

Panic in His Eyes!

By Marshall Chasin

It wasn't really panic, but I saw eyes full of shock. It's the type of shock that slowly comes on after knowing that something is not quite right, but we're not sure what is wrong. Suddenly it dawns ... all of the senses become hyper-aware. The lights suddenly go out and there is an ear piercing scream...

There was a 30 dB notch in his audiogram at 6000 Hz!!!!

With perhaps a slight exaggeration, this is what frequently happens in the clinic. Musicians—especially musicians—feel that anything less than absolute perfection is cause for great concern and a harbinger of the end of their career.

The next question is “how can I get that back?” And the answer is “Huh? What back? There is nothing wrong with you”.

At that point the musician punches you in the nose, kicks you somewhere, and walks out of your office.

A pure tone hearing loss at 6000 Hz, or any other high frequency location is to a large extent an artifact of how we perform hearing tests and not an indicator of one's musicianship or prospects of future employment. When we perform a pure tone audiogram the client is asked to respond whenever they hear a beep, and we record their threshold, which is a beep heard half the time at the softest level presented. But this is really only assessing the 0 phon equal loudness contour.

We know that the shapes of the equal loudness contours from 0 phon to 100 phon are not the same. Near threshold, there is the typical saucer shaped bowl with the best sensitivity (in SPL) in the mid-frequency region. At higher levels, this saucer shape tends to flatten out and this is also true if there are the beginnings of a slight sensori-neural hearing loss.

The client may have a 30 dB notch at 6000 Hz at threshold but would have no notch if the stimuli were presented at a more realistic level such as that of speech or of music. Stated differently, a hearing aid may provide 10-15 dB of gain for very soft sounds but 0 dB of gain for medium and loud sounds. While this is obvious to an audiologist, the typical musician may just see a scary looking notch eaten out of their livelihood.

While it is true that there is nothing wrong with this musician's hearing, at least for everyday speech and music, that's not what our audiograms indicate. We definitely need something better!

This is not an easy task—a pure tone audiogram is quick and easy to perform and interpret—even though our interpretations may be simplistic. Couple that with the fact that by the time we

do observe a “hearing loss” on the pure tone audiogram, there has already been significant cochlear or inner ear damage, so it’s not the most sensitive test we can use.

Otoacoustic emission (OAE) testing is more sensitive. While pure tone audiograms assess the sensitivity or acuity of our hearing, OAEs measures auditory function, at least for one part of the hearing mechanism. The figure at the bottom shows poorer function for the left ear despite the audiogram being symmetrical. This is for a drummer where the high hat cymbal is situated off to the left side. I have no doubt that sometime in the near future, this person’s audiogram will show a left sided asymmetry even if he was kidnapped and kept in sound proof booth for several years and was no longer subjected to loud music or noise. Although I have never performed this experiment, this would make a great Capstone project for some criminally minded AuD student.

To be fair, I should have amended my initial statement to the musician who was just shown his audiogram with a 30 dB loss at 6000 Hz from “...There is nothing wrong with you” to “Don’t panic. This is an artifact of the way that we test hearing. You can still continue to play and enjoy your music and thank goodness we caught this now. Let’s talk about hearing protection.”

If the hearing loss was even greater, I would then go on to suggest that they equalize their music at around 75-80 dBA to ensure that their hearing was not a factor, and then reduce it slightly, while being assured that their career as a sound engineer was not in jeopardy.

OAEs within an individual musician performed longitudinally on an annual basis can be a very instructive tool but with the natural wiggles, dips, and peaks in a response, it’s not as clear looking as a pure tone audiogram.

Any suggestions?

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