

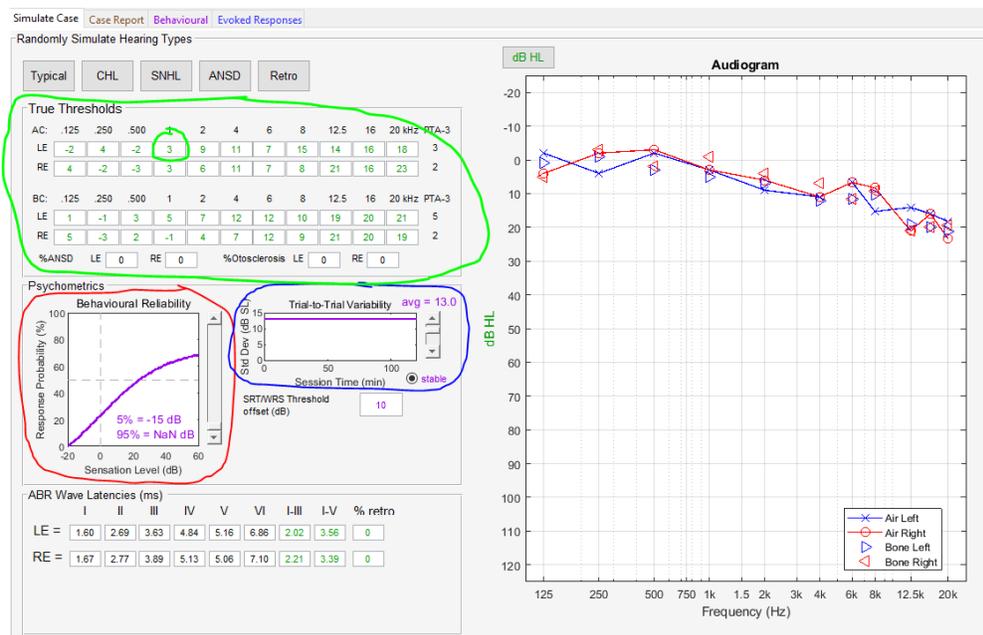
# Frequently Asked Questions (by Topic)

## General

1. Is there a written manual that I have missed on your website? I've tried to make a methodical search, but may have overlooked it.
  - a. I have not completed a written manual yet. It is still in the works. I originally decided to focus on making video tutorials on topics because that had greater interest by other instructors and students. If there are topics not yet covered on the SimHERA/SimHBA websites under "Tutorials" then please send them to me and I will create a video tutorial.

## Case Simulation & Case Database

1. Are we able to manipulate the audiogram to better fit our needs for lesson plans (for example, make a hearing loss conductive)? An extra question, is there a way to find malingering cases within the software?
  - a. Yes, you can change hearing thresholds by entering them for each frequency in the boxes in the "True Thresholds" panel under the "Simulate Case" tab (circled in green image below)
  - b. I ran into this lack of a feature in my class this term (Spring 2022) as well. So I put it on my "ToDo" list to add a button to simulate "malingering" cases. There is a slight work around though that I did for my class. I set the patient's "behavioural reliability" (circled in red) to be very low and their "trial-to-trial variability" (circled in blue) to be high (10-15 dB SL). This essentially makes the patient be very unreliable when testing behaviourally, usually resulting in 20-60 dB elevated thresholds. The electrophys thresholds will remain close to the "True Thresholds" given the typical 10-15 dB standard deviations within the population.



2. Is there an internal database of cases defined by the case ID in SimHERA?
  - a. SimHERA cases are not stored internally as ID numbers or initials. They are stored as case files (.mat). I plan to make future updates with an internal database where you can enter in the case ID to call up previous saved cases. The Case ID right now is not linked to any files or cases. Currently, when you change initials, SimHERA generates another random case based on similar profile and case info of the previous case.

To load specific cases you need to first save a case by clicking on “Save Case” and then load the case by clicking on “Load Case” and select the previous case file (.mat).

