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Kristen Sullivan, Editor



Masked Phonation: How Are Our Voices Affected?

Reena Gupta and Mindy Pack

COVID-19 has affected us in a multitude of ways. The illness itself has had a devastating health impact. But some unexpected phenomena have also been noted by Dr. Reena Gupta, laryngologist and founder of Center for Vocal Health in Beverly Hills, CA. With stress and anxiety at higher levels, patients were increasingly reporting pain in their ears, due to temporomandibular joint (jaw joints) inflammation from grinding and clenching. There was also a higher incidence of reflux laryngitis, likely triggered by stress.

Additionally, Dr. Gupta was noting some unusual symptoms in her own voice,

including voice fatigue, roughened quality, and loss of vocal range. This, despite an overall reduction in daily voice use from a lower patient volume due to COVID restrictions.

After doing a rigid stroboscopy on herself (the benefits of being a laryngologist!) and noting no injury, she theorized it was connected to masked phonation. She did a self-test. She placed the stroboscopy microphone against her neck and spoke at conversational volume, masked and unmasked, to a colleague in the room. Neither person looked at the output readings but they were recorded.

While not an exquisitely-designed experiment, she noted two things immediately. During masked phonation, her amplitude (volume) was 10 dB higher. Whether masked or unmasked, her fundamental frequency was a half an octave lower than her normal. She reached out to expert vocal coach and NCVS-trained clinical Vocologist, Mindy Pack, with whom she has partnered on The Svava Project, a vocal education, outreach, and advocacy organization. They theorized that masked phonation was resulting in subconsciously louder phonation, increased resultant effort and strain, and muscle tension, accounting for the lower fundamental frequency.

On the fly, Mindy developed strategies to restore Dr. Gupta's speaking voice, being cognizant that standard techniques would need to be adjusted due to COVID-related precautions. Mindy adapted SOVT exercises to be done while masked, since straw use wasn't an option. They joked it was a "trial by fire" because they filmed the process and released it on The Svava Project; an unsuccessful attempt at correction would have been disappointing and embarrassing (they make a habit of publishing failures as well as successes in the interest of honesty and full disclosure).

But the two immediately saw Dr. Gupta's fundamental frequency shift. Most importantly, Dr. Gupta could feel the ease return to her voice within a few minutes of doing Mindy's adapted exercises. There were additional methods to become self-aware of speaking volume, including occluding an ear while speaking. When an ear is blocked, it can serve as a feedback loop because the voice is intensified to the user. This can help a voice user to periodically correct an unintentionally loud speaking voice.

The exploratory conversation and techniques were filmed and posted on The Svava Project's social media pages (@svavaproject on Instagram and Svava Project on Facebook). Follow this fantastic team there for more practical explorations in voice.

[View the video here.](#)

Or on Instagram @svavaproject



Can You Hear Me Now?: Evolving Best Practice for Connecting with our Clients

Joshua D. Glasner, M.M., Ph.D.

There are three main principles that guided my research workgroup¹ and my work throughout this summer:

1. Things will change and best practice will continue to evolve.
2. We want to enable music-making.
3. We want to enable informed decision-making given limited time and resources.

The voice community was thrown into generally unexplored territory in March 2020. We were tasked with helping our clients to improve their vocal function, to communicate clearly and effectively, and, for many of us, to make music. And we worked with the resources allotted to us at the time. We explored different streaming platforms, different recording equipment, and even different modalities of instruction. Luckily, we as a field continue to do what we do best: stretch past what is known and develop more effective practice to help our clients.

So, things will continue to change. I fully anticipate that this short article will be *passé* within the next few months as new platforms are explored, as new technologies are implemented, and as we find ways to help our clients to reach their vocal goals despite having to reach for connection through the ether. If you come away with nothing else from reading this article, please know that, at the time of this writing, it is possible to make real-time music and to hold therapy sessions and voice lessons with high fidelity audio. To do so requires a minimal investment on the part of the client and therapist/voice teacher, but the result is worth that investment (subjectively, of course).

