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Talented Listeners: Amplification in a Counter Culture

Heather Malyuk, AuD F-AAA

Learning Objectives

As a result of this Continuing Education Activity, participants will be able to

1. Explain how to better communicate within the music industry culture.
2. Explain how to better adjust compression, gain, and EQ for music industry professionals with hearing loss.
3. Explain how to better choose amplification devices for music industry professionals.

Agenda

- Introduction
- Cultural considerations
- Counseling
- Amplification options
- Fitting amplification
- Questions

Who I am

My background:

-Professional musician

-Interest in audiology as artist healthcare

-Currently working at a musicians' clinic as well as working as a musician

Disclaimer: I am employed by Sensaphonics, a manufacturer. I will be discussing some Sensaphonics products as well as products from other companies for educational purposes.

Where I work

-Clinic and manufacturer committed to providing musicians and other "talented listeners" with solutions for hearing conservation and amplification

-Patient population is primarily professional musicians, audio engineers, and audiophiles

Sensaphonics
Hearing Conservation

What is culture?

According to Merriam-Webster:

"The beliefs, customs, arts, etc., of a particular society, group, place, or time…..a particular society that has its own beliefs, ways of life, art, etc…a way of thinking, behaving, or working that exists in a place or organization (such as a business)."

CONTINUED™

Cultural sensitivity

-The role of culture in health care has become important enough that it is now an integrated part of clinical education at the doctoral level

-We adapt to other cultures by changing language, attitude, or demeanor to ensure a message is communicated clearly, respectfully, and understood well

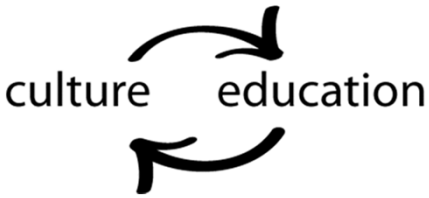
Why is this important to our patients?

-Comfort

-Education

-Understanding

-Retention of information



Cultures

Some examples include

-Foreign culture

-Corporate culture

-Pop culture

Cultural differences

Example: Shaking the head in a horizontally means “no” in most countries, while in some it means “yes.”

Imagine you’re with a patient and discussing hearing and hearing loss…What will they think of?

Speech or music?

Aural values

Musicians hold different aural values than others. It doesn't mean that they don't value hearing conversation, it just means that they value other sounds just as much as speech.

One patient might value being able to communicate with a friend above other sounds while someone from the music industry might value being able to hear his or her instrument.

Counseling

Considering the additional values of "talented listeners," additional or alternate counseling might be necessary.

Some things to determine when counseling talented listeners….

Counseling

Why are they in your office?

-Are they seeking amplification?

-In what situations are they looking for amplification?

-Are they even there because of hearing loss?

Counseling

What are they most interested in hearing?

-Speech might only be one factor in amplification

-They are likely just as concerned about performance/work

-Definitely concerned with sound quality

Counseling

Do they understand the cause of the hearing loss?

-Is the hearing loss music induced?

-Is it another underlying medical issue?

-Perhaps genetic?

Counseling

Have you also counseled them regarding hearing loss prevention?

-If they are continuing to work in potentially harmful loudness levels, how can they protect themselves?

-Should a musician wear hearing aids on stage?

Amplification

Choosing appropriate amplification for a talented listener can be a daunting task

Amplification

Hearing aids

-A great choice for every day listening

-Designed to enhance speech signals

-The *best option* for amplifying communication

Amplification

What style of hearing aid?

Choose the type of hearing aid for a talented listener the same as you would for any other patient--Whatever is appropriate for the hearing loss will be fine.

Keep in mind that you will need to have as much control as possible over the aids for tweaking. Some hearing aids will give you more control than others and higher technology levels have more options.

A word on counseling…

Before fitting the hearing aids, it is important to counsel the talented listener in expectations. He or she will need to be aware of the limitations of hearing aids, that the hearing aids are designed for communication, and that the sound quality will likely be poorer than expected.

Amplification

Most newer hearing aids work with smart phone apps that allow the wearer to control certain aspects of amplification. These are a great choice for talented listeners!

Amplification

Some devices give minimal amplification for individuals who aren't hearing aid candidates

For example, the music pro has a setting to give 6 dB gain for inputs below 70 dB

Amplification

-3D-ME (Music Enhancement)

-First discussed by Larry Revit in the 2014 edition of The Hearing Review

-A method of using in-ear monitors and outboard gear to correct for bilateral hearing loss

Fitting Hearing Aids

A few things to keep in mind:

-Hearing aids are designed for speech, not music

-There will potentially be a lot of tweaking appointments with talented listeners

-Even with the best tweaking, hearing aids have physical limitations that leave music appreciation nearly impossible

-A talented listener will be able to express what he or she wants—listen to them!

Fitting Hearing Aids

Physical limitations: Both headroom and bandwidth are limitations of hearing aid amplification

To my knowledge, the hearing aid with the widest bandwidth and highest headroom is currently the Widex Dream. The bandwidth is 100-10 kHz and the headroom is 111 dB.

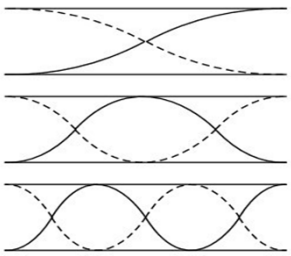
This is still extremely limited for music appreciation and talented listeners.

Fitting Hearing Aids

There are some tweaks that can be made to hearing aids in order to achieve the best possible sound quality.

Talented listeners aren't just listening to one sound or pitch, they're listening to complexities within that pitch or sound that give it structure. Each instrument or note relies on a harmonic series to give it its relative character or timbre.

AKA an "overtone series," consisting of a fundamental frequency and overlaying frequency components with precise, mathematical spacing.



Fitting Hearing Aids

Remember, you are fitting digital devices

Current hearing aid technology works off of a 16 bit A/D converter which has a very limited dynamic range

For speech, a smaller range is not nearly as much of an issue as it is for music

Fitting Hearing Aids

In a music program:

-Omni-directional microphones

-Flatter frequency response

-As linear as possible

- -This will be dependent on the hearing aid and the programming software

Fitting Hearing Aids

A few notes on creating a linear program…

-Some hearing aid software will not let you control the compression independently of the gain

-Depending on the hearing loss and amount of recruitment, some individuals might need more compression than others for comfort

Fitting Hearing Aids

A final thought on fitting hearing aids:

The newer hearing aid technologies that allows the wearer to use an app are wonderful for talented listeners. Many musicians appreciate having the ability to change their own settings within the app while they are recreationally enjoying music. Apps that have the ability to adjust treble and bass frequencies are especially appreciated. Don't be afraid to let the wearer have some control over their own programming!

Fitting In-Ear Monitors (IEMs)

-I say this cautiously because not all IEMs are created equally. If you can achieve an isolating seal on the IEMs, they can be used in a protective way, but no IEM is in and of itself a protective device

-For professional musicians with hearing loss, however, they can be used very successfully on stage

Fitting IEMs

For musicians who have a dedicated engineer working with them on stage, they can achieve the mix they like for hearing loss.

(Remember, not every musician will need to correct hearing loss)

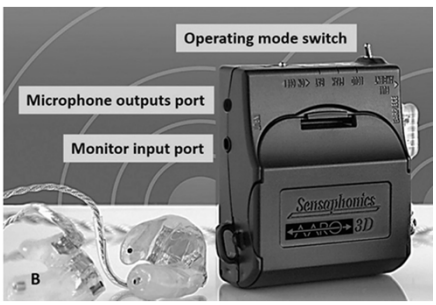
There are musicians who need ambient sound to be corrected

3D-ME

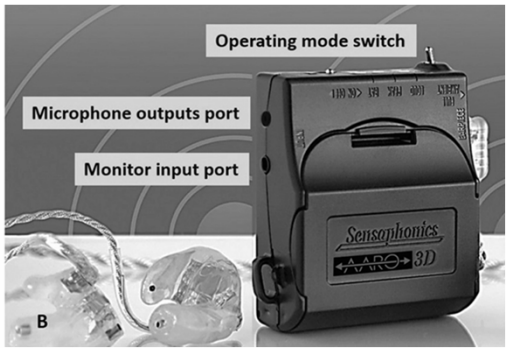
-The 3D-ME system uses ambient IEM technology to allow the wearer to EQ his or her own hearing loss via outboard gear (mixing board, DSP, etc).

3D-ME

-The benefit of using this system with talented listeners is that it's analog, has bandwidth that is approximately 20Hz-16,000 Hz, and headroom of 140 dBSPL.

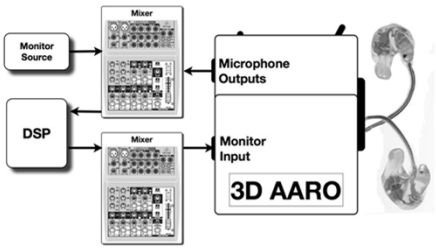


3D-ME

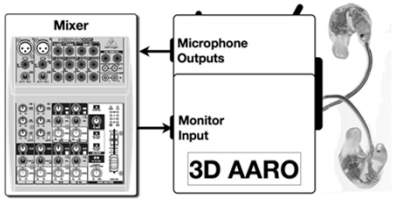


3D-ME

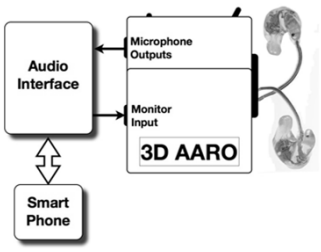
3D-ME has 3 versions that can be used for individuals in the music industry as well as music appreciation



1) "Stage"



2) "Home"



3) "Mobile"

Conclusions

It is my professional opinion that the music industry is its own culture and should be treated as such.

Within a clinical setting it behooves the audiologist to adapt and be sensitive to the values of a given culture.

There are currently several different amplification options for talented listeners from hearing aids to IEMs.

Conclusions

Taking time, even within a short appointment, to thoroughly counsel and educate this patient population is ESSENTIAL.

Don’t forget to also consider hearing protection with this population!

Questions?