Predefined case files can be found on SimEHRA’s website:  
<https://audiospeech.ubc.ca/research/brane/simhera/case-tutorials/>

There is also a SimHERA’s “Public” Case Database where you can download and upload case files to share with others.  
[https://drive.google.com/drive/folders/1mdERVrsN\\_qXz5JdiJ1p77ZegXeMHdn\\_eO?usp=sharing](https://drive.google.com/drive/folders/1mdERVrsN_qXz5JdiJ1p77ZegXeMHdn_eO?usp=sharing)

## **Recordings**

1. Does SimHERA’s split buffer have interleaved sweeps like the Vivosonic Integrity?
  - a. The split buffers are the interleaved sweeps (rare and cond) like IHS and Vivosonic, I believe. So if you split the tone-evoked AEPs in SimHERA, you get one split wave as the rarefaction condition and one split wave as the condensation condition. You will see the stimulus artifacts and cochlear microphonics in the splits.

## **Display**

2. How do I adjust the time scale so that it does not extend all the way to 25 ms?
  - a. The time scale is adjusted by changing the “X scale” just under the “Left Ear” axes for plotting waveforms. The “Y scale” changes the amplitude scale.
3. Is there a way for me to resize the screen because the options at the bottom are hard to see.
  - a. Yes, the screen is resizable by clicking and dragging the edges. You can also use the “maximize” screen button for the windows in the top right hand corner – just to the left of the “X”.

## Markers & Labels

3. Is it possible to turn off the valley markings (e.g. III')? Are those chosen as the lowest valley within a certain number of milliseconds of the marked peak?
  - a. I have tried this but it messes up how I programmed the adding of markers. You can ask students to drag the III' marker to the beginning or end of the waveform to get it out of the way or to "right click" and rename it to be blank "". But note, once the marker is moved or the waveforms is replotted/reloaded again it defaults back to the III' label.

The prime markers are automatically set to the minimum values within a certain time period. They are set to be within 2 ms for CM-AP markers, 3 ms for wave I-III, and 6 ms for wave IV-VII. I will have to check on the values for MLR and CAEP peaks. Let me know if you want those as well.

## EEG noise

4. What option should EEG be set on (signal stable/fluctuating, noise stable/fluctuating)?
  - a. These options depend on what you want. If you want a more realistic session then choose fluctuating where the noise fluctuates across the session and the patient might wake up intermittently. Click on the radio button "State & Noise" next to the radio button "EEG" above the EEG plot. A graph will popup showing you how the patient state and noise fluctuates across the session.

For most of my teaching demos, I set the State and Noise menu to "Stable" for both unless I'm teaching about how noise can fluctuate across recordings.

5. State & Noise: I see the "Noise Parameters" section in the lower right corner. I noted that if I set both State and Noise as Stable, that the quiet-to-noisy slider moves the EEG Noise Gain plot and the numeric value beside "Noise Gain =" from a gain near zero to two. The asleep-to-awake slider changes the numeric "Noise State" and the blue line labelled "EEG Awake State". Can you define the EEG Awake State (also numerically given as "Noise State =" ; I think these are synonymous?) ?
  - a. The noise and awake state scales are the same but they work independently. The EEG awake state defines the EEG coloured-noise slope, such that a higher awake-state value yields a more low-frequency noise simulating awake-like EEG. The awake state also is used for modeling the patient's attention to the stimulus when simulating the effects of attention on AEPs. The attention effects are all modeled based on the literature, even for ASSRs.

Note, the noise sliders and menu selections are disabled in the Assignment modes so that students can't make the patient have "no noise" just to keep the signal in order to get the correct answer. Also, when setting up pre-defined case assignments, you can choose fluctuating or stable noise across the session. Once you save the case that is the noise that will occur for all students opening the case file. If they wake the patient up then the noise increases accordingly. The next

update 3.2c (coming soon) will allow testers to try to put the patient back to sleep but there is a random chance that they patient will not comply and stay awake. If they do manage to go back to sleep there is a semi-random delay in the noise going back to the original sleep state, just like what happens in the clinic. If you are creating a case for CAEPs, then wake up the patient to make sure that the awake/attention state is high and then save the case.

6. In the bottom right section, there is a separate "Noise Multiplier" factor. I see it directly affects the numeric Noise Gain and I assume that is to allow us to make someone extremely noisy or to scale a calculated set of values (i.e. if the sliders are disabled due to a choice of yy "Fluctuates" with the drop down).
  - a. Yes.
  
7. The HF Noise allows us to add high frequency noise like muscle noise that has energy up to about 500 Hz? Or is this noise even higher in frequency to represent something else?
  - a. The HF noise (randomly set to be 800-1200 Hz) is used to demonstrate when electrodes sometimes get that high-frequency interference noise that can sometimes be due to RF noise or electrode impedance issues. It's not related to myogenic noise.