You may have heard and seen some terminology tossed around this summer. Briefly, in the context of audio/video streaming, *latency* refers to the time that it takes for the sound of your voice to reach the headphones of your client. *Round-trip* latency is that time doubled. Practically, the literature suggests that latencies (one-way) between 20-30 ms are perceived as real-time (Hirsh, 1959; Carôt, 2009).² Audio streaming platforms that purport to perform in real-time (i.e. “lagless” connection) typically use peer-to-peer connections and the

latency between systems using these platforms depends on geographical distance, processor speed, internet connection speed, and the latency of the audio interfaces used by both individuals. Oftentimes, these platforms also deliver high fidelity audio and ostensibly deliver the client’s sound exactly as it is recorded by a microphone. In nearly all of these situations, a separate video streaming platform is needed (such as Jitsi, which has lower latency than Zoom) and, depending on the audio streaming platform used, may need to be run on a separate device.

Certain equipment is required to take full advantage of the benefits offered by these types of audio streaming platforms. These requirements are determined by the individual circumstances for which the platforms are used and include a microphone, an audio interface, an ethernet cable (and adapter if necessary), a webcam, and a pair of wired headphones. The specifications for each of these devices are outlined in Table 1. While these costs may seem prohibitive, this equipment can be prioritized by the teacher/clinician and student/client. For example, a teacher/clinician could do without a high-end microphone since we know that it is more effective for our clients to be making sounds in our sessions rather than hearing us make sounds (Verdolini, 2000; Holding, 2015). Likewise, a client might need a flat-response microphone and an audio interface before they need open-back headphones. As a rule, it is important for the sound the teacher/clinician hears to be accurate so that they can appropriately and efficiently guide the client.

Just as we as voice professionals hope that our clients will improve their voice practice as a result of working with us, these new developments in best practice for voice lessons/therapy can help us to improve our own professional practice. We were “thrown into the deep end,” as it were, and it is my hope that these suggestions help us to feel like we are not just surviving but thriving as we help our clients to develop vocal agency.

Table 1: Equipment for High Fidelity Audio

Microphone	Audio Interface	Headphones
Omnidirectional Polar Pattern	1-2 Inputs	Open-Back
Flat Frequency Response	Low Device Noise	“Transparent” Sound
Condenser Microphone	Flat Frequency Response	Semi Open-Back if Needed
Small Diaphragm	Low Round-Trip Latency	
XLR (Not USB)	Preferably Outlet Powered	N.B. An ethernet connection is suggested for all teleconferencing solutions.
Low Device Noise	24-bit Sampling Rate	

Table 2: Platforms for Online Voice Sessions	
Laggy	Nearly Lagless
Zoom	Soundjack + Jitsi or Soundjack
Cleanfeed (PtP) + Jitsi	Jacktrip + Jitsi
SourceConnect Now + Jitsi	Jamulus + Jitsi
Internet MIDI (allows laggy accompanying)	JamKazam

1. I would be remiss if I did not thank my research workgroup, led by Dr. Ian Howell (New England Conservatory), for their combined efforts this summer: Kayla Gautereaux (New England Conservatory), Dr. Nicholas Perna (Mississippi College), and Dr. Chadley Ballantyne (Stetson University).

2. For reference, commonly used platforms that combine audio and video such as Zoom or Microsoft Teams often measure one-way latencies in the realm of 100-250 ms.

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Further Reading

Avant, B. (2020, September 6). *Soundjack: Current Thoughts, Understandings and Guidance of this Real-Time Communication and Collaboration Tool*. Retrieved September 6, 2020, from https://www.dropbox.com/s/ubq44le8lv2tfe/Soundjack%20Article%20-%20Avant.pdf?dl=0&fbclid=IwAR0h-It_aPjHjj6SUMXL0J1iVlj1DpDKN5qIKqJTw1W_qh7Zzf0zFg6c1DA

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Virtually PAVA:

A Chance to Connect with Colleagues Across the Globe!

The Virtually PAVA 2020 Symposium was a huge success! Thank you to all our presenters and attendees.

If you weren't able to join us in real time, you can still take advantage of all the recorded talks and workshops by registering on the [events](#) page. Content will be available for viewing through World Voice Day, April 16, 2021.

Read what some members said about Virtually PAVA and the PAVA Village!

The platform of the Village was really user friendly, fun, and interactive... I loved the opportunity to meet new people and interact with friends. That is something we are all missing in this time of COVID.

