

Module 1.2

An inside job: interoceptive awareness

Singing is a Motor Memory

- your brain sings before you do
- simplify singing as a kind of movement
- activated respiratory system
- phonatory system: larynx, throat, mouth, and nose

When you move, your brain uses sensory data about your environment and memories to predict your movement.

- repeating a complex movement teaches the brain to predict for that movement.
- over your lifetime, you've amassed a huge library of motor memories.

Brushing teeth experiment

- first with one hand: comfortable, familiar
- second, with the other hand: awkward and unfamiliar

- ease and familiarity of familiar movement is proof of a strong motor memory.

Your Singing Provides Interoceptive Messages

Sensory data:

- brain receives data about environment based on senses
- uses that data to combine with memories to help make efficient predictions

Data from afferent messages from the body

somatosensory system

- Temperature
- Balance
- pain, the position of your body in space, etc.

Interoception: information, both conscious and unconscious, about the internal state of the body.

Attention network:

- can make you aware of your body's internal state
- can diminish awareness of incoming sensory data as it shines a spotlight on one thing in your awareness

Phonating:

- requires internal muscle activity from the respiratory and phonatory systems.
- creates air vibrations that can be experienced through feeling in the tissues of the mouth, nose, and throat
- provides sensory data your attention network can focus on

The brain has to process sound

Singers hear themselves differently in each individual performance situation

- Brain is good at filtering sonic information to focus
- Other stimuli can alter that sonic message
 - Venue type and size
 - Stage type and size
 - Audience number and configuration
 - Singer's internal state

- Other sensory stimuli like lights, people, and sound

Amplified situations magnify singer's inability to hear themselves:

- in-ear monitors can help but voice is still experienced differently than acoustic practicing situations.
- Sometimes singers are unable to hear their own voice at all
- Sometimes singers share a monitor and cannot discern their own voice
- Not hearing their own voice when they're singing is the industry standard for singers in amplified situations

Interoception for singing

If they cannot hear themselves, how do they sing?

Nearly all experienced band singers with sustainable vocal technique have all learned to feel their singing. They are very familiar with how their singing feels to them in an interoceptive way, and their brains have learned to predict how to faithfully deliver those feelings regardless of the sonic information that is, or is not, being delivered to the singers' ears.

Because we know something about brains and singing, this skill can be reverse-engineered.

- singer can be taught to increase their sensitivity to their interoceptive experience of phonation
- singer can be taught to phonate in a way that supports both sustainable technique and appropriate sounds for popular styles
- singer can be taught to turn their attention to the interoceptive feelings that phonation generates.

This skill is the most deceptively powerful thing you will learn in this class.

It is easy, and can seem simple.

To learn and teach this skill with interoception in mind, and in a manner that teaches the singer how balanced, efficient phonation feels, is worth your attention as well as your understanding.

You'll be surprised at the brain power behind this unassuming little hum.

1.2NV_Interception

- Exercise:
 - Hunn
- Homework
 - Try this with 1-3 students (which students?)
 - [How hearing works: a TED talk](#)
 - [Music and the Mind Concert for Sound Health at the Kennedy Center](#)
 - In this talk Kraus makes clear “sound ingredients: pitch, timing, timbre, sound processing
 - Kraus demonstrates sound recordings from brains. This demonstrates the way healthy brains process sound in a very analogous way.
 - Kraus explores the cognitive and biological benefits of music training.
 - TOTALLY optional for people who like reading research papers (this is particularly well-written for a research paper): [Neurobiology of Everyday Communication: What Have We Learned from Music?](#)
- Support materials
 - Copy of video & class notes
 - Hunn script
 - Hunn crib sheet