The Voice and Voice Therapy

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From Dan to his sister, Barbara Boone Brueggemann, who typed the raw manuscripts of the first two editions of this textbook.

From Stephen to his wife, Patty, and his family.

From Shelley to her mother, Sarah Von Berg, an extraordinary speech pathologist and mentor.

From Richard to his wife, Amanda, and his twin daughters, Kaitlyn and Brooklyn, whose voices fill his heart with joy.
In Memoriam

DANIEL R. BOONE was born in Chicago, IL on October 30, 1927 and died suddenly on October 27th, 2018, three days shy of his 91st birthday. On the week of his passing, Dan was the keynote speaker at a voice and speech conference in Dallas. He had just published a new book featuring vignettes covering more than 60 years of aphasia, speech, and voice practice. Dan was on top of his game until the very end.

Dan graduated with a BA in speech-language pathology (with a minor in psychology) from the University of Redlands in 1951. From 1951–1953, he worked as a speech-language pathologist at the Long Beach VA Hospital with veterans of either WW II or the Korean War. He subsequently received both an MA (1954) and a PhD (1958) from Western Reserve University in Cleveland.

Dan had a series of academic appointments: Assistant Professor at Western Reserve University, 1960–1963; Associate Professor, University of Kansas Medical Center, 1963–1966; Professor, University of Denver, 1966–1973; Professor, University of Arizona, 1973–1988 and Professor Emeritus, 1988–present. For the first 20 years of his professional career, Dan was active clinically and in research with various neurogenic disorders. With the success of his voice text, *The Voice and Voice Therapy*, first published in 1971, he devoted the last 40-plus years of his career to voice disorders and treatment. As a writer, Dan authored over 100 professional articles and 18 books. In both Kansas and Colorado, he was elected president of that state’s speech and hearing association. He served both as Vice President and President of the American Speech, Language, and Hearing Association (ASHA), receiving both Fellowship and Honors from that organization.

In the prologue to this edition, Dan presents a historical personal overview of the field of voice disorders and their treatments, as well as a rich history of the evolution of this textbook. We trust you will find it as interesting as we do.

It was our privilege to know Dan as a mentor, colleague, and dear friend. May his legacy be a lasting one.

*Stephen, Shelley, and Richard*
About the Authors

DANIEL R. BOONE celebrated his 60th year as a speech-language pathologist with the publishing of this tenth edition of *The Voice and Voice Therapