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Long Hours of Vocalization Over Electronic Media

Ingo Titze

I recently received a request to address a group of vocologists in Australia who are concerned about vocal health at a time when almost every conversation, every lecture, and every demonstration is online. I was asked something like this: Do our voices suffer more with hours of conversation in front of a computer screen, where acoustic backgrounds differ from those in classrooms or studios, and listener distances cannot be judged? For those who prefer to have immediate feedback of all voices over headphones, including their own, the question was whether vocalization is more fatiguing than in a free field environment (speaker and listener both in a room or performance hall).

My immediate answer comes from general motor performance principles: Vary the task and vary the delivery! Nothing is more fatiguing than doing the same task, or similar tasks, over and over again, in the same position and the same delivery. Speech already tends to crowd laryngeal activity into a limited range of pitch, loudness, register, and overall tone color. Adding to that a postural rigidity and a suspicion that the microphone has a limited dynamic range, may further promote restrictions in vocal loudness and voice quality. Constant concerns about "Can you hear me?" may promote a robotic speech that is favorable to the electronic link rather than your vocal expressiveness.

An obvious solution would be to work in a professional recording studio, where the equipment has the highest acoustic fidelity and environmental noises are minimized. Interviews in a broadcast studio provide this kind of environment. In conversation, soft sighs and giggles come across with the same fidelity as shouts, a sung phrase, and loud laughter. However, few of us have access to such facilities. We teach and discuss at home with a laptop computer, or sometimes with nothing more than a phone. With headphones, we need to make sure that we don't artificially invoke the Lombard Effect with excessively loud feedback. Conversational speech at 1 m distance is on the order of 60 dB. You can check your output with a sound level meter. Monitoring this with a side-tone system or an LED visual signal may be useful if you have a tendency to grow louder to retain audience attention.

Perhaps it is possible do a send-receive test with a partner. Your video systems (cameras and monitor screens) ideally should allow you to stand up and take a step or two away from the chair. Can you whisper and shout both at close range and a few feet away without losing or distorting the signal? Assuming you have that freedom, then move around and use as much prosodic variation in your speech and nonspeech vocalization as possible. To practice

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exaggerated prosody in speech, try telling the bedtime story "The Three Little Bears" to a toddler, with a real or imagined child in front of you. Maximize a contrast in pitch, loudness, and register to distinguish Papa Bear from Mama Bear and Baby Bear. As in physical exercise, range of motion is critical for muscular systems to endure. Muscles need to contract and relax repeatedly. Tissue fibers need to be lengthened and shortened. The variations in pitch, loudness, and register can keep the laryngeal musculature from locking up and fatiguing rapidly. Too much monotonous speech over electronic media can become "vocal texting."[1]

With regard to recovery from vocal fatigue, ask yourself if there is enough dialogue in your sessions, as opposed to a continuous monologue. If you are vocalizing most of the time, then you need to stagger your sessions with at least 15–30 minutes rest periods between sessions. During those recovery periods, you can do semi-occluded vocal tract exercises (twice for 3 minutes each) and remain silent the rest of the time.

With increasing age, these rest periods need to be longer. Even a mild trauma to vocal fold tissues will take longer to heal. Unfortunately, the effect of vocal fold tissue trauma is often not felt by the vocalist for a period of one or two days. When the feeling comes, usually in the form of roughness, lower pitch, delayed voice onset, or vocal instability, it may require several days of minimal vocalization to recover.

NOTE

I. R. Titze, "Human Speech: A Restricted Use of the Mammalian Larynx," *Journal of Voice* 31, no. 2 (March 2017): 135–141.

Ingo R. Titze is Distinguished Professor of Speech Science and Voice at the University of Iowa and Executive Director of the National Center for Voice and Speech at the University of Utah. His formal education is in physics and electrical engineering, but he has devoted much of his studies to vocal music and speech. Dr. Titze has published more than 400 articles in scientific and educational journals, coedited two books titled *Vocal Fold Physiology*, and now has three books in print: *Principles of Voice Production*, *The Myoelastic Aerodynamic Theory of Phonotion*, and *Fascinations with the Human Voice*. He has lectured throughout the world and has appeared on such educational television series as *Innovation, Quantum, and Beyond 2000*. He is a recipient of the William and Harriott Gould Award for laryngeal physiology, the Jacob Javits Neuroscience Investigation Award, the Claude Pepper Award, the Quintana Award, and the American Laryngological Association Award. He is a Fellow and a Silver Medalist of the Acoustical Society of America, and a Fellow of the American Speech-Language-Hearing Association. Dr. Titze has served on a number of national advisory boards and scientific review groups, including the Scientific Advisory Board of the Voice Foundation and the Division of Research Grants of the National Institutes of Health. In addition to his scientific endeavors, Dr. Titze continues to be active as a singer. He is married to Kathy Titze and has four children and eight grandchildren. Mail should be addressed to Ingo R. Titze, National Center for Voice and Speech, 330 WJSHC, Iowa City, IA 52242. Telephone (319) 335-6600.

The keen stars were twinkling,
And the fair moon was rising among them
Dear Jane!
The guitar was tinkling,
But the notes were not sweet till you sung them
Again.
As the moon's soft splendour
O'er the faint cold starlight of Heaven
Is thrown,
So your voice most tender
To the strings without soul had then given
Its own.
The stars will awaken,
Though the moon sleep a full hour later,
Tonight;
No leaf will be shaken
Whilst the dews of your melody scatter
Delight.
Though the sound overpowers,
Sing again, with your dear voice revealing
A tone
Of some world far from ours,
Where music and moonlight and feeling
Are one.

"To Jane: The Keen Stars Were Twinkling,"
Percy Bysshe Shelley