

Midwest Voice

Abstract Booklet

November 7, 2026
Voxman Music Building
University of Iowa
Iowa City, IA

Stay tuned for future opportunities and events



Titles and Authors

KEYNOTE: LARYNGEAL DYSTONIA: ADVANCES IN ASSESSMENT AND TREATMENT	4
Rita R. Patel, PhD, CCC-SLP	4
10 BUCKS, A LOT OF NOISE, AND A VOICE TO ASSESS: BRINGING CONTACT MICROPHONES TO THE BEDSIDE	6
Adrián Castillo-Allendes, Fernanda Figueroa-Martínez, Mark Berardi, Eric J. Hunter	6
INDIVIDUAL VARIABLES ASSOCIATED WITH A READINESS TO CHANGE HOW ONE CARES FOR THEIR VOICE IN COLLEGE STUDENTS.....	8
Brittany L. Perrine	8
RECOGNITION AND MANAGEMENT OF VOICE CHANGES IN OLDER ADULTS BY PRIMARY CARE PHYSICIANS: PRELIMINARY SURVEY FINDINGS.....	9
Maryann N. Krasko, PhD, MS, CF-SLP ^{1,2} , Regan DeMaris, BS ³ , Emma Thayer, BS ¹ , Nicholas R. Butler, MD, MBA ⁴ , Alison Moore, MD, MPH ⁵ , Matthew R. Hoffman, MD, PhD ¹	9
MODELING HUMAN VOCAL FOLD HEALTH AND DISEASE: HIPSC-DERIVED 3D MUCOSAL AND ORGANOID SYSTEMS	10
Vlasta Lungova, Susan Thibeault	10
LISTENING TO INFLAMMATION: EARLY STEPS IN VOICE RESEARCH FOR RHEUMATOLOGIC AND AUTOIMMUNE DISEASE	11
Theodora Nestorova ^{1,3} , Elisabeth Renkert ^{1,4} , Jeffery Yang ² , Matthew Koster MD ² , Alison Berry ² , Semirra Bayan ¹ , Eric Moore, MD ¹ , Cornelia Weyand ² , Keiko Ishikawa ⁴ , Diana Orbelo, PhD ¹	11
COGNITIVE LOAD AND SPEECH TECHNIQUE IMPLEMENTATION ACCURACY DURING SPEECH MODIFICATION: A DUAL-TASK APPROACH.....	13
Keiko Ishikawa ¹ , Elisabeth Renkert ¹ , Jennifer Yeatts ² , Isabelle Cramer ²	13
KEYNOTE: BUILDING COMMUNITY THROUGH SONG: THE STORY OF THE OAKDALE PRISON CHOIR	14
Mary L. Cohen.....	14
THERAPEUTIC GROUP SINGING FOR PARKINSON'S DISEASE: INTERDISCIPLINARY PERSECTIVES, EMERGING EVIDENCE, AND FUTURE DIRECTIONS	16
Abbey L. Dvorak, PhD, MT-BC ¹ ; Sun Joo Lee, PhD, MT-BC ² ; Jeremy Manternach, PhD ¹ ; Louise Pinkerton, MM, MA, CCC-SLP ¹	16
PROFESSIONAL SOUL SINGERS, WELL-BEING AND OPTIMAL PERFORMANCE: A QUALITATIVE DESCRIPTIVE STUDY.....	18
Angelia Williams, PhD	18
VIRTUAL REALITY FOR PERFORMANCE PREPARATION: INCREASING FAMILIARITY AND EASING ANXIETY	19
Carly J. Wingfield ¹ , Pasquale Bottalico ² , Charles J. Nudelman ³ , Yvonne Gonzales Redman ⁴	19
THE LIFE AND SOLO VOCAL WORKS OF CARLOTTA FERRARI DA LODI (1831-1907).....	20
Jennifer Kreider	20
MUSCULOSKELETAL HEALTH IN THE VOICE STUDIO	21
Kourtney R. Austin.....	21
KEYNOTE: LARYNGEAL MODELING AT IOWA.....	22
Ronald C. Scherer.....	22
THE EFFECT OF VOCAL FOLD GEOMETRIC VARIABLES ON AERODYNAMICS, ACOUSTICS, AND KINEMATICS IN PHYSICAL SELF-OSCILLATING VOCAL FOLD MODELS.....	23
Nicholas A. May ¹ , Ronald C. Scherer ²	23

DO IT YOURSELF DOSIMETER For DETECTING ACOUSTIC MARKERS OF NEUROGENIC VOICE DISORDERS: A FEASIBILITY STUDY	25
Elisabeth Renkert ¹ , Pasquale Bottalico ² , Charles Nudelman ³ , Rachel Jonas ⁴ , Mark Fritz ⁴ , Sanford Archer ⁴ , Diana Orbelo ⁵ , Keiko Ishikawa ¹	25
CHANGES IN SOURCE-FILTER INTERACTION ACCOMPANYING A CHANGE IN REGISTER MECHANISM	27
Peter Pabon ¹ , Katrin Neumann ² , Philipp Mathmann ²	27
LOUDNESS VOICE MAPS	28
Peter Pabon ¹ , Christian T. Herbst ^{2,3,4}	28
CONCURRENT FMRI, EXTRALARYNGEAL EMG, AND ACOUSTIC MEASUREMENT OF SPEECH PRODUCTION UNDER PSYCHOSOCIAL STRESS	29
Mark L. Berardi ¹ , Gui N. DeSouza ² , Maria M. Dietrich ³	29
TOWARDS ACCESSIBLE SPEECH MRI METHODS	30
Swati Ramtilak ¹ , David Meyer ^{2,3} , Ute Gorke ⁴ , Sean Fain ^{5,1} , Sajan Lingala ^{1,5}	30
BUILDING AN OPEN 3D VOCAL TRACT MRI DATABASE OF SUSTAINED PHONATION: PAIRING EXPERT SEGMENTATION WITH DEEP LEARNING DRAFTS	31
Payton Westphal ¹ , Subin Erattakalungara ² , Sarah Vigmostad ¹ , David Meyer ^{3,4*} , Sajan Goud Lingala ^{1,5*} (*Co senior Authors)	31
EMMA SEILER: AN OLD AND NEW LOOK AT SOPRANO FORMANT TUNING	32
David Meyer ^{1,2} , Christian T. Herbst ^{1,3}	32
KEYNOTE: SCIENCE AND ART OF CHAOTIC VOCAL STYLES	33
Melissa Cross	33
DEVELOPING THE ACOUSTIC VOICE HYPERFUNCTION INDEX FOR BRAZILIAN PORTUGUESE ...	34
Tiago Lima Bicalho Cruz ¹ , Leonardo Lopes ²	34
VIBRATO RATE AND HALF-EXTENT IN WESTERN CLASSICAL SINGERS: CORPUS-BASED REFERENCE DISTRIBUTIONS	35
Tiago Lima Bicalho Cruz ¹ , Pedro Amarante Andrade ^{2,3} , Manuel Brandner ⁴ , Christian T. Herbst ^{5,6}	35
BEYOND LANGUAGE: ARTICULATORY SETTINGS IN MULTILINGUAL AND CROSS-GENRE SINGING	36
Lori Şen	36
PRELIMINARY OVERVIEW OF SOVTE CUING AND INSTRUCTION	38
Sophia Dove, Ronald C. Scherer	38
SINGING SAVVY: SOMATICS FOR THE 21ST CENTURY SINGER	39
Elizabeth (Lily) Thompson	39
ZWISCHENFACH: AN EXPLORATION OF THE IN-BETWEEN	40
Geneil Perkins	40
MORE THAN SCREAMING: PRACTICAL USES FOR VOCAL DISTORTIONS	41
Nicolás Hormazábal	41

KEYNOTE: LARYNGEAL DYSTONIA: ADVANCES IN ASSESSMENT AND TREATMENT

RITA R. PATEL, PhD, CCC-SLP

Department of Speech Language and Hearing Sciences, Department of Otolaryngology Head and Neck Surgery,
Indiana University, Bloomington, Indiana, USA

Keywords: Adductor Laryngeal Dystonia; High-speed videoendoscopy, deep brain stimulation, laryngeal electromyography

Abstract

Adductor laryngeal dystonia (ADLD), also called adductor spasmodic dysphonia, is a neurological voice disorder often difficult to distinguish from muscle tension dysphonia and vocal tremor. Current diagnosis relies on auditory perceptual and videostroboscopic evaluations with limited interrater reliability. This research integrates physiological, acoustic, and artificial intelligence (AI) approaches to improve objective ADLD assessment, diagnosis, and treatment.

First, high-speed videoendoscopy (HSV) is used to characterize vibratory patterns and identify distinctive features of ADLD of voice breaks (oscillatory breaks, etc.). Then synchronized HSV and laryngeal electromyography are used to investigate the relationship between thyroarytenoid muscle activation and vibratory motion during voice breaks in patients with ADLD and healthy controls. This work aims to improve understanding of the physiological mechanisms underlying voice breaks.

Second, preliminary acoustic analyses of seven patients receiving deep brain stimulation (DBS) explore the effects of stimulation targets on voice production. Initial findings suggest target-specific differences: globus pallidus interna (GPe) stimulation may yield greater improvements in voicing and intensity modulation, whereas ventral intermediate nucleus of the thalamus (VIM) stimulation may provide greater improvement in vocal tremor.

Third, we investigate deep learning approaches for automated ADLD detection and severity assessment using diverse speech samples. Across five datasets, we evaluate ResNet18-based convolutional neural networks (CNNs) and gated recurrent unit (GRU)-based recurrent neural networks (RNNs), incorporating supervised contrastive learning and adversarial domain adaptation to improve generalization. Preliminary results show that the ResNet18 model with supervised contrastive learning achieved an area under the receiver operating characteristic curve of 0.703 for distinguishing ADLD from healthy speakers using sentence-level speech. We further explore multimodal learning by integrating audio signals with HSV-derived glottal area waveforms, comparing CNN, RNN, and Transformer architectures using early- and late-fusion strategies. Extending this work to connected speech, where ADLD symptoms are often more apparent, we develop a multimodal sequence-labeling framework that detects clinically relevant vocal biomarkers over time. This approach aims to provide temporally localized, interpretable evidence to support diagnosis beyond conventional utterance-level classification.

Together, these studies aim to advance objective, non-invasive voice assessment, improve understanding of vocal dysfunction, and support more reliable diagnosis, AI-assisted clinical decision-making, and individualized treatment for voice disorders.

References

Patel, R., Liu, L., Galatsanos, N., Bless, D. (2011). Differential Vibratory characteristics of spasmodic dysphonia and muscle tension dysphonia on high speed digital imaging. *Annals of Otolaryngology, Rhinology, and Laryngology*, 120, 21-32. PMID 21370677

Patel, R. Zauber, S. E., Yadav, A., Witt, T., Halum, S., Gupta, K. (2022). Globus pallidus interna and ventral intermediate nucleus of the thalamus deep brain stimulation for adductor laryngeal dystonia: blinded analyses of objective voice outcomes in two patients, *Neurosurgery*, 90 (4), 457-463. PMID: 35138294

Patel, R. Burroughs, L., Higgins, A., Zauber, S. E., Isbaine, F., Schneider, D., Hohman, R., Gupta, K. (2024). Bilateral deep brain stimulation of the ventral intermediate nucleus of the thalamus improves objective acoustic measures of essential vocal tremor, *Neurosurgery*, 95 (4), 915-923. PMID: 38787392

Patel, R., Stall, M., Halum, S., Anthony, B., Parker, N., Yount, M., Kareken, D., Dickinson, S., Purger, D., Gupta, K., Zauber, S. E. (2026). Effects of deep brain stimulation on adductor laryngeal dystonia, *Laryngoscope*, 136 (7), 3085-3096. PMID: 41693579.

Presenter Bio

Dr. Rita Patel is a distinguished speech-language pathologist specializing in voice, upper airway, and endoscopic laryngeal imaging. Was named an Extraordinary Professor at the University of Pretoria and ASHA Fellow (2022). Her work advances voice development in children and both basic/clinical understanding of complex voice and upper airway disorders.

Acknowledgments

This research was supported by:

- Dysphonia International Grant
- American Speech-Language Hearing Foundation Grant
- Indiana Clinical and Translational Sciences Institutes, funded in part by grant #UL1TR002529 from the National Institutes of Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award

Collaborators:

Department of Otolaryngology Head and Neck Surgery, Indiana University

- Stacey Halum, MD, Benjamin Anthony, MD, Noah Parker, MD

Department of Neurology, Indiana University

- S. Elizabeth Zauber, MD and David Kareken, PhD

Department of Neurosurgery, Indiana University

- Kunal Gupta, MD, David Purger, MD

Department of Computer Science, Indiana University

- Hiroki Sato, MS, Weslie Khoo, PhD, David Crandall, PhD

Department of Computer Science, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

- Maitreya Mohapatra, MSc and Michael Döllinger, PhD

Disclosures

Editor-in-Chief, American Journal of Speech-Language Pathology

Board of Trustees, American Speech-Language Hearing Foundation

Content creator, Northern Speech Services

10 BUCKS, A LOT OF NOISE, AND A VOICE TO ASSESS: BRINGING CONTACT MICROPHONES TO THE BEDSIDE

ADRIÁN CASTILLO-ALLENDES, FERNANDA FIGUEROA-MARTÍNEZ, MARK BERARDI,
ERIC J. HUNTER

Department of Communication Sciences and Disorders, University of Iowa, Iowa City, Iowa, USA

Keywords: Contact microphone; Bedside voice assessment; Acoustic analysis; Hospital noise

Abstract

Voice is closely tied to communication, identity, and recovery in hospitalized patients, yet objective bedside voice assessment remains uncommon. Although acoustic measures are widely used in voice research, reliable recordings in hospital environments present practical challenges. This presentation integrates three studies examining these barriers and evaluating low-cost contact microphones as a potential solution.

The first study used semi-structured interviews with 25 speech-language pathologists from four countries to explore inpatient voice assessment practices. Clinicians reported that swallowing often takes priority over voice assessment, while limited equipment, patient immobility, environmental noise, and time constraints restrict instrumental evaluation. Many relied on informal listening, nonstandardized smartphone recordings, and patient self-report, highlighting a gap between recommended practices and clinical realities.

The second study evaluated six commercially available contact microphones costing approximately USD 8–32. Using a standardized shaker platform, frequency responses and signal-to-noise ratios were compared with a calibrated reference accelerometer. Microphones generally showed greater low-frequency sensitivity, with attenuation above 1 kHz. Two devices costing approximately USD 9 and 11 achieved signal-to-noise ratios slightly exceeding the reference under experimental conditions, although performance varied across devices and frequencies.

The third study examined acoustic measurement reliability under simulated hospital conditions. Two vocally trained adults were recorded in a sound booth and hospital procedure room under quiet conditions, multi-talker babble, and simulated hospital noise reaching approximately 65 dBA. Smoothed cepstral peak prominence (CPPS) and fundamental frequency (F0) remained relatively stable across noise conditions, with no significant device effects detected. In contrast, the headset microphone was more susceptible to background noise, while measures sensitive to high-frequency energy varied across devices.

Together, these studies connect clinical barriers with laboratory validation and preliminary real-world feasibility. Findings suggest that contact microphones costing approximately ten dollars may preserve useful acoustic measures in noisy environments where conventional recording is challenging. However, clinical validity in patients with voice disorders remains unestablished. Ongoing work will evaluate performance in unmodified clinical settings, including bedside assessments. Implications for clinical voice documentation, monitoring, and other noisy environments, including operating rooms, will be discussed.

References

- Castillo-Allendes, A., Searl, J., Knowles, T., Hodgman, M., Salas-Pohl, C., & Hunter, E. J. (2025). Between necessity and feasibility: A qualitative study on how clinicians navigate bedside voice assessment. *Journal of Voice*. <https://doi.org/10.1016/j.jvoice.2025.06.009>
- Castillo-Allendes, A., Figueroa-Martínez, F., Berardi, M., & Hunter, E. J. (2025). Performance evaluation framework for contact microphones: A controlled laboratory study for voice research. *Journal of Voice*. <https://doi.org/10.1016/j.jvoice.2025.11.030>
- Castillo-Allendes, A., Figueroa-Martínez, F., Cantor-Cutiva, L. C., Berardi, M., & Hunter, E. J. (2026). Low-cost contact microphones for bedside voice assessment: Proof of concept. *European Archives of Oto-Rhino-Laryngology*, 283, 1827–1836. <https://doi.org/10.1007/s00405-025-09970-0>

Presenter Bio

Adrián Castillo-Allendes is a speech-language pathologist and Postdoctoral Research Scholar in the Department of Communication Sciences and Disorders at the University of Iowa. He is also affiliated with the Department of Otolaryngology at the Pontificia Universidad Católica de Chile School of Medicine. Originally from Chile, he earned his PhD in Communicative Sciences and Disorders at Michigan State University as a Fulbright scholar. His research focuses on voice disorders, voice and swallowing physiology, and the development of accessible technologies for clinical voice assessment, particularly in environments where conventional acoustic measurements are difficult to obtain.

Acknowledgments

This research was supported by the NIDCD of the NIH under Grant No. R01DC012315 and by the BIO Fulbright-ANID Scholarship for doctoral studies (ANID, Scholarship ID 56170003). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Disclosures

The authors declare no conflicts of interest.

INDIVIDUAL VARIABLES ASSOCIATED WITH A READINESS TO CHANGE HOW ONE CARES FOR THEIR VOICE IN COLLEGE STUDENTS

BRITTANY L. PERRINE

Department of Communication Sciences and Disorders, Baylor University, Waco, Texas, U.S.A.

Keywords: Transtheoretical Model, vocal hygiene, voice problems, readiness to change

Abstract

The Transtheoretical Model of Health Behavior has been applied to the creation of prevention models in many areas such as, prevention of sun damage [1], increasing physical activity [2], and smoking cessation programs [3], but has not been used for voice disorder prevention. In one study, participants not seeking treatment for a voice problem were mainly in the pre-contemplation stage of change, with medication use, the voice not performing as it should, and history of or plans to begin speech therapy contributed to a higher stage of change [4]. The purpose of this study was to determine the readiness to change how one cares for the voice and factors that contribute to differences in readiness to change in those with or without voice problems and not seeking treatment for a voice problem.

A survey was completed by 289 participants. The survey contained questions about vocal hygiene, symptoms of a voice problem, and the Vocal Fatigue Index. One question asked the readiness to change how one cares for their voice. Chi-square analyses were conducted to determine if there were significant differences in proportions across the stages of readiness to change and the remaining survey questions.

The majority of participants were in the pre-contemplation stage (50.7%) then the contemplation stage (33.8%). Not experiencing a voice problem, $\chi^2(2) = 13.226, p = .010$, or various symptoms of a voice problem were associated with a higher proportion in the pre-contemplation stage. More frequently warming-up, $\chi^2(2) = 43.488, p < .001$, and cooling-down, $\chi^2(2) = 43.602, p < .001$, the voice was associated with a greater readiness to change.

The effectiveness of voice disorder prevention and therapy partially depend on the readiness to change the voice. The majority of college students were in the pre-contemplation stage. Being in the post-contemplation stage was associated with already applying positive vocal hygiene behaviors. The results indicate that even those who are not seeking treatment for a voice problem may have variations in their readiness to change and that their readiness to change may be related to experiencing voice problems and vocally healthy behaviors.

References

1. Rossi-Barbosa LA, Gama AC, Caldeira AP. Association between readiness for behavior change and complaints of vocal problems in teachers. *CoDAS* 2015;27(2):170-7. doi: 10.1590/2317-1782/20152013088
2. Aygun O, Muslu GK. The effect of a school-based sun protection program on students' sun protection behavior in Turkey. *J Pediatr Nurs*. 2021;59:e61-9. doi: 10.1016/j.pedn.2021.01.030
3. Spencer L, Adams TB, Malone S, et al. Applying the transtheoretical model to exercise: a systematic and comprehensive review of the literature. *Health Promot Pract*. 2006;7(4):428-43. doi: 10.1177/1524839905278900
4. Aveyard P, Massey L, Parsons A, et al. The effect of Transtheoretical Model based interventions on smoking cessation. *Soc Sci Med*. 2009;68(3):397-403. doi: 10.1016/j.socscimed.2008.10.036

Presenter Bio

Brittany L. Perrine is an Associate Professor and holds the SWG Endowed Professorship at Baylor University in Waco, TX where she teaches Voice Pathology and Resonance Disorders and Speech Science. Her research focuses on factors that help to maintain a healthy voice, with a special interest in professional voice users.

RECOGNITION AND MANAGEMENT OF VOICE CHANGES IN OLDER ADULTS BY PRIMARY CARE PHYSICIANS: PRELIMINARY SURVEY FINDINGS

MARYANN N. KRASKO, PHD, MS, CF-SLP^{1,2}, REGAN DEMARIS, BS³, EMMA THAYER, BS¹, NICHOLAS R. BUTLER, MD, MBA⁴, ALISON MOORE, MD, MPH⁵, MATTHEW R. HOFFMAN, MD, PhD¹

¹ Department of Otolaryngology—Head and Neck Surgery, University of Iowa, Iowa City, IA, USA

² Department of Communication Sciences and Disorders, University of Iowa, Iowa City, IA, USA

³ Carver College of Medicine, University of Iowa, Iowa City, IA, USA

⁴ Department of Family and Community Medicine, University of Iowa, Iowa City, IA, USA

⁵ Department of Medicine, Division of Geriatrics, University of California San Diego, San Diego, CA, USA

Keywords: Presbyphonia; Primary care; Aging; Voice

Abstract

Age-related voice changes (*i.e.* presbyphonia) are common in older adults and may reflect age-related laryngeal changes or underlying pathology. Little is known about how primary care physicians identify and manage these concerns. This study examined physician practices, knowledge, confidence, referral patterns, and perceived barriers related to voice changes in adults aged ≥ 65 .

U.S. Family Medicine, Internal Medicine, and Geriatrics physicians caring for adults aged ≥ 65 were invited to complete an online survey. Survey questions assessed clinical practices, referrals, familiarity with presbyphonia and voice therapy, barriers to addressing voice concerns, prior voice-related training, and desired resources. Survey responses were summarized descriptively. Spearman correlations examined associations between prior voice-related training and selected measures of knowledge and confidence.

Sixty-one physicians completed the survey; 86.9% reported little or no voice-specific training during residency or fellowship. Routine inquiry about voice was uncommon, with 60.7% rarely or never asking about voice changes. However, 70.5% often or always inquired about noticeable voice changes, and 86.9% often or always evaluated patient-reported voice concerns, though only 9.8% conducted voice assessments. Half (50.8%) were slightly or not at all confident distinguishing age-related voice changes from concerning pathology. Fifty-nine percent had never heard of “presbyphonia” or did not know/remember its meaning, and 67.2% were slightly or not at all confident explaining it. For persistent voice change without red flags, 70.5% would initiate referral at the initial encounter, including 18% who would also provide initial management; 29.5% would initially manage without referral. Common management approaches included anti-reflux medication (69%), antihistamines (48.3%), and observation (44.8%). Barriers included competing priorities (73.8%), patients not raising voice concerns (55.7%), and limited appointment time (45.9%). A brief screening tool was viewed as potentially helpful by 90.2%. Greater voice-related training was associated with greater confidence explaining presbyphonia ($\rho=0.34$, $p=0.007$) and familiarity with voice therapy ($\rho=0.26$, $p=0.039$).

Preliminary findings suggest a gap between recognition and proactive identification of voice concerns. Physicians generally respond once concerns arise, but routine inquiry about voice changes and formal training are limited. These findings will inform our next steps, which include qualitative interviews and development of a brief clinical screening tool with referral guidance.

Presenter Bio

Maryann N. Krasko, PhD, MS, is a postdoctoral scholar and clinical fellow in Otolaryngology and Communication Sciences and Disorders at the University of Iowa. She received her PhD from the University of Wisconsin-Madison. Her research integrates clinical and translational approaches to investigate voice, swallowing, upper airway function, and neurodegenerative disease.

Disclosures

This research was supported by the NIA of the NIH under Grant No. R03AG089006. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

MODELING HUMAN VOCAL FOLD HEALTH AND DISEASE: HIPSC-DERIVED 3D MUCOSAL AND ORGANOID SYSTEMS

VLASTA LUNGOVA, SUSAN THIBEAULT

Department of Otolaryngology - Head and Neck Surgery, University of Wisconsin Madison, Madison, WI, USA

Keywords: three-dimensional mucosal model; air-liquid interface, host-microbiome interactions, organoids

Abstract

Three-dimensional models of human vocal fold (VF) mucosa provide valuable insights into mucosal cell responses to environmental challenges that alter VF mucosal integrity and function. Engineered VF mucosae are particularly well suited for these studies. This three-dimensional system provides an essentially unlimited source of human VF epithelial cells derived from human induced pluripotent stem cells (hiPSCs), which are differentiated to recapitulate embryonic development. The epithelial cells are seeded onto collagen scaffolds containing fibroblasts, forming tissue-like constructs *in vitro*. Moreover, these constructs can be maintained under air–liquid interface (ALI), enabling direct apical exposure to airborne environmental toxins, chemical agents, and microbial species under non-submerged, physiologically relevant conditions.

The tissue-like architecture of engineered VF mucosa enables comprehensive structural and molecular assessments, including histological examination, gene-expression profiling by quantitative polymerase chain reaction, ultrastructural analysis by transmission electron microscopy (TEM), and functional epithelial permeability assays. These approaches can be used to investigate epithelial responses to cigarette smoke and electronic-cigarette extracts, including potential changes in epithelial lipid deposition. Furthermore, they allow for the study of complex interactions between pathogenic bacteria (such as *Streptococcus pseudopneumoniae*) and commensal bacteria (such as *Streptococcus salivarius*) with the human VF epithelium, specifically regarding bacterial adhesion, pathogenicity, and biofilm formation. Newly designed *in vitro* systems, such as primary VF organoids embedded in Matrigel containing fibroblasts, further enable the utilization of primary cells to study cellular behavior in real time via live-cell imaging.

Together, these 3D engineered human VF mucosal models and Matrigel-embedded organoid systems offer versatile, physiologically relevant platforms for investigating laryngeal biology. By capturing complex epithelial–stromal crosstalk, barrier function, and real-time host–microbe interactions under ALI conditions, these models bridge the gap between simplified 2D monocultures and human clinical translation.

References

Lungova, V. et al. Human induced pluripotent stem cell-derived vocal fold mucosa mimics development and responses to smoke. *Nature Communications*. 2019. <https://doi.org/10.1038/s41467-019-12069-w>

Lungova, V. et al. Exposure to e-cigarette vapor extract induces vocal fold epithelial injury and triggers intense mucosal remodeling. *Disease Model Mechanisms*. 2022. <https://doi.org/10.1242/dmm.049476>

Lungova, et al. Contribution of *Streptococcus pseudopneumoniae* and *Streptococcus salivarius* to vocal fold mucosal integrity and function. *Disease Model Mechanisms*. 2024. <https://doi.org/10.1242/dmm.050670>

Presenter Bio

Dr. Vlasta Lungova is a Senior Scientist and Co-Principal Investigator in the Susan Thibault Laboratory, focusing on the mechanisms underlying laryngeal and VF development and postnatal regeneration. Utilizing human *in vitro* model systems and transgenic mouse models, her research aims to advance the understanding of congenital laryngeal disorders as well as disease- and aging-related laryngeal pathologies, while laying the groundwork for bioengineered neo-VF therapies.

Acknowledgments

This study was funded by the NIH R01DC020734, R01DC004336 and R01GM102756

LISTENING TO INFLAMMATION: EARLY STEPS IN VOICE RESEARCH FOR RHEUMATOLOGIC AND AUTOIMMUNE DISEASE

THEODORA NESTOROVA^{1,3}, ELISABETH RENKERT^{1,4}, JEFFERY YANG², MATTHEW KOSTER MD², ALISON BERRY², SEMIRRA BAYAN¹, ERIC MOORE, MD¹, CORNELIA WEYAND², KEIKO ISHIKAWA⁴, DIANA ORBELO, PhD¹

¹ Department of Otolaryngology Head and Neck Surgery, Mayo Clinic, Rochester MN, USA

² Department of Rheumatology, Mayo Clinic, Rochester MN, USA

³ Department of Communication Disorders & Sciences, Viterbo University, La Crosse, WI, USA

⁴ Department of Communication Science & Disorders, University of Cincinnati, Cincinnati, OH

Keywords: Voice; Rheumatoid Arthritis; Auditory-Perceptual; Dysphonia

Abstract

Dysphonia affects communication and quality of life but may go unrecognized in patients with rheumatoid arthritis (RA). RA prevalence ranges from 12% to 35%. As part of an ongoing investigation, this study characterizes patient-reported voice symptoms across RA disease activity levels and extends these findings through auditory-perceptual assessment.

Forty-three adults with RA completed the 30-item Voice Symptom Scale (VoiSS) and a standardized recording protocol including sustained vowels, sentences, reading, and conversational speech. Disease activity was classified clinically by a rheumatologist as remission, low, moderate, or high. VoiSS scores were compared across these categories. Expert listeners evaluated recordings from a subset of 35 participants using the Consensus Auditory-Perceptual Evaluation of Voice–revised (CAPE-Vr).

Participants had a mean age of 62.2 years, and 74% were female. Forty-one (95%) reported at least one voice symptom, and eight (19%) met or exceeded a VoiSS score of 16. The mean VoiSS score was 9.1 (SD 7.2), with a median of 7 and a range of 0–32. A higher proportion of participants with active disease than in remission scored at or above 16 (28% vs 6%), though this did not reach statistical significance (Fisher's exact $p = 0.111$). Median VoiSS scores increased with RA disease severity from 6 in remission to 8, 9, and 13 in low, moderate, and high disease activity, respectively; however, distributions did not differ significantly across groups (Kruskal–Wallis $H = 2.67$, $df = 3$, $p = 0.445$). Small, unequal groups limit interpretation. Auditory-perceptual rating results for the 35-participant subset are pending.

Self-reported voice symptoms were present in this RA cohort, but the findings did not establish an association with disease activity. Many participants were in remission or on biologic therapy, therefore ongoing study enrollment aims to include more patients with moderate to high disease activity. Future work will incorporate acoustic analyses to further characterize the potential relationships between vocal features and RA disease.

References

Kempster, GB., Nagle, K, Solomon, NP. Development and Rationale for the Consensus Auditory-Perceptual Evaluation of Voice–Revised (CAPE-Vr). *Journal of Voice*. Article in Press

Roy N, Tanner K, Merrill RM, Wright C, Miller KL, Kendall KA. Descriptive epidemiology of voice disorders in rheumatoid arthritis: prevalence, risk factors, and quality of life burden. *Journal of Voice*. 2016;30(1):74-87

Sanz L, Sistiaga JA, Lara AJ, Cuende E, García-Alcántara F, Rivera T. The prevalence of dysphonia, its association with immunomediated diseases and correlation with biochemical markers. *Journal of Voice*. 2012;26(2):148-153.

Speyer R, Speyer I, Heijnen MA. Prevalence and relative risk of dysphonia in rheumatoid arthritis. *Journal of Voice*. 2008;22(2):232-237.

Presenter Bio

Dr. Diana Orbelo, associate professor in the Department of Otolaryngology-Head and Neck Surgery at Mayo Clinic, has over 20 years of experience treating patients with voice disorders and conducting voice related research. Recent work has explored the use of voice as a biomarker of disease. OR

Theodora Nestorova; PhD, MBA, MM, BM, is Assistant Professor of Speech-Language Pathology & Voice at Viterbo University. A soprano, vocologist, and Fulbright Scholar, her research investigates vibrato variability, sensorimotor control, and voice biomarkers of neurological, endocrine, and systemic disorders. Her work bridges clinical voice science, pedagogy, and performance.

Acknowledgments

This work is supported by the Mark E. and Mary A. Davis Initiative in Rheumatoid Arthritis Research and could not be ongoing with the support of Jessica O'Neill and our research coordinators Zachary Chew, Anna Haugen, & Autumn Holland. We are grateful to the patients who make this work possible.

Disclosures

Nothing to disclose.

COGNITIVE LOAD AND SPEECH TECHNIQUE IMPLEMENTATION ACCURACY DURING SPEECH MODIFICATION: A DUAL-TASK APPROACH

KEIKO ISHIKAWA¹, ELISABETH RENKERT¹, JENNIFER YEATTS², ISABELLE CRAMER²

¹ Dept of Communication Sciences and Disorders, University of Cincinnati, Cincinnati, Ohio, United States

² Dept of Communication Sciences and Disorders, University of Kentucky, Lexington, Kentucky, United States

Keywords: voice rehabilitation; cognitive-motor interactions; skill generalization

Abstract

A persistent challenge in voice therapy is the transfer of newly learned vocal behaviors from the clinic to everyday communication. Patients may successfully produce a target behavior during structured therapy but struggle to maintain it during spontaneous speech. Insufficient development of automaticity, the ability to maintain successful performance with minimal cognitive load, may contribute to this problem. Despite its potential importance for skill transfer, the cognitive demands associated with speech modification are rarely assessed in clinical practice.

Demands were examined whether a simple secondary reaction time (RT) task could detect cognitive costs associated with intentional speech modification. In the first study, 14 vocally healthy adults counted aloud at slow, habitual, and fast speaking rates while responding to visual stimuli. RTs were significantly longer during both slow and fast speech compared with habitual speech, suggesting that departures from habitual speaking patterns impose additional cognitive demands. In a second study, 30 vocally healthy adults produced habitual, whispered, and clear speech while completing the same RT task and rating perceived mental effort. Clear speech elicited longer RTs than habitual or whispered speech, and this additional cognitive cost persisted across five repetitions. Perceived mental effort increased progressively from habitual to whispered to clear speech, despite the absence of a significant RT difference between habitual and whispered speech. Although RT and perceived effort were positively correlated across speaking conditions, their association was no longer significant after controlling for speaking style.

Together, these findings suggest that behavioral cognitive cost and perceived mental effort provide related but distinct information about speech modification. They also underscore the importance of distinguishing successful speech performance from the cognitive resources required to achieve it. Integrating RT with acoustic measures of speech performance may help characterize how cognitive demands and speech performance change together as automaticity develops through practice. Understanding these trajectories, including individual differences in the relationship between performance and cognitive demand, may ultimately help explain why newly acquired speech behaviors transfer successfully to everyday communication in some individuals but not others.

References

van Leer, E., & Connor, N. P. (2010). Patient perceptions of voice therapy adherence. *Journal of Voice*, 24(4), 458–469. <https://doi.org/10.1016/j.jvoice.2008.12.009>

Ishikawa, K., Li, H., & Coster, E. (2023). The effect of noise on initiation and maintenance of clear speech and associated mental demand. *Journal of Speech, Language, and Hearing Research*, 66(11), 4180–4190. https://doi.org/10.1044/2023_JSLHR-23-00157

Ishikawa, K., Murgia, S., Li, H., Renkert, E., & Bottalico, P. (2024). Cognitive load associated with speaking clearly in reverberant rooms. *Scientific Reports*, 14, Article 20069. <https://doi.org/10.1038/s41598-024-70820-w>

Presenter Bio

Keiko Ishikawa, PhD, is an Associate Professor in the Department of Communication Sciences and Disorders at the University of Cincinnati. Her research investigates cognitive-motor interactions in speech production, mechanisms underlying voice and speech therapy outcomes, and speech intelligibility in challenging communication environments, integrating acoustic, perceptual, and psychophysiological approaches.

KEYNOTE: BUILDING COMMUNITY THROUGH SONG: THE STORY OF THE OAKDALE PRISON CHOIR

MARY L. COHEN

University of Iowa, Iowa City, USA

Keywords: choral singing, prisons, abolition, generative justice

Abstract

In this keynote I provide a brief introduction to the Oakdale Community Choir (OCC), a combined incarcerated (“inside singers”) and non-incarcerated (“outside singers”) choir that met weekly in a Midwest male medium security prison from 2009 to 2020. We will watch a 30-minute documentary film, “The Inside Singers” about the OCC. This choir is an example of “Generative Justice” (McNeill, et al., 2026), a new criminological concept that emphasizes relationship-building with people who have lived experience in prisons to build awareness of problems and complexities related to prisons.

In the U.S. incarceration machine, nearly 2 million people are in over 3100 jails waiting trial or serving short sentences, in 1,566 state prisons, 98 federal prisons, 1,277 youth facilities, 77 Indian country jails, and 220 immigration detention facilities costing at least \$445 billion annually (Sawyer et al., 2026). Racial disparities are extreme as Black Americans are incarcerated five times the rate of whites (Ghandnoosh, 2023). Creative approaches are needed to heal harms, build relationships, dismantle a punishment-obsessed mindset, and make positive changes.

The OCC created caring communities through weekly rehearsals, a reflective writing exchange (Cohen 2012), songwriting (Cohen & Wilson, 2017), and performances. The choir began with 44 members—22 inside singers and 22 outside singers. Warden Jim McKinney who ran Oakdale Prison from 2015 to 2020 allowed over 80 members in the last season themed “Remember: Be Love.” I coordinated the audience guest lists, initially limited to 85 people, and after 2015 over 300 people. Audience members including choir members’ families, friends, and community members. For some inside singers, their families started visiting them more regularly to attend choir concerts.

Choral singing in prisons has the potential to promote prosocial connections between people in custody and people outside of prisons (Cohen, 2019). When facilitated effectively, music-making in prisons may lead to a deeper awareness of prison abolition (Cohen & Duncan, 2022). Prison abolitionists such as Patrisse Cullors argue that abolition is about how we show up in relationships, centered in dignity and care, forgiveness, personal transformation, and working with perpetrators of violence and crime survivors toward restoration.

References

- Cohen, M. L. (2019). Choral singing in prisons: Evidence-based activities to support returning citizens. *The Prison Journal*, 99(4), 106-117
- Cohen, M. L. (2012b). Writing between rehearsals: A tool for assessment and building camaraderie. *Music Educators Journal*, 98(3), 43-48.
- Cohen, M. L., & Duncan, S. P. (2022). Music-making in U.S. prisons: Listening to Incarcerated Voices. Wilfrid Laurier University Press.
- Cohen, M. L., & Wilson, C. (2017). Inside the fences: The processes and purposes of songwriting in an adult male U.S. prison. *International Journal of Music Education*, 35(4), 543-551.
- Ghandnoosh, N. (2023, December 7). One in five: Racial disparity in imprisonment—causes and remedies. The Sentencing Project. <https://www.sentencingproject.org/reports/one-in-five-racial-disparity-in-imprisonment-causes-and-remedies/>
- International Music and Justice Inquiry Network: IMAJIN Caring Communities <https://www.imajincaringcommunities.com/>
- McNeill, F., Corcoran, M., & Weaver, B. (Eds.). (2026). *Generative justice: Beyond crime and punishment*. Bristol University Press.

Montross, C. (2020). *Waiting for an echo: The Madness of American Incarceration*. Penguin Random House.

Sawyer, W., Nam-Sonenstein, B., & Wagner, P. (2026, March 11). Mass incarceration: The whole pie 2026. Prison Policy Initiative. <https://www.prisonpolicy.org/reports/pie2026.html>

Songs of Generative Justice Bandcamp Channel with songs collaboratively written by incarcerated and non-incarcerated musicians: <https://songsofgenerativejustice.bandcamp.com/>

Presenter Bio

Mary L Cohen, an affiliate in Music and Peacebuilding with the Min-On Music Research Institute, is a music education professor at the University of Iowa (USA). Informed by concepts of *Ubuntu* and Generative Justice, her scholarship aims to build relationships between people inside and outside prison through music-making.

Acknowledgments

Thank you to Priscilla and Gene Zimmerman, the Teaching and Learning Department, filmmaker Daniel Kolen, Warden Jim McKinney, and all the members of the Oakdale Community Choir.

THERAPEUTIC GROUP SINGING FOR PARKINSON'S DISEASE: INTERDISCIPLINARY PERSPECTIVES, EMERGING EVIDENCE, AND FUTURE DIRECTIONS

ABBEY L. DVORAK, PhD, MT-BC¹; SUN JOO LEE, PhD, MT-BC²; JEREMY MANTERNACH,
PHD¹; LOUISE PINKERTON, MM, MA, CCC-SLP¹

¹ The University of Iowa, Iowa City, Iowa, USA

² University of Missouri-Kansas City, Kansas City, Missouri, USA

Keywords: Parkinson's Disease; Therapeutic Group Singing; Music Therapy; Voice

Abstract

Parkinson's disease (PD) is a progressive neurodegenerative condition that affects movement, communication, emotional well-being, and quality of life. Among the most common and frustrating symptoms are changes in voice and speech, including reduced vocal loudness, monotone speech, imprecise articulation, and decreased communicative participation. These challenges often contribute to social withdrawal, reduced confidence, and diminished quality of life for both individuals living with PD and their care partners. Research increasingly suggests that therapeutic group singing may offer a unique opportunity to address these interconnected physical, communicative, emotional, and social needs through an engaging community-based intervention.

This presentation provides an interdisciplinary introduction to therapeutic group singing from perspectives in music therapy, speech-language pathology, and music education. Presenters will discuss how singing engages respiratory, phonatory, articulatory, cognitive, emotional, and social systems simultaneously, and review potential mechanisms that may contribute to therapeutic outcomes. The session will briefly explore theoretical frameworks and mechanisms that help explain how singing influences movement, mood, memory, and motivation. Current evidence regarding voice, communication, psychosocial outcomes, and quality of life will be summarized, along with important gaps related to long-term outcomes, mechanisms of change, and implementation in community settings.

The presentation will conclude with an overview of the University of Iowa's TEMPO Lab, a National Endowment for the Arts Research Lab dedicated to investigating therapeutic group singing for individuals living with Parkinson's disease. Current studies examining health outcomes, community performances, public understanding of Parkinson's disease, and future directions for research and clinical practice will be highlighted. Attendees will gain a broader understanding of how singing may function as both a voice intervention and a pathway for promoting connection, participation, and quality of life for individuals affected by neurodegenerative conditions.

References

- Brown, J. L., Hughes, C., Bartel, M., Jordan, T., Stegemoller, E. (2026). "Beyond just a singing group": Perceptions of people with Parkinson's disease, caregivers, and leaders of singing groups. *Music Therapy Perspectives*, 44(1), miaf017, <https://doi.org/10.1093/mtp/miaf017>
- Lee, S. J., Dvorak, A. L., & Manternach, J. (2024). Outcomes of singing and semi-occluded vocal tract exercises for individuals with Parkinson's disease. *Journal of Music Therapy*, 61(2), 132-167. <https://doi.org/10.1093/jmt/thae004>
- Lee, S. J., & Dvorak, A. L. (2023). Therapeutic group singing for individuals with Parkinson's disease: A conceptual framework. *Music Therapy Perspectives*, miad008. <https://doi.org/10.1093/mtp/miad008>.
- Rojas Romero, C. J., & Guerrero, Y. (2026). Singing-based interventions for treating hypokinetic dysarthria in Parkinson's disease: A systematic review. *Journal of Music Therapy*, 63(1), thag009, <https://doi.org/10.1093/jmt/thag009>

Presenter Bio

Dr. Abbey Dvorak is Associate Professor and Director of Music Therapy at the University of Iowa. She is a board-certified and neurologic music therapist with research and clinical expertise in using music-based interventions to support the physical and psychosocial needs of individuals with neurodegenerative conditions. Dr. Dvorak is currently the director of Tremble Clefs Iowa.

Dr. Sun Joo Lee is an Assistant Professor of Music Therapy at the University of Missouri–Kansas City, a classically trained vocalist, and a music therapy clinician whose research integrates music therapy and voice science to examine how therapeutic group singing supports voice, communication, and psychosocial well-being for individuals living with Parkinson’s disease. She has directed Tremble Clefs Arizona since 2008 and founded Tremble Clefs Iowa in 2023 and Tremble Clefs Kansas City in 2026.

Dr. Jeremy Manternach is Associate Professor of Vocal/Choral Music Education at the University of Iowa. His research examines choral and vocal acoustics, singer efficiency, musician health and wellness, and teacher voice use, with a particular interest in the intersection of voice science, music education, and performance.

Louise Pinkerton, MM, MA, CCC-SLP is a Clinical Assistant Professor in Communication Sciences and Disorders at the University of Iowa and a speech-language pathologist specializing in voice disorders, Parkinson's disease, and voice rehabilitation. A professional singer, she brings expertise in both clinical voice care and vocal performance.

Acknowledgments

The authors would like to thank all the members of Tremble Clefs Iowa and their families, and all the interdisciplinary team members who collaborated on these projects. The authors would especially like to thank Sue and Frank Cannon and Kate Gfeller for their support of music therapy and our work in music and neurodegeneration.

Disclosures

This project was supported in part by an award from the NEA Research Labs program at the National Endowment for the Arts: Award# 1949262-38-26. The opinions expressed in this material are those of the author(s) and do not represent the views of the National Endowment for the Arts. The National Endowment for the Arts does not guarantee the accuracy or completeness of the information included in this material and is not responsible for any consequence of its use. Additional funding provided by the Iowa Mid-Career Scholar Award, the Fraternal Order of the Eagles Parkinson’s Grant, and the generosity of our donors.

**PROFESSIONAL SOUL SINGERS, WELL-BEING AND OPTIMAL
PERFORMANCE: A QUALITATIVE DESCRIPTIVE STUDY**

ANGELIA WILLIAMS, PhD

Department of General Education and Psychology, Colorado Technical University, Colorado Springs, CO, USA
Angelia Williams Enterprises LLC, Owensboro, KY, USA

Keywords: Soul Singers, Performance Psychology, Emotion Regulation, PERMA

Abstract

The purpose of this qualitative phenomenological study was to explore how professional soul singers described the lived experience of optimal performance as it relates to positive emotions, engagement, relationships, meaning and accomplishment (PERMA) in the southern US. The researcher utilized the Seligman (2012) PERMA model as the theoretical framework that outlines positive emotions, engagement, relationships, meaning, and accomplishment as viable tool for a life of flourishing that leads to well-being. This well-being leads to a pathway of improved performance outcomes. The research question posed for this investigation was what are the lived experiences of professional soul singers with achieving optimal performances through positive emotions, engagement, relationships, meaning, and accomplishment? Nine professional soul singers participated in semi-structured interviews, providing rich data on their experiences. Analysis using Giorgi's phenomenological method revealed four main themes: the importance of mindfulness in achieving optimal performances, the relationship between meaning and engagement, the role of psychological preparedness through positive mindsets and relationships, and the detrimental effects of negative mindsets on confidence and emotional regulation. These findings underscore the PERMA model's potential as a framework for enhancing well-being and performance, and highlights how the understanding of psychological interventions can lead to superior outcomes. Future research may explore the applicability of the PERMA model across different music genres and performance contexts.

References

Williams, A. (2025). Professional Soul Singers, Well-Being and Optimal Performance: A Qualitative Descriptive Study (Doctoral dissertation, Grand Canyon University).

Presenter Bio

Dr. Angelia Williams is a Performance Psychologist, Professional Vocal Coach, Researcher, and Independent Recording Artist. The Voice Studio of Angelia Williams was the recipient of the Nashville's Best Award in the category of Vocal Coach 2013-2024 consecutively and continues to work with singers/public speakers/performing artists in multiple markets and internationally.

VIRTUAL REALITY FOR PERFORMANCE PREPARATION: INCREASING FAMILIARITY AND EASING ANXIETY

CARLY J. WINGFIELD¹, PASQUALE BOTTALICO², CHARLES J. NUDELMAN³, YVONNE
GONZALES REDMAN⁴

¹ School of Music, Stetson University, DeLand, FL, USA

² Department of Speech and Hearing Science, University of Illinois Urbana-Champaign, Urbana, IL, USA

³ Department of Communication Sciences and Disorders, Syracuse University, Syracuse, NY, USA

⁴ School of Music, University of Illinois Urbana-Champaign, Urbana, IL, USA

Keywords: Virtual Reality; Singing; Performance Anxiety; Room Acoustics

Abstract

Singers often face challenges when adapting from rehearsal spaces to the acoustic conditions of performance venues. This study investigated whether rehearsing in a Virtual Reality (VR) simulation of a performance venue could help address this challenge. The effects of VR training were examined across four vocal parameters: vibrato extent, vibrato rate, quality ratio, and vibrato jitter. Singers' perceptions were assessed using an Acoustic Perception Survey (APS). Performance anxiety was also evaluated by comparing pre- and post-performance responses to a modified Kenny Music Performance Anxiety Inventory. Nine university students who were not voice majors were randomly assigned to either an experimental VR group or a control group. Both groups received equal preparation time to learn a song of their choice, which they performed in a chamber recital hall. Over the course of three voice lessons, the experimental group rehearsed using a VR simulation of the performance venue, while the control group practiced exclusively in a traditional voice studio. Results indicated that singers who used VR demonstrated improved adaptation to the recital hall's acoustics, and their post-performance responses indicated lower-than-anticipated levels of *Proximal Somatic Anxiety and Worry about their Performance*. Furthermore, participants perceived the VR simulation as more supportive than the traditional studio environment. These findings suggest that VR-based rehearsal may help singers prepare more effectively for unfamiliar performance spaces, potentially improving vocal outcomes and reducing performance anxiety. Overall, VR represents a promising tool for incorporating diverse acoustic environments into vocal practice.

References

C. J. Wingfield, "Virtual Reality for Vocal Training: Validation and Application of VR as a Tool for Performance Preparation," Ph.D. dissertation, University of Illinois Urbana-Champaign (2025).

P. Bottalico, C. J. Wingfield, C. J. Nudelman, A. Farina, J. D. Glasner, and Y. G. Redman, "Singing in virtual versus real rooms: Is it the same?," *J. Acoust. Soc. Am.* 158(5), 3645–3655 (2025).

Presenter Bio

Carly Wingfield is a Visiting Assistant Professor of Voice at Stetson University and a graduate of the University of Illinois Urbana-Champaign (2025). A Kate Neal Kinley Fellow, her research explores virtual reality for performance preparation. She is also a sought-after soprano, performing with Seraphic Fire, the Spoleto Festival USA Chorus, and the World Youth Choir.

Acknowledgments

This research was supported by the Kate Neal Kinley Fellowship. We also acknowledge the singers who participated in the study, the University of Illinois Urbana-Champaign College of Fine and Applied Arts for the use of the venues, and research assistants Asritha Tunuguntla, Bonnie Martin, and Jasmyne Ruffin for their valuable assistance with data collection and curation.

THE LIFE AND SOLO VOCAL WORKS OF CARLOTTA FERRARI DA LODI (1831-1907)

JENNIFER KREIDER

Simpson College, Indianola, IA, USA

Keywords: Voice; Female Composer; Italian art song; 19th century Italian music & literature

Abstract

Carlotta Ferrari da Lodi (1831-1907) was an accomplished Italian composer and writer. She wrote and published many solo vocal works, piano pieces, two mass settings, and three operas for which she also wrote the libretti. In addition to her musical compositions, she published a four-volume collection of her complete literary works, including her poetry, prose, libretti, and a memoir of her artistic life. Despite the quality and the breadth of her work, Ferrari is virtually forgotten today.

Learning more about Ferrari's fascinating life as a writer and musician reveals the challenges female creatives in Italy were faced with during the late 1800s. In her memoir, she continually speaks to her "bad luck" in business and instances of prejudice against her due to her gender. Despite these obstacles, Ferrari was determined to make her way in the musical world. She knew her worth and was unwilling to compromise for less than she deserved; occasionally her own stubbornness was an impediment to her renown. Nonetheless, Ferrari did achieve musical success during her lifetime, however fleeting.

Much of recent musicological scholarship focuses on the inclusion of previously excluded voices from our classical music canon, primarily female and BIPOC voices. In surveying the canon of Italian art song, it is difficult to name a female Italian composer, especially one from the nineteenth century. Ferrari's art songs are a testament to the fact that women in the nineteenth century were creating works worthy of being heard and studied. The reintroduction of Ferrari's music would not only be filling a gap in our musical cannon; her art songs would also function as helpful pedagogical tools for younger college students experimenting with the Italian language and bel canto style for the first time.

References

Kreider, Jennifer. "The Life and Solo Vocal Works of Carlotta Ferrari da Lodi." Doctoral diss., Indiana University, 2025. <https://hdl.handle.net/2022/33526>

Presenter Bio

Dr. Jennifer Kreider is an Assistant Professor in Music (Voice) at Simpson College. Her doctoral dissertation completed at Indiana University is the first long form document in English about the life and music of Carlotta Ferrari da Lodi. Jennifer is currently editing a two-volume anthology of Ferrari's art songs which will be published by Classical Vocal Reprints. In addition to teaching and research, Jennifer is an active performer of new music and chamber works.

MUSCULOSKELETAL HEALTH IN THE VOICE STUDIO**KOURTNEY R. AUSTIN**

Department of Music, University of Wisconsin-La Crosse, La Crosse, WI, USA

Keywords: e.g. Occupational Health; Musculoskeletal; Singing Health***Abstract***

Singing is physical work. Like other occupational groups, singers experience musculoskeletal demands associated with repetitive activity, sustained postures, physical workload, environmental conditions, and insufficient opportunities for recovery. Yet musculoskeletal health is often considered only when pain or injury interferes with singing, rather than as an essential component of occupational health and injury prevention for singers. Understanding these risks can help voice teachers better prepare students for the physical realities of a career in music.

This presentation examines musculoskeletal health for singers through the framework of occupational health in music. It considers the cumulative physical demands created not only by singing itself, but also by practice, rehearsal and performance schedules, travel, prolonged sitting and standing, carrying equipment or costumes, staging and choreography, and the increasingly varied physical expectations placed on contemporary performers. These demands may contribute to fatigue, discomfort, musculoskeletal pain, and injury, particularly when high workloads are combined with inadequate recovery.

The session will explore occupational risk and protective factors relevant to singers, including workload and load management, repetitive and sustained activity, conditioning, recovery, sleep, physical environment, and individual variability. Particular attention will be given to the ways in which educational and professional environments can either reduce or compound these risks.

Finally, the presentation will consider the role of the voice teacher within a broader occupational health model. Rather than diagnosing or treating musculoskeletal conditions, teachers can help singers develop health literacy, recognize emerging problems, understand the relationship between workload and recovery, and seek appropriate care when necessary. By approaching musculoskeletal health as an occupational concern rather than simply a technical one, voice educators can contribute to healthier training environments and help singers develop the knowledge and habits necessary to sustain long, healthy careers.

Presenter Bio

Dr. Kourtney Austin is a mezzo-soprano, educator, and performing arts health advocate. She currently serves as Assistant Professor of Voice and Choir at the University of Wisconsin–La Crosse. She holds a Ph.D. in Music from the University of North Texas with concentrations in Performing Arts Health and Voice Pedagogy, along with degrees from UMKC Conservatory, Northwest Missouri State University, and postgraduate work in Speech-Language Pathology at the University of Iowa.

**KEYNOTE:
LARYNGEAL MODELING AT IOWA**

RONALD C. SCHERER

Department of Communication Sciences and Disorders, Bowling Green State University,
Bowling Green, Ohio, USA

Keywords: Laryngeal Modelling, Model M5, Phonation

Abstract

Physical modeling of laryngeal airways has added to the understanding of human phonation through deeper explorations of pressure, airflows, and glottal geometry. The author was a student at the University of Iowa during the development of a series of physical laryngeal models and would like to share that history at this Iowa conference. There have been six models in this series, Models M1 through M6, where the first 5 were created at the University of Iowa. The significance of the models range from testing prior concepts and equations to expanding the modeling to a wider range of glottal shapes and sizes in order to gain a clearer understanding of the pushing and pulling forces on the vocal folds during phonation, and the aerodynamics and acoustics of phonation in general. The most complex of the models is M5 which has been run for a wide range of glottal angles, diameters, and transglottal pressures. Results have been obtained for both symmetric glottal shapes as well as oblique (slanted) glottal shapes. The M5 intraglottal surface pressures and corresponding transglottal pressures and glottal airflows have been incorporated into a two- and a three-mass model of phonation whereby the findings drive the vocal folds rather than using a form of the Bernoulli equation to determine the intraglottal surface pressures. The report is an historical orientation of these models that have been tied to the University of Iowa, with numerous examples of the gains from the modeling.

Presenter Bio

Ron Scherer, Ph.D., Distinguished Research Professor at Bowling Green State University, received his Ph.D. from the University of Iowa in 1981. He teaches voice disorders and voice and speech science courses. His research interests include the physiology, mechanics, and acoustics of basic, abnormal, and performance sound production, and physical and computer modeling of phonation.

Acknowledgments

Funding over the years has come from The Voice Foundation (initially) and NIH NIDCD.

THE EFFECT OF VOCAL FOLD GEOMETRIC VARIABLES ON AERODYNAMICS, ACOUSTICS, AND KINEMATICS IN PHYSICAL SELF-OSCILLATING VOCAL FOLD MODELS

NICHOLAS A. MAY¹, RONALD C. SCHERER²

¹ Department of Communication Sciences & Disorders, The University of Maine, Orono, ME, USA

² Department of Communication Sciences & Disorders, Bowling Green State University, Bowling Green, OH, USA

Keywords: Self-Oscillating Vocal Fold Models; M5; Geometric Variables

Abstract

Static and computational models have investigated the effects of geometric variables such as inferior and superior vocal fold surface angles (Li et al., 2006a), intraglottal angle (Li et al., 2006b), glottal entrance (Li et al., 2012) and exit (Scherer et al., 2001a) radii, and vertical vocal fold thickness (glottal duct length) (Li et al., 2018, 2021) on intraglottal pressures and phonation threshold pressure (PTP). However, the effects of these geometric variables on phonatory outcome measures such as PTP have not yet been empirically studied in a physical synthetic vocal fold model. Such research is essential to validate computational modeling results and to examine the effects of these previously unexamined vocal fold model geometric variables for purposes of model optimization. In the current study, modifications to the M5 geometry (Scherer et al., 2001b) were explored using physical single-layer isotropic silicone *self-oscillating vocal fold models* (SO-VFMs). The effect of inferior and superior vocal fold surface angles, entrance and exit radii, intraglottal convergence/divergence angle, vertical vocal fold thickness, and vocal fold length on glottal aerodynamics, acoustics, and kinematics were experimentally explored using a bench set-up similar to May et al. (2026a, 2026b) but without a vocal tract. Three levels of each variable within the range of expected human values (Nanayakkara, 2005) were examined and replicated in three identical batches of vocal fold models per experimental condition. Material properties were held constant. The effects of: 1) changing vertical glottal thickness given a uniform intraglottal angle, 2) changing intraglottal angle given a greater vertical glottal thickness, and 3) co-varying the inferior and superior vocal fold surface angles (i.e., raising or lowering both together to determine if f_0 changes were the result of changing mass or vocal fold surface angles), were also investigated. Modifications to M5 geometric variables, particularly vocal fold length and vertical thickness, influenced phonatory aerodynamics, acoustics, and kinematics. These results have implications for future vocal fold model optimization research.

References

- Li, S., Scherer, R. C., Fulcher, L. P., Wang, X., Qiu, L., Wan, M., & Wang, S. (2018). Effects of vertical glottal duct length on intraglottal pressures and phonation threshold pressure in the uniform glottis. *Journal of Voice*, 32(1), 8-22.
- Li, S., Scherer, R. C., & Wan, M. (2021). Effects of vertical glottal duct length on intraglottal pressures in the convergent glottis. *Applied Sciences*, 11(10), 4535.
- Li, S., Scherer, R. C., Wan, M., & Wang, S. (2012). The effect of entrance radii on intraglottal pressure distributions in the divergent glottis. *The Journal of the Acoustical Society of America*, 131(2), 1371-1377.
- Li, S., Scherer, R. C., Wan, M., Wang, S., & Wu, H. (2006a). Numerical study of the effects of inferior and superior vocal fold surface angles on vocal fold pressure distributions. *The Journal of the Acoustical Society of America*, 119(5), 3003-3010.
- Li, S., Scherer, R. C., Wan, M., Wang, S., & Wu, H. (2006b). The effect of glottal angle on intraglottal pressure. *The Journal of the Acoustical Society of America*, 119(1), 539-548.
- May, N. A., Scherer, R. C., and Meyer, D. P. (2006a). Self-Oscillating Vocal Fold Models Coupled to 3D-Printed Vocal Tracts, Part I: Aerodynamic Threshold Measures with Semi-Occluded Vocal Tract (SOVT) Tubes. *Journal of Voice*. <https://doi.org/10.1016/j.jvoice.2026.01.034>

May, N. A., Scherer, R. C., and Meyer, D. P. (2006b). Self-Oscillating Vocal Fold Models Coupled to 3D-Printed Vocal Tracts, Part II: Aerodynamics and Kinematics with and without Semi-Occluded Vocal Tract (SOVT) Tubes at Constant Low Flow Conditions. *Journal of Voice*. <https://doi.org/10.1016/j.jvoice.2026.01.041>

Nanayakkara, I. U. (2005). *Inferior and Superior Vocal Fold Surface Angles During Phonation* (Master's thesis, Bowling Green State University).

Scherer, R. C., De Witt, K. J., & Kucinski, B. R. (2001a). The effect of exit radii on intraglottal pressure distributions in the convergent glottis. *The Journal of the Acoustical Society of America*, 110(5), 2267-2269.

Scherer, R. C., Shinwari, D., De Witt, K. J., Zhang, C., Kucinski, B. R., & Afjeh, A. A. (2001b). Intraglottal pressure profiles for a symmetric and oblique glottis with a divergence angle of 10 degrees. *The Journal of the Acoustical Society of America*, 109(4), 1616-1630.

Presenter Bio

Dr. Nicholas May's research interests include physical synthetic self-oscillating vocal fold modeling; fluid-structure-acoustic interactions; semi-occluded vocal tract exercises; objective measurements of speech and voice; and interactions between voice and swallowing function. Clinically, Dr. May is a FEES (fiberoptic endoscopic evaluation of swallowing) endoscopist in the skilled nursing facility environment.

DO IT YOURSELF DOSIMETER FOR DETECTING ACOUSTIC MARKERS OF NEUROGENIC VOICE DISORDERS: A FEASIBILITY STUDY

ELISABETH RENKERT¹, PASQUALE BOTTALICO², CHARLES NUDELMAN³, RACHEL JONAS⁴, MARK FRITZ⁴, SANFORD ARCHER⁴, DIANA ORBELO⁵, KEIKO ISHIKAWA¹

¹ Dept of Communication Sciences and Disorders, Univ of Cincinnati, Cincinnati, Ohio, United States

² Dept of Speech and Hearing Sciences, Univ of Illinois Urbana-Champaign, Champaign, Illinois, United States

³ Dept of Communication Sciences and Disorders, Syracuse Univ, Syracuse, New York, United States

⁴ Dept of Otolaryngology, Head & Neck Surgery, UK Healthcare, Lexington, Kentucky, United States

⁵ Dept of Otolaryngology—Head & Neck Surgery, Mayo Clinic, Rochester, Minnesota, United States

Keywords: Voice dosimetry; ambulatory voice monitoring; neurogenic voice disorders; neurological voice disorders

Abstract

Voice dosimeters (VDs) detect vibration from the vocal folds, enabling monitoring of vocal dose in real-world environments with reduced susceptibility to environmental noise. Neurogenic Voice Disorders (NVDs), such as laryngeal dystonia (LD) and vocal tremor (VT), are characterized by intermittent phonatory breaks and greater variation in fundamental frequency and intensity, and these acoustic abnormalities can vary across different speaking contexts. As such, VDs may be well-suited for capturing these phonatory disruptions. This study examined the feasibility of using a previously validated Do-It-Yourself (DIY) dosimeter to detect acoustic abnormalities in LD and VT.

Four individuals with clinically confirmed NVDs and four age-matched, healthy speakers (HS) were recruited at UK Healthcare and the Cincinnati community. Participants produced (1) sustained /a/ and (2) CAPE-V sentences using both the DIY voice dosimeter and a headset microphone. Signals were processed using the python-based DIY Voice Acoustic Analysis software. Fundamental frequency standard deviation (f_0 SD), sound pressure level standard deviation (SPL SD), cepstral peak prominence smoothed (CPPS) and the quantity of zero frames within the speech sample were extracted. The ratio of 0.01s unvoiced frames to total frames within the speech sample were then calculated as a potential indicator of phonatory breaks.

During sustained /a/, mean f_0 SD and mean SPL SD were higher for the NVD group than HS group, and mean CPPS was lower for the NVD group than HS group. The median ratios of internal zero frames to total frames were higher for the NVD group than HS group across sustained /a/ and CAPE-V sentences.

Our findings suggest the potential for a DIY dosimeter to detect and monitor features of NVDs. However, this study is limited by a small sample size and restricted speech tasks. Future work should evaluate performance across broader speech contexts, examine sensitivity to symptom severity, and assess robustness to microphone placement variability.

References

- Bottalico, P., & Nudelman, C. J. (2023). Do-It-Yourself Voice Dosimeter Device: A Tutorial and Performance Results. *Journal of speech, language, and hearing research : JSLHR*, 66(7), 2149–2163. <https://doi.org/10.1044/2023.JSLHR-23-00060>
- Bottalico, P., Nudelman, C. J., Tellawi, Y. S., & Mendes, C. (2025). Do-It-Yourself Voice Acoustic Analysis: A Companion to the DIY Voice Dosimeter Device. *Journal of voice : official journal of the Voice Foundation*, S0892-1997(25)00398-4. Advance online publication. <https://doi.org/10.1016/j.jvoice.2025.09.032>
- Lester, R. A., Barkmeier-Kraemer, J., & Story, B. H. (2013). Physiologic and acoustic patterns of essential vocal tremor. *Journal of Voice*, 27(4), 422–432.

Pierce, J. L., Dwenger, K., Sharma, A., Jennings, S. G., Smith, M., & Barkmeier-Kraemer, J. (2026). A Comparison of Four Selected Acoustic Measures in Detecting Voice Quality Changes With Botulinum Toxin Treatment in Adductor-Type Laryngeal Dystonia. *American Journal of Speech-Language Pathology*, 35(3), 901-922.

Simonyan K, Barkmeier-Kraemer J, Blitzer A, Hallett M, Houde JF, Jacobson Kimberley T, Ozelius LJ, Pitman MJ, Richardson RM, Sharma N, Tanner K; The NIH/NIDCD Workshop on Research Priorities in Spasmodic Dysphonia/Laryngeal Dystonia. Laryngeal Dystonia: Multidisciplinary Update on Terminology, Pathophysiology, and Research Priorities. *Neurology*. 2021 May 25;96(21):989-1001. doi: 10.1212/WNL.00000000000011922. Epub 2021 Apr 15. PMID: 33858994; PMCID: PMC8205448.

Presenter Bio

Elisabeth Renkert is a speech-language pathologist and second year doctoral student at the University of Cincinnati within the department of Communication Sciences and disorders. Her research interests include neurogenic voice disorders, ambulatory monitoring, and skill transfer within voice therapy.

Acknowledgments

This project was made possible by the 2025-2026 Emerging Scientist Grant at the University of Kentucky.

CHANGES IN SOURCE-FILTER INTERACTION ACCOMPANYING A CHANGE IN REGISTER MECHANISM

PETER PABON¹, KATRIN NEUMANN², PHILIPP MATHMANN²

¹ Voice Quality Systems, Utrecht, The Netherlands

² Dept. of Phoniatics and Pedaudiology, University Hospital Münster, Münster, Germany

Keywords: Harmonic-formant interaction; VRP; Voice mapping; Counter tenor voice.

Abstract

This study, explores the acoustic evidence for the idea that a change in register mechanism, also implies a fundamental change in the way the vocal fold vibration is coupled to the supra and subglottal spaces. It is a hypothesis, formulated to explain differences in bandwidth, tuning curve symmetry, and dominant resonance mode (formant) that show up when sound spectra for the two register mechanisms are compared for identical pitch, sound level and vowel settings. Alterations in filtering characteristics with a change of mechanism are earlier observed and reported on, but the notion that these findings were not incidental, but part of a structural effect, became evident and got supported by substantial data, as byproduct of a study on countertenor voices. This study aimed at identifying the frequency locations within counter tenor voice M2 (falsetto/head register), where additional register-like transitions may occur as a result of strong harmonic-formant interactions. For the purpose of this study, mechanism specific spectral VRP recordings of 27 professional counter tenors were made, not only for M2, (the mechanism of interest) but as a control also for M1 (modal/chest register). To rate the harmonic-formant interaction experienced over the entire tonal and SPL range that is covered in each mechanism, three dedicated metrics were developed, estimating: (A) spectral dominance, (B) frequency selectivity, and (C) tuning curve symmetry. The features maps for these the metrics together evidence the following contrasting spectrum changes when a vowel /a/ is produced in M2 instead of M1:

- (I) In M2, F1 is seldom resolvable and becomes virtually invisible as a factor. The main resonance/mode that dominates the spectral power lays continuously in the frequency range of F2.
- (II) In M2, the tuning curve associated with F2 more resembles the shape of a sharp cutoff filter than that of a narrow band filter.

This curious phenomenon, raises issues that questions some fundamental starting points of our voice production models. It will be discussed how general the observed findings are and what the implications are when predictions are made based on models that do not consider this dependency.

Presenter Bio

After retiring as a teacher at the Institute of Sonology, Dr. Peter Pabon became even more involved in research and found more time to again innovate and further advance the voice analysis tools he developed earlier. His current activities still circle around the topic of VRP based mapping of voice quality, where the question which acoustical features characterize and differentiate individual voices, remains an enduring interest.

Disclosures

The VRP recording system, Voice Profiler, that Peter Pabon developed within his own firm Voice Quality Systems, is no longer commercially available. The dedicated software is currently available as freeware.

LOUDNESS VOICE MAPS

PETER PABON¹, CHRISTIAN T. HERBST^{2,3,4}¹ Voice Quality Systems, Utrecht, The Netherlands² Department of Vocal Studies, Mozarteum University, Mirabellplatz 1, 5020 Salzburg, Austria³ Department of Behavioral and Cognitive Biology, University of Vienna, Austria⁴ Department of Communication Sciences and Disorders, College of Liberal Arts and Sciences, University of Iowa, Iowa City, Iowa, USA**Keywords:** VRP; Voice mapping, Loudness.**Abstract**

Voice assessment traditionally relies on sound pressure level (SPL) measurements, which characterize acoustic output in the physical domain. However, the respective loudness level – a perceptual construct – may prove more informative for assessing voice in clinical and pedagogical settings. Considering both metrics and quantifying their difference yields "Excess Loudness Over SPL" (ELOS), a novel index of how much louder a sound is perceived relative to its actual sound pressure level. Addressing this, loudness-augmented voice maps were created for a cohort of 35 participants phonating in chest (M1) and falsetto (M2) register. For each voice map cell (each combination of fundamental frequency and SPL), loudness levels (L_N) were estimated using the ISO 532 loudness model. The isoparametric difference between L_N and respective SPL within each voice map cell was computed as "excess loudness over SPL" (ELOS), expressed in units of [phon-dB]. ELOS was mostly positive but systematically varying across each participant's voice map, overall indicating larger loudness levels for respective SPL. Larger ELOS values were found for trained vs. untrained singers and for M1 vs. M2 phonation. Loudness-augmentation of voice maps is a useful tool, reflecting how a change in SPL pays off in loudness independent of the maximum loudness levels reached.

References

C. T. Herbst and P. Pabon: "Loudness voice maps" Journal of the Acoustical Society of America, in press, <https://doi.org/10.1121/10.0046851>

Presenter Bio

After retiring as a teacher at the Institute of Sonology, Dr. Peter Pabon became even more involved in research and found more time to again innovate and further advance the voice analysis tools he developed earlier. His current activities still circle around the topic of VRP based mapping of voice quality, where the question which acoustical features characterize and differentiate individual voices, remains an enduring interest.

Disclosures

The VRP recording system, Voice Profiler, that Peter Pabon developed within his own firm Voice Quality Systems, is no longer commercially available. The dedicated software is currently available as freeware.

CONCURRENT FMRI, EXTRALARYNGEAL EMG, AND ACOUSTIC MEASUREMENT OF SPEECH PRODUCTION UNDER PSYCHOSOCIAL STRESS

MARK L. BERARDI¹, GUI N. DESOUZA², MARIA M. DIETRICH³

¹ Department of Communication Sciences and Disorders, University of Iowa, Iowa City, IA, USA

² Department of Electrical Engineering and Computer Science, University of Missouri, Columbia, MO, USA

³ Department of Psychiatry and Psychotherapy, University Hospital Bonn, Bonn, NRW, Germany

Keywords: e.g. MR Imaging; EMG; Stress; Speech

Abstract

Stress alters voice and speech production, but the neural and muscular mechanisms linking affective state to vocal output are rarely observed together. Electromyography and acoustic recording during functional imaging introduce artifact in all three signals, and few protocols acquire them concurrently during overt speech.

A protocol was implemented acquiring functional MRI, surface laryngeal EMG, and acoustic recordings simultaneously while participants produced speech under low- and high-stress instructional conditions. Thirty adults completed the protocol, with salivary cortisol and the PANAS collected to corroborate the manipulation.

Signal quality across modalities, artifact-handling procedures, and preliminary condition differences in acoustic measures and extralaryngeal activation are reported.

Concurrent acquisition relates affective state, extralaryngeal muscle activity, and the acoustic signal within the same speaker and utterance, supporting mechanistic accounts of how stress shapes communication.

Presenter Bio

Mark Berardi is a Research Scientist whose academic journey began in acoustical physics with applications in music, speech, and architectural acoustics. He earned his PhD from Michigan State University developing models for aging voice, vocal effort, and vocal fatigue. He completed postdoctoral fellowship at University Hospital Bonn, investigating neurobiological factors in vocal production.

TOWARDS ACCESSIBLE SPEECH MRI METHODS

SWATI RAMTILAK¹, DAVID MEYER^{2,3}, UTE GORKE⁴, SEAN FAIN^{5,1}, SAJAN LINGALA^{1,5}¹ Roy J. Carver Department of Biomedical Engineering, University of Iowa, Iowa City, Iowa² School of Music, University of Iowa, Iowa City, Iowa;³ Department of Communication Sciences and Disorders, University of Iowa, Iowa City, Iowa⁴Siemens Healthineers, USA⁵Department of Radiology, University of Iowa, Iowa City, Iowa**Abstract**

Speech production depends on the coordinated motion of the upper airway articulators (lips, tongue, jaw, velum, and larynx). This coordination varies with the speech task, so each task has different spatiotemporal demands. Sustained sounds hold the articulators in place for seconds, while consonant clusters and rapid speech involve movements in the order of tens of milliseconds [1]. MRI can image these dynamics non-invasively, with excellent soft-tissue contrast and full views of the vocal tract [1–3]. The central challenge is balancing spatial and temporal resolution well enough to capture fast articulator motion.

MRI scanners are characterized by their main magnetic field strength, measured in Tesla (T). Clinical systems typically run at 1.5T or 3T. Higher field strength produces more signal (higher signal-to-noise ratio, SNR), roughly in proportion to field strength. That extra signal can be traded for faster imaging or finer spatial resolution. Stronger, faster-switching gradients collect the data for each image in less time, allowing more frames per second and higher spatial resolution. A new 3T research scanner costs roughly \$3 million, and premium high-performance-gradient models can cost more, thus restricting these studies to well-resourced centers [4].

Lower-field systems such as 0.55T are cheaper and need far less liquid helium [4]. Newer dental dedicated MRI systems at low fields cost around 200-500K\$ [5,6]. These systems could make speech MRI more accessible for voice research. In this study, we evaluate capabilities of low-cost 0.55 T systems against high-performance high-cost 3 T systems for vocal tract shaping in speech production. Preliminary results will be presented at the symposium.

References

- Lingala SG, Sutton BP, Miquel ME, Nayak KS. Recommendations for real-time speech MRI. *J Magn Reson Imaging*. 2016;43(1):28–44. <https://doi.org/10.1002/jmri.24997>
- Pruthi T, Espy-Wilson CY, Story BH. Simulation and analysis of nasalized vowels based on magnetic resonance imaging data. *J Acoust Soc Am*. 2007;121:3858–3873. <https://doi.org/10.1121/1.2722220>
- Leppävuori M, Lammintausta E, Peuna A, et al. Characterizing vocal tract dimensions in the vocal modes using magnetic resonance imaging. *J Voice*. 2021;35:804.e27–804.e42. <https://doi.org/10.1016/j.jvoice.2020.01.015>
- Campbell-Washburn AE, Ramasawmy R, Restivo MC, et al. Opportunities in interventional and diagnostic imaging by using high-performance low-field-strength MRI. *Radiology*. 2019;293(2):384–393. <https://doi.org/10.1148/radiol.2019190452>.
- Ramachandran, Anupama, et al. "Abdominal MRI on a commercial 0.55 T system: initial evaluation and comparison to higher field strengths." *Academic radiology* 31.8 (2024): 3177-3190.
- Kelsey, Lauren J., et al. "Routine and advanced neurologic imaging at 0.55-T MRI: opportunities and challenges." *Radiographics* 45.3 (2025): e240076.

Presenter Bio

Swati Ramtilak is a graduate student in Dr Sajjan Lingala's lab

Acknowledgments

This work was supported by NIH under grant NIH NHLBI: R01 HL173483. A part of this work was conducted on an MRI instrument funded by NIH-S10 instrumentation grant: 1S10OD025025-01.

BUILDING AN OPEN 3D VOCAL TRACT MRI DATABASE OF SUSTAINED PHONATION: PAIRING EXPERT SEGMENTATION WITH DEEP LEARNING DRAFTS

PAYTON WESTPHAL¹, SUBIN ERATTAKALUNGARA², SARAH VIGMOSTAD¹, DAVID MEYER^{3,4*}, SAJAN GOUD LINGALA^{1,5*} (*CO SENIOR AUTHORS)

¹ Roy J. Carver Department of Biomedical Engineering, University of Iowa, Iowa City, Iowa

² Memorial Sloan Kettering Cancer Center, New York, USA

³ School of Music, University of Iowa, Iowa City, Iowa;

⁴ Department of Communication Sciences and Disorders, University of Iowa, Iowa City, Iowa

⁵ Department of Radiology, University of Iowa, Iowa City, Iowa

Abstract

Vocal tract shape underlies resonance, vowel quality, and the planning of voice therapy and surgery. Magnetic resonance imaging (MRI) can safely capture this shape during sustained phonation, but turning images into usable 3D airway models requires segmentation, which is slow. In our work, an expert vocologist needed roughly 40 minutes to 1 hour per volume. Few open-source MRI databases include expert-drawn segmentations [1,2], and to our knowledge none covers the English vowel inventory.

Our objectives were to (1) build an open-source database of 20 English-speaking subjects, each producing six sustained vowels (/a/, /i/, /ε/, /o/, /u/, /æ/), for 120 static 3D vocal tract segmented volumes, and (2) test whether a vocologist's expertise can be used more efficiently by pairing it with a deep learning model.

An expert vocologist (co senior author David Meyer) initially manually segmented seven subjects (42 volumes). These trained a baseline 3D U-Net [2], which produced draft segmentations for the remaining 13 subjects (78 volumes) in under five seconds each. The drafts showed consistent errors: missing airway in the pyriform sinuses and hypopharynx, and leakage past the soft palate, near the glottis, and into signal-void regions near the teeth. These are anatomically subtle areas that matter for laryngeal and pharyngeal resonance. Drafts are corrected by a trained annotator (first author Westphal) and finalized by the vocologist (co senior author David Meyer). Three of remaining 13 subjects are complete, and in an example case a correction took about five minutes versus up to an hour from scratch.

Next, the UNET model will be fine-tuned on the corrected volumes, updating only its final layers, and evaluated with region-specific Dice scores to see whether draft quality improves where errors are most common. Because this retraining is still in progress, results will be presented as preliminary.

Presented will be what 3D vocal tract segmentations look like across English vowels and how clinical expertise guides, rather than is replaced by automated tools. Further is how an open, expert-verified dataset could support teaching, acoustic modeling, and research on resonance and voice disorders. More broadly, the work suggests that a small number of targeted expert corrections can help grow shared resources without re-annotating everything by hand.

References

[1] Birkholz, P., Kürbis, S., Stone, S., Häsner, P., Blandin, R., & Fleischer, M. (2020). Printable 3D vocal tract shapes from MRI data and their acoustic and aerodynamic properties. *Scientific data*, 7(1), 255.

[2] Erattakulungara, S., Kelat, K., Burnham, K., Balbi, R., Gerard, S. E., Meyer, D., & Lingala, S. G. (2025). Open-source manually annotated vocal tract database for automatic segmentation from 3D MRI using deep learning: Benchmarking 2D and 3D convolutional and transformer networks. *Journal of voice*.

Presenter Bio

Payton Westphal is an undergraduate student conducting research in Dr Sajan Lingala's lab.

Acknowledgments

This work was supported by University of Iowa Office of Vice President's jump start P3 award. This work was conducted on an MRI instrument funded by NIH-S10 instrumentation grant: 1S10OD025025-01.

EMMA SEILER: AN OLD AND NEW LOOK AT SOPRANO FORMANT TUNING

DAVID MEYER^{1,2}, CHRISTIAN T. HERBST^{1,3}

¹ University of Iowa School of Music, Iowa City, Iowa, USA

² Department of Communication Sciences and Disorders, Iowa City, Iowa, USA

³ Department of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria (Christian T. Herbst)

Keywords: soprano singing; vowel modification; formant tuning; voice pedagogy

Abstract

Emma Seiler (1821–1886) was among the earliest singing pedagogues to integrate scientific observation with vocal instruction. A contemporary and collaborator of Hermann von Helmholtz, Seiler used laryngoscopic self-observation and emerging acoustic theory to develop recommendations for soprano registration and vowel modification. This presentation revisits her nineteenth-century recommendations through the lens of contemporary linear source–filter theory.

Drawing on Seiler’s 1861 German monograph and the English paraphrase published under her supervision, we compare her recommended pitch–vowel combinations and examine discrepancies between the texts. Because Seiler wrote before the International Phonetic Alphabet and sound recording, her intended vowels must be interpreted cautiously. We map plausible vowel equivalents onto modern acoustic estimates of the first and second vocal tract resonances and compare these with the fundamental frequency and harmonics across the soprano range.

The presentation illustrates how historical singing pedagogy can be examined using contemporary voice science, while acknowledging uncertainties arising from historical vowel descriptions, spoken-vowel reference data, and nineteenth-century pitch standards. Seiler’s work provides an early example of productive dialogue between vocal artistry and acoustic science.

Meyer, D., & Herbst, C. T. (2025). Emma Seiler: An old and new look at soprano formant tuning. *Journal of Singing*, 82(1), 67–75. <https://doi.org/10.53830/sing.00151>

References

1. Seiler, E. (1861). *Altes und Neues über die Ausbildung des Gesangorganes mit besonderer Rücksicht auf die Frauenstimme*. Leopold Voss.
2. Hillenbrand, J., Getty, L. A., Clark, M. J., & Wheeler, K. (1995). Acoustic characteristics of American English vowels. *The Journal of the Acoustical Society of America*, 97(5), 3099–3111. <https://doi.org/10.1121/1.409456>
3. Meyer, D., & Herbst, C. T. (2025). Emma Seiler: An old and new look at soprano formant tuning. *Journal of Singing*, 82(1), 67–75. <https://doi.org/10.53830/sing.00151>

Presenter Bio

David Meyer is Assistant Professor of Voice and Voice Science at the University of Iowa. An accomplished performer, teacher, clinician, and researcher, he studies singing voice acoustics and pedagogy. He co-chairs the NATS Voice Science Advisory Committee and received the prestigious Van L. Lawrence Fellowship in 2010.

Disclosures

Nothing to disclose.

KEYNOTE:
SCIENCE AND ART OF CHAOTIC VOCAL STYLES

MELISSA CROSS

New York City, NY, USA

Keywords: Extreme vocalization; vocal distortion; voice pedagogy; contemporary commercial music

Abstract

Screaming, growling, rasp, and other distorted vocal styles are essential expressive tools in many contemporary musical genres. Although these sounds are often perceived as aggressive, uncontrolled, or potentially harmful, their production involves complex interactions among vocal physiology, acoustics, learned motor behaviors, and artistic intention. Understanding these techniques requires moving beyond traditional definitions of beautiful or healthy singing to examine how singers intentionally create and control sounds that may appear chaotic.

Drawing on decades of experience training professional vocalists across rock, metal, and other contemporary styles, Melissa Cross will explore the relationship between the science and art of extreme vocal production. The presentation will consider distinctions between pitched phonation with added distortion and predominantly noise-like vocalizations, including the techniques commonly associated with fry screaming. Particular attention will be given to how vocal fold behavior, airflow, resonance, and coordination contribute to different vocal effects and how these behaviors can be developed through systematic training.

The presentation will also address the pedagogical challenges of teaching unconventional vocal styles. How can teachers distinguish intentional distortion from potentially problematic vocal behavior? What role do sensory awareness, breath management, and vocal conditioning play in developing reliable techniques? How can scientific understanding inform instruction without compromising the individuality and emotional authenticity that make these styles artistically compelling?

By connecting practical experience with contemporary voice science, this presentation will encourage researchers, clinicians, and educators to reconsider assumptions about vocal roughness, irregularity, and healthy voice production. Ultimately, the goal is to demonstrate how scientific inquiry and artistic exploration can work together to expand our understanding of the possibilities of the human voice.

Presenter Bio

Melissa Cross is an internationally recognized vocal coach and creator of *The Zen of Screaming*. Known for pioneering instruction in extreme vocal techniques, she has coached more than 250 recording artists. Her work bridges contemporary vocal performance, voice science, and pedagogy, emphasizing expressive freedom and sustainable vocal technique.

DISCLOSURES

Creator of The Zen of Screaming.

DEVELOPING THE ACOUSTIC VOICE HYPERFUNCTION INDEX FOR BRAZILIAN PORTUGUESE

TIAGO LIMA BICALHO CRUZ¹, LEONARDO LOPES²

¹ Federal University of Minas Gerais, Belo Horizonte, Minas Gerais, Brazil

² Federal University of Paraíba, João Pessoa, Paraíba, Brazil

Keywords: Vocal hyperfunction; Acoustic voice analysis; Relative fundamental frequency; Cepstral peak prominence

Abstract

Objective. To develop and preliminarily evaluate the Acoustic Voice Hyperfunction Index (AVHI), a multidimensional acoustic index for screening and monitoring tension-related voice behavior in Brazilian Portuguese, integrating cepstral, spectral, relative fundamental frequency (RFF), and relative-intensity information without requiring absolute sound pressure level calibration.

Methods. Recordings from 71 adults (51 women, 20 men; mean age 30.34 ± 13.83 years; range 19–70) included habitual and soft sustained /a/, counting from 1 to 10, and /afa/, /ifi/, and /ufu/ tokens. The AVHI combines reference-standardized Tension, Quality, and Spread components derived from RFF, cepstral, spectral, and relative-intensity measures. A preliminary local reference group comprised 10 speakers with typical auditory-perceptual ratings and CPPS within the reference range. Three judges rated overall voice deviation and strain using VoxMore; Judge 01 was used as the primary perceptual reference. Performance was explored across four RFF implementations. ROC analyses used leave-one-participant-out threshold selection.

Results. Using the primary TC-ROI RFF implementation, AVHI increased with perceptual overall severity (Spearman $\rho = 0.449$; Holm $p < 0.001$). Typical and moderate groups differed, whereas mild and moderate groups overlapped. For overall deviation, AVHI yielded an AUC of 0.833 (95% CI 0.682–0.951), with 83.6% sensitivity and 70.0% specificity. Discrimination for perceived strain was lower (AUC 0.651, 95% CI 0.510–0.788; sensitivity 70.0%, specificity 52.4%), consistent with limited interjudge strain agreement (ICC = 0.167). In the same 64 participants, AVHI and habitual /a/ CPPS both yielded an AUC of 0.788; added discrimination over CPPS was therefore not demonstrated. Relative-intensity computation allowed AVHI scoring without calibration audio or a sound-level-meter reading.

Conclusion. Preliminary findings support the feasibility of integrating complementary acoustic domains into a single screening and monitoring score. AVHI was associated with overall perceptual voice deviation, but evidence for strain-specific discrimination and incremental value beyond CPPS remains limited. The current reference sample is small, and clinical and longitudinal validation, larger recruitment, improved perceptual characterization of strain, and linkage to diagnosed hyperfunction are still needed. AVHI should be interpreted alongside clinical information rather than as a diagnostic test.

Presenter Bio

Tiago Lima Bicalho Cruz, PhD, SLP, is a professor at the Federal University of Minas Gerais, Brazil, and a voice scientist, speech-language pathologist, and singer. His research focuses on singing voice, acoustic analysis, computational voice assessment, vocal vibrato, and the development of open-source tools for voice science.

Disclosures

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this study.

VIBRATO RATE AND HALF-EXTENT IN WESTERN CLASSICAL SINGERS: CORPUS-BASED REFERENCE DISTRIBUTIONS

TIAGO LIMA BICALHO CRUZ¹, PEDRO AMARANTE ANDRADE^{2,3}, MANUEL BRANDNER⁴,
CHRISTIAN T. HERBST^{5,6}

¹ Federal University of Minas Gerais, Belo Horizonte, Brazil

² Curtin School of Allied Health, Curtin University, Perth, Western Australia, Australia

³ Adjunct Research Fellow, Medical School, Faculty of Health and Medical Sciences, The University of Western Australia, Perth, Australia

⁴ Independent Scholar

⁵ Department of Vocal Studies, Mozarteum University, Salzburg, Austria

⁶ Department of Communication Sciences and Disorders, College of Liberal Arts and Sciences, University of Iowa, Iowa City, Iowa, USA

Keywords: Vocal vibrato; Singing voice; Voice type; Commercial recordings

Abstract

Objective. To derive corpus-based reference distributions for vibrato rate and half-extent in Western classical singing and to test associations with voice type, score-relative pitch, professional taxonomy, and recording year.

Methods. One hundred fifty-one recordings of Ombra mai fu yielded 906 planned sustained-note excerpts. The Music.ai-separated excerpts were analyzed with VibratoScope 2.0.2; 896 outputs were available and 875 met eligibility. Gaussian generalized estimating equations with robust singer-clustered covariance modeled note-level median rate and half-extent. Models included voice type, linear and quadratic score-relative pitch, matched-pitch phrase context, recording year, and prespecified interactions. Singer-weighted percentiles were derived after summarizing notes within singer.

Results. Among 847 notes from 146 singers with known recording year, voice type was associated with median rate (Wald $\chi^2(7) = 30.96$, $p < 0.001$) and median half-extent ($\chi^2(7) = 97.37$, $p < 0.001$). Relative pitch was associated with half-extent ($\chi^2(2) = 191.73$, $p < 0.001$) but not rate ($p = 0.063$). The voice type $\times$ relative-pitch interaction was significant for half-extent ($\chi^2(14) = 37.18$, $p < 0.001$) but not rate ($p = 0.683$). Rate-year associations differed by voice type ($\chi^2(7) = 46.87$, $p < 0.001$). Half-extent showed a nonlinear year association in the primary model ($p = 0.005$), but this was not retained after excluding four singers recorded before 1930 ($p = 0.523$). Adult taxonomy was unrelated to rate ($p = 0.983$), while half-extent differences varied with year ($p = 0.034$).

Conclusion. Voice category and score-relative pitch accounted for important vibrato variation, with the half-extent association differing among voice types. Professional taxonomy did not define a simple monotonic gradient, and precise historical half-extent trajectories were sensitive to the earliest recordings. These findings argue against using a single universal target to interpret vibrato and support evaluating rate and half-extent in relation to voice type and context in research and pedagogy. The singer-weighted distributions are descriptive corpus references rather than clinical norms.

Presenter Bio

Tiago Lima Bicalho Cruz, PhD, SLP, is a professor at the Federal University of Minas Gerais, Brazil, and a voice scientist, speech-language pathologist, and singer. His research focuses on singing voice, acoustic analysis, computational voice assessment, vocal vibrato, and the development of open-source tools for voice science.

Disclosures

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this study.

BEYOND LANGUAGE: ARTICULATORY SETTINGS IN MULTILINGUAL AND CROSS-GENRE SINGING

LORI ŞEN

Voice Division, Shenandoah University, Winchester, Virginia, USA

Keywords: articulatory settings; vocal tract postures; multilingual singing; cross-genre singing

Abstract

Articulatory settings are language-specific habitual postures of the vocal tract, including the tongue, lips, jaw, velum, and pharynx, adopted during interspeech rest positions. Empirical imaging studies have demonstrated systematic cross-linguistic variation in these postures (Gick et al., 2004; Wilson & Gick, 2014; Benitez et al., 2014; Badin et al., 2024). Despite growing evidence for language-specific articulatory settings in speech production, their implications for voice pedagogy and singing remain largely unexplored.

This presentation examines how habitual speech postures may transfer into singing, potentially influencing resonance strategies, vowel and consonant production, phonatory efficiency, and vocal ease. Singers performing in non-native languages may retain articulatory configurations associated with their native language, affecting their adaptation to unfamiliar phonetic and stylistic demands.

Extending this framework to cross-genre vocal training, the presentation considers whether singers may develop habitual vocal tract configurations associated with their primary singing language and genre. Just as speakers may carry native-language articulatory habits into a second language, singers may retain familiar configurations when transitioning between languages, as well as classical, musical theatre, and contemporary commercial styles.

Drawing parallels with second-language acquisition and accent modification, the presentation explores how awareness of habitual articulatory tendencies, supported by biofeedback and targeted exercises, may facilitate vocal adaptability across languages and genres.

By integrating linguistics, phonetics, voice science, and vocal pedagogy, this presentation proposes a framework for investigating habitual vocal tract configurations in singing. Future interdisciplinary research is needed to evaluate their potential applications in evidence-based voice training, vocal habilitation, and rehabilitation.

References

- Badin, P., Swallis, T. R., Tabain, M., & Lamalle, L. (2024). Bilinguals from larynx to lips: Exploring bilingual articulatory strategies with anatomic MRI data. *Language and Speech*. Advance online publication. <https://doi.org/10.1177/00238309231224790>
- Benítez, A., Ramanarayanan, V., Goldstein, L., & Narayanan, S. (2014). A real-time MRI study of articulatory setting in second language speech. In *Proceedings of Interspeech 2014* (pp. 701–705). International Speech Communication Association.
- Boyce, S. E., Hamilton, S. M., & Rivera-Campos, A. (2016). Acquiring rhoticity across languages: An ultrasound study of differentiating tongue movements. *Clinical Linguistics & Phonetics*, 30(3–5), 174–201. <https://doi.org/10.3109/02699206.2015.1127999>
- Dediu, D., Moisik, S. R., Baetsen, W. A., Bosman, A. M., & Waters-Rist, A. L. (2021). The vocal tract as a time machine: Inferences about past speech and language from the anatomy of the speech organs. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 376(1824), 20200192. <https://doi.org/10.1098/rstb.2020.0192>
- Foss, D. J., & Hakes, D. T. (1978). *Psycholinguistics: An introduction to the psychology of language*. Prentice-Hall.
- Gick, B., Wilson, I., Koch, K., & Cook, C. (2004). Language-specific articulatory settings: Evidence from inter-utterance rest position. *Phonetica*, 61(4), 220–233.

Islam, J., de Boer, G., & Gick, B. (2025). Velum movement in speech and inter-speech pause intervals: A cineradiographic study of French and English speech. *Phonetica*, 82(4), 247–270. <https://doi.org/10.1515/phon-2024-0052>

Laver, J. (1980). *The phonetic description of voice quality*. Cambridge University Press.

McKinney, R. (2019). *Here's how to do accent modification: A manual for speech-language pathologists*. Plural Publishing.

Moisik, S. R., Czyżkowska-Higgins, E., & Esling, J. H. (2019). Phonological potentials and the lower vocal tract. *Journal of the International Phonetic Association*, 51(1), 1–35. <https://doi.org/10.1017/S0025100318000403>

Tilsen, S., Spincemaille, P., Xu, B., Doerschuk, P., Luh, W.-M., Feldman, E., & Wang, Y. (2016). Anticipatory posturing of the vocal tract reveals dissociation of speech movement plans from linguistic units. *PLOS ONE*, 11(1), e0146813. <https://doi.org/10.1371/journal.pone.0146813>

Wilson, I. L. (2006). *Articulatory settings of French and English monolingual and bilingual speakers* (Doctoral dissertation, University of British Columbia).

Wilson, I., & Gick, B. (2014). Bilinguals use language-specific articulatory settings. *Journal of Speech, Language, and Hearing Research*, 57(2), 361–373.

Presenter Bio

Turkish mezzo-soprano and Fulbright alumna Dr. Lori Şen is a leading authority on Sephardic Art Song, as well as a performer and scholar specializing in vocal literature, pedagogy, and voice science. With a background in physics, she bridges art and science in her research. Dr. Şen is Assistant Professor of Vocal Pedagogy at Shenandoah University.

PRELIMINARY OVERVIEW OF SOVTE CUING AND INSTRUCTION

SOPHIA DOVE, RONALD C. SCHERER

Department of Communication Science and Disorders, Bowling Green State University, Bowling Green, Ohio, USA

Keywords: Pedagogy; Clinical Voice; SOVTE; Implementation Science**Abstract**

Semi-occluded vocal tract exercises (SOVTEs) are a popular class of voice training and rehabilitative tools. They are formed by the voice user maintaining continuous phonation with a partial or oscillating occlusion within the vocal tract. While the theorized and observed benefits of SOVTEs are numerous (Titze, 2006), studies related to their impact on voice production parameters, such as electroglottographic (EGG) measures of vocal fold contact quotient, are inconsistent from study to study. Previous investigations have suggested that instructing participants on the sensations and goals of SOVTE use may impact the outcome measures as compared with participants not instructed in their use (Gaskill and Quinney, 2012). Several clinical and pedagogical instructors have authored valuable guides on SOVTE cuing and suggested instructions, but a comprehensive list of suggested protocols has not yet been compiled (Bhatt et al., 2025). Thus, a review of instructions found in published studies and discussion on themes found in the extant instructional literature will be reviewed in the hopes that a consensus can be reached in future empirical studies regarding the instruction and cueing of this class of voice exercises.

References

- Titze, I. R. (2006). Voice training and therapy with a semi-occluded vocal tract: rationale and scientific underpinnings. *Journal of Speech, Language, and Hearing Research*, 49(2), 448-459.
- Gaskill, C. S., & Quinney, D. M. (2012). The effect of resonance tubes on glottal contact quotient with and without task instruction: a comparison of trained and untrained voices. *Journal of Voice*, 26(3), e79-e93. <https://doi.org/10.1016/j.jvoice.2011.03.003>
- Bhatt, S., Searce, L., Frank-Ito, D., Nixon, T., & Umstead, K. A. (2025). A human-centered design approach to SOVTE straw phonation instruction. *Journal of Voice*, 39(4), 1139-e1. <https://doi.org/10.1016/j.jvoice.2023.01.023>

Presenter Bio

Sophia Dove, a recent graduate of Shenandoah University (Master's in Voice Pedagogy, '23), is a current Ph.D. student in Communication Sciences and Disorders at BGSU under the mentorship of Dr. Ronald Scherer. Her research interests lie in the phenomena of vibrato and vocal tremor, and in practical application of SOVT for pedagogues and speech pathologists alike.

Disclosures

The authors have no disclosures to make.

SINGING SAVVY: SOMATICS FOR THE 21ST CENTURY SINGER

ELIZABETH (LILY) THOMPSON

School of Music, Illinois State University, Normal, IL, USA

Keywords: voice; pedagogy; somatics

Abstract

The word ‘somatics’ derives its root from the Greek ‘soma,’ meaning body, and is the study of the body in movement. For singers in the 21st century, somatic practices provide a vital framework for building physical awareness, supporting technical skills, managing performance anxiety, and balancing the varied demands of a modern music career. In the digital age, we all spend portions of our day communicating remotely (text messages, emails, voice/video memos, etc.) and existing in a world that often keeps us seated and stationary. And yet this contrasts with the basic undertaking of all musicians, which is to move. It is profoundly beneficial, then, to train our embodied instruments purposefully, building an understanding of how our bodies move in music-making and how we move in the world. Somatic studies provide us with this foundation.

As a singer, applied voice teacher, and vocal pedagogy instructor, my work explores these somatic strategies for singers, particularly as a tool for mitigating stress-responses in the body. Somatic explorations – such as those offered through Body Mapping, Alexander Technique, Feldenkreis Method, yoga, and others – serve as an effective support for students’ music-making by empowering them with awareness and freedom of movement. Singers with little developed awareness of their bodies or their singing sensations can learn to build those connections. In this session, examples of body mapping and mind-body awareness integration will be presented. Participants will be guided through movement explorations to help them embody that information.

Presenter Bio

Dr. Lily Thompson is a well-respected vocal pedagogue with a passion for student-centric learning, emphasizing skills which provide a technical foundation for thoughtful expression and vocal longevity. Specializations include the trauma-informed voice studio and somatic practices for musicians. She is a Licensed Body Mapping Educator Trainee through the Association for Body Mapping Education (ABME).

ZWISCHENFACH: AN EXPLORATION OF THE IN-BETWEEN

GENEIL PERKINS

Schwob School of Music, Columbus State University, Georgia, USA

Keywords: Pedagogy; Repertoire; Voice Categorization

Abstract

Zwischenfach is a relatively underexamined voice category within the German *Fach* system, yet recognizing it as a distinct voice type may have important implications for vocal pedagogy, repertoire selection, and professional development. This presentation will examine the historical and pedagogical context of Zwischenfach and proposes criteria for identifying voices that demonstrate its characteristic qualities. An overview of the broader German *Fach* system provides context for understanding the development and function of the Zwischenfach classification. Examples of professional singers whose voices exhibit Zwischenfach characteristics are presented to illustrate the practical application of these criteria.

Recognizing Zwischenfach as a legitimate vocal category may help teachers and singers make more informed decisions regarding vocal development, repertoire, and career planning. The presentation also considers repertoire appropriate for Zwischenfach voices at beginning, intermediate, and advanced stages of training and professional development. By bringing greater attention to this often-overlooked category, this research aims to provide voice teachers and singers with a framework for more accurately understanding, developing, and programming for Zwischenfach voices.

References

Perkins, Geneil Marie. "Zwischenfach: An Exploration of the In-Between." IUScholarWorks, 2025. <https://hdl.handle.net/2022/33568>.

Presenter Bio

Geneil Perkins is Lecturer of Voice at the Schwob School of Music at Columbus State University and holds a Doctorate in Voice from the Jacobs School of Music at Indiana University. A professional singer in opera and choral music, Geneil is passionate about both teaching and performing, with expertise in vocal pedagogy and performance.

MORE THAN SCREAMING: PRACTICAL USES FOR VOCAL DISTORTIONS

NICOLÁS HORMAZÁBAL

New York Vocal Coaching, NYC, NY, USA

Keywords: Vocal Pedagogy; Vocal Distortions

Abstract

For many years, vocal distortions were considered potentially harmful to the voice. In recent decades, however, this perspective has begun to shift thanks to the work of professionals dedicated to researching, understanding, and teaching these techniques, contributing to a growing interest in the topic within the voice community.

Although we have made considerable progress, there is still much work to be done, particularly in establishing a shared vocabulary, as differences persist among the definitions and approaches used by various voice teachers and authors.

This presentation aims to propose basic definitions of vocal distortions and share practical pedagogical applications that explore their usefulness beyond stylistic expression.

Presenter Bio

Nicolás Hormazábal is a Chilean voice teacher at New York Vocal Coaching specializing in vocal distortion and contemporary singing. A recipient of PAVA's 2024 Best Interactive Workshop award, he combines teaching, performance, and science-based pedagogy to explore the artistic and pedagogical applications of vocal distortions.