narrated to the respondents.

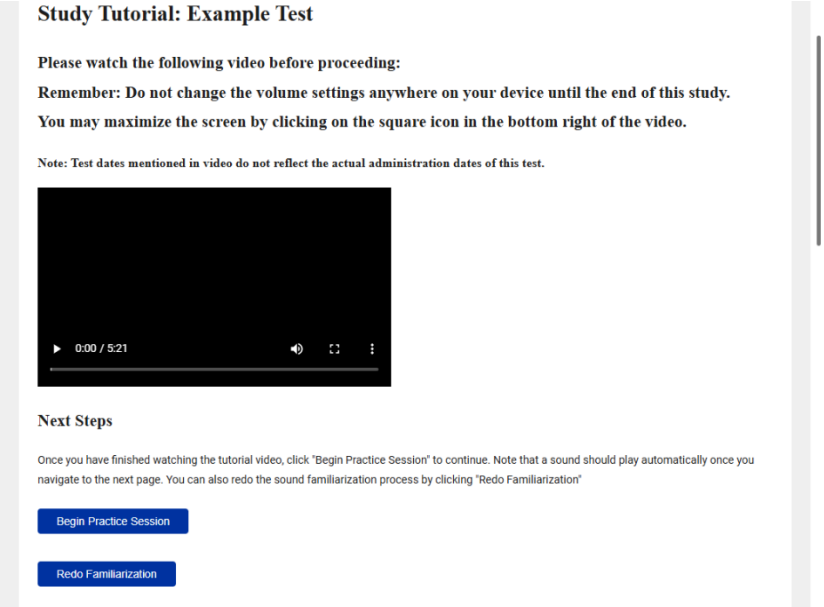

Figure 16. Practice video.

The Practice session will start with the first sound being played (Figure 17). After the sound has finished playing, respondents select their annoyance rating of the sound by moving the slider to any point on the rating scale (Figure 18). The rating scale uses an 11-point scale from "Not at all annoying" to "Extremely annoying." Once a respondent has selected an annoyance rating, they confirm their response and press the "Continue" button to proceed to the next sound in the session (Figure 19). After rating all the sounds in the Practice session, respondents may continue to the Main Test (Figure 20).

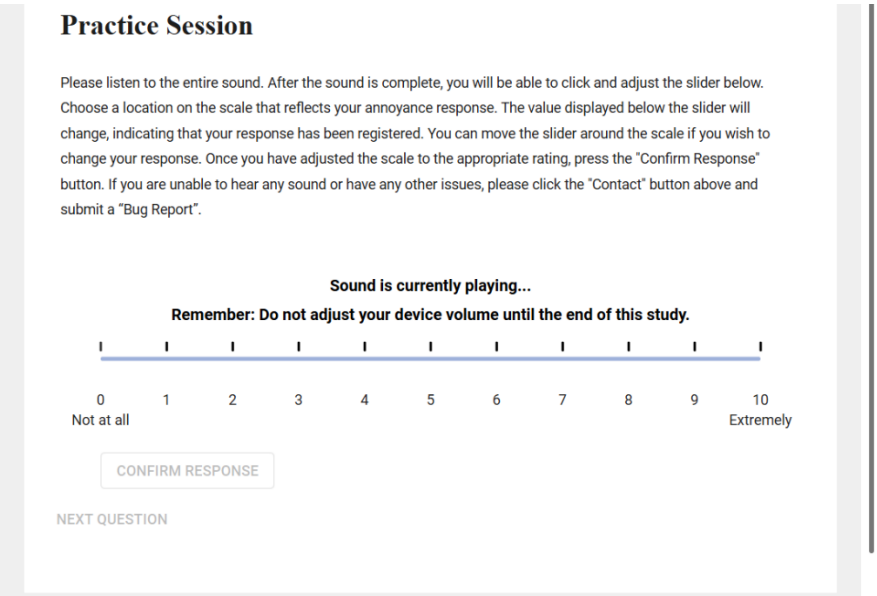

Figure 17. Practice session, sound is playing.

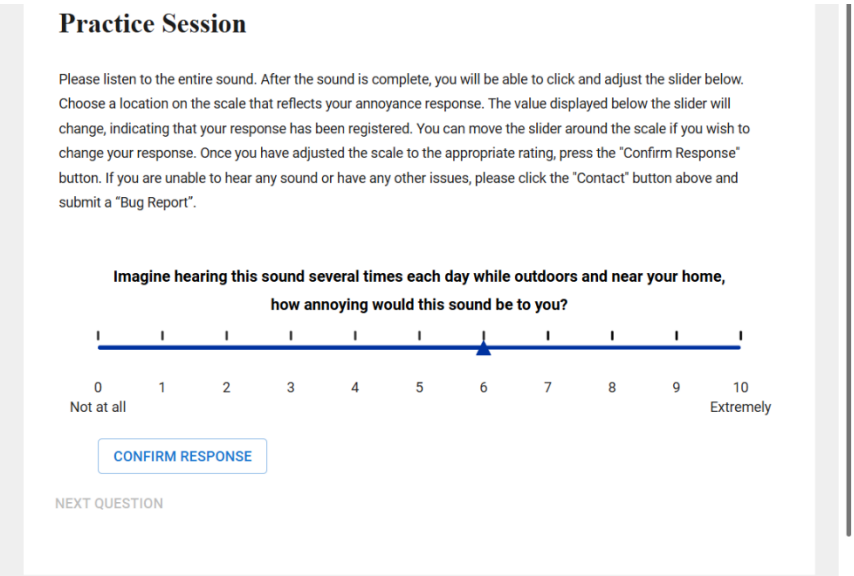

Figure 18. Practice session, providing response.

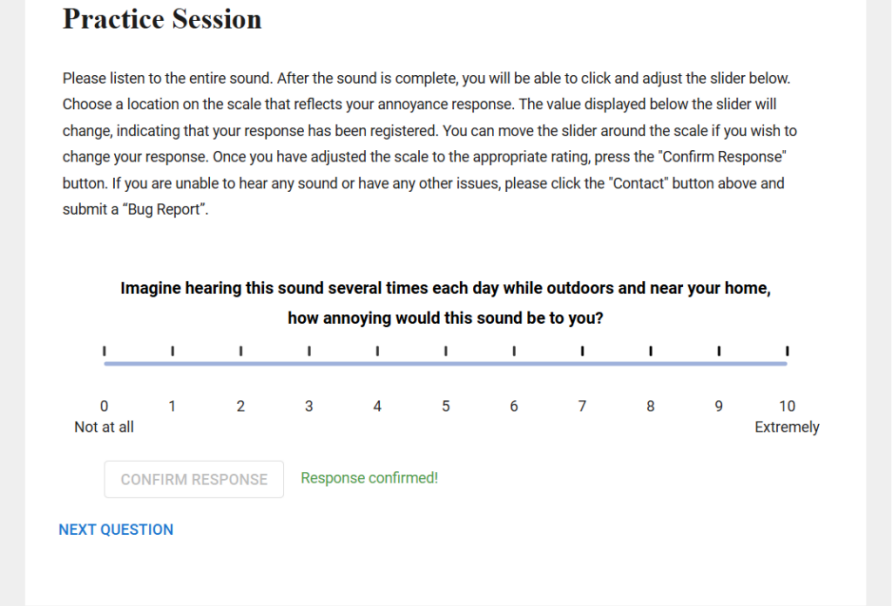

Figure 19. Practice session, response has been confirmed, continue to next sound requested

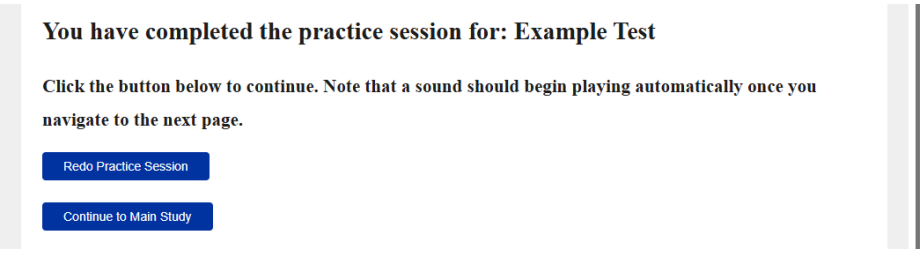

Figure 20. End of Practice session.

During the Practice Session as well as during the subsequent Main Study sessions, respondents may contact support by selecting "Contact" at the top of the screen. They will be provided with the test proctor's (Floor23's) contact information.

Respondents take the Main Study portion of the remote test like they took the Practice Session. The Main Study portion will be divided into no more than four sessions with a break provided between each session.

Respondents may also decide to exit the test, upon which they will be presented with the window in Figure 21.

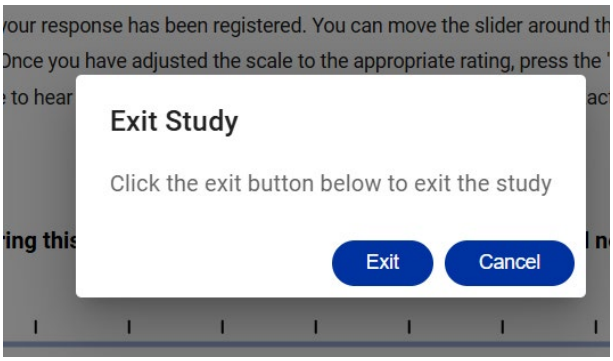

Figure 21. Exit test window.

When returning to the test later, respondents are given the screen in Figure 22 asking if they changed their audio device.

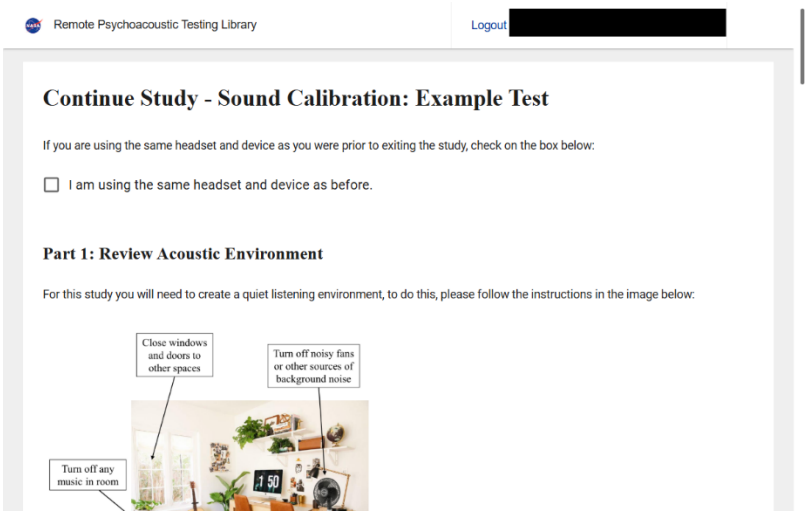

Figure 22. Entering test again.

If respondents do not select the box indicating they are using the same audio device, they will redo the calibration. If respondents select the box indicating they are using the same audio device, then they are asked to adjust their computer volume from the last calibration (Figure 23). Respondents then continue with the test from where they last exited.

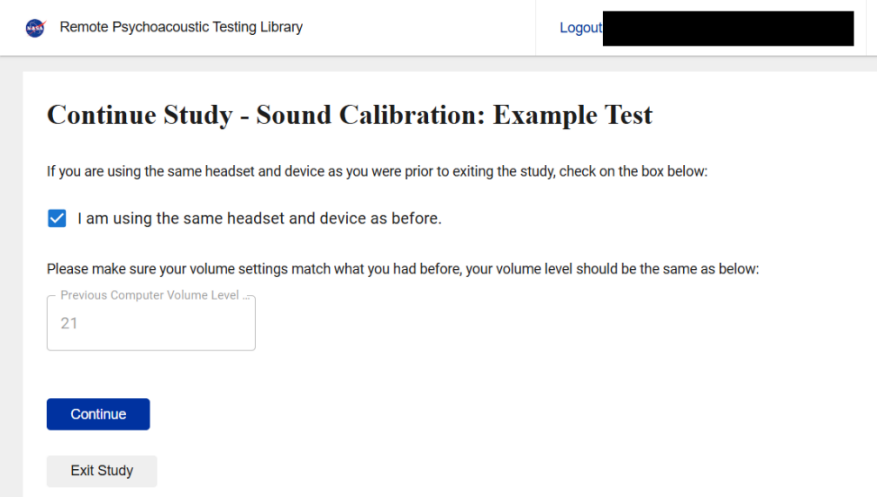

Figure 23. Request to make sure volume is set to that from last calibration.

After completing the Main Study, respondents are requested to proceed to the Post-Test (Figure 24).

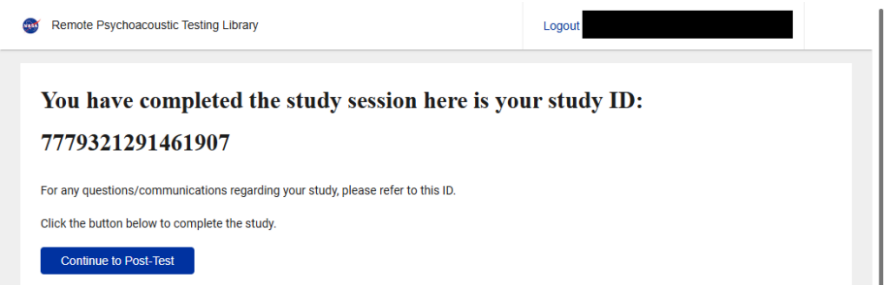

Figure 24. End of Main Study.

The Post-test Survey consists of a question on whether volume was changed during the study and the 26 noise sensitivity questions given in "PostTestQuestions.pdf." For the volume question, any respondent who answers "Yes" will not have their responses analyzed. Respondents will only be able to exit the test after responding to all 26 post-test survey questions. After the completing the test, respondents will not be able to reenter the test (Figure 25).

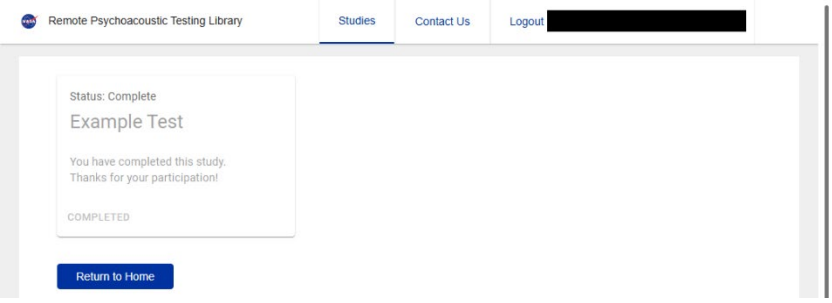

Figure 25. Test complete.

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