~ Zipporah Peddle (Springfield, MO, member of Virtually PAVA committee)

I saw people meet and chat after not seeing each other for a long time, people making new connections, it was beautiful to see how on the social aspect it was close to the real thing plus we had some experiences that we could have never had if we were to meet physically.

~ Aramat Arnheim Sharon (Israel, member of Virtually PAVA committee)

PAVA 2020 was one of my best experience this year! Thank you all!

~Juan Francisco Tobon (Colombia)



PAVA BRAVA AWARD

Beth Falcone, Virtually PAVA Symposium Chair

In recognition of exemplary leadership, vision, planning, and tireless efforts to successfully execute the first Virtually PAVA Symposium, the Pan American Vocology Association Board of Directors formally acknowledges and extends its profound appreciation to Beth Falcone for her outstanding service and presents this inaugural PAVA Brava Award!



Beth, you are Wonder Woman!! Thanks for everything you have done for all of us!

~ D.D. Michael (Minneapolis, Minnesota)

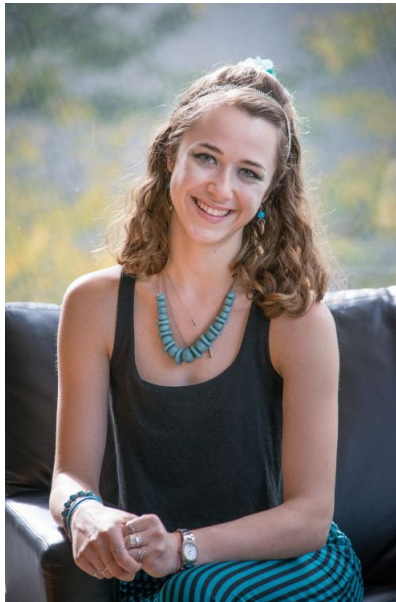




Congratulations to Theodora Nestorova

**Winner of the "Best Student Presentation Award"
at the Virtually PAVA Symposium**

Ms. Nestorova presented her research, "Does Vibrato Define Genre or Vice Versa?: A Novel Approach to Stylistic Vibrato Derivative Analysis." Read more about our winner below.



Bulgarian-British-American soprano, researcher, and teacher **Theodora Ivanova Nestorova** was the 2018-2019 Fulbright Study/Research Grant Recipient to Vienna, Austria studying MA Lied/Oratorio at Universität für Musik und darstellende Kunst Wien and conducting voice science research with Dr. Christian Herbst. The 2018-2019 first-place winner of the American Prize in Vocal Performance (Art Song), Theodora is an emerging opera singer as well as an avid early and contemporary musician. She has recorded world premiere compositions at the Bulgarian National Radio in Sofia, Wien Modern Festival, Bang on a Can, and Emmanuel Music's Bach Institute. As a scholar, Theodora has presented her original research on vibrato at the National Opera Association, Voice Foundation's New Investigator Research Forum, and Pan American Vocology Association. Theodora graduated with a BM (Voice Performance/Musicology) from Oberlin Conservatory in 2018 and is currently pursuing her MM (Vocal Pedagogy) at New England Conservatory with Dr. Ian Howell in Boston. Visit: theodoranestorova.com



Join Us for Our October PAVA Forum!

Wednesday, October 21, 2020 - 8:00pm ET

- Dr. Julia Gerhard, "The Extended Voice Team Network"
- Moderated by Rachelle Fleming
- [Register here](#)
- Visit our [events](#) page for more information

Julia Gerhard is a speech pathologist and singer with a passion for interdisciplinary voice education and professional voice rehabilitation. She earned a doctorate in musical arts in vocal performance and a master of arts in speech-language pathology from Temple University. She also completed the Summer Vocology Institute in 2010. This training eventually led to a clinical fellowship at the Children's Hospital of Philadelphia and a faculty appointment at the University of Miami in the Department of Otolaryngology. At the University of Miami, Gerhard and the medical voice team worked together with faculty from the vocal performance department to foster learning opportunities for voice students including a pedagogy internship program within the voice clinic, World Voice Day events, and educational lectures. Now, as a new mother recently relocated to central Florida, she works as a speech pathologist for Florida Hospital on a per diem basis.



Watch your email for the full lineup of fall PAVA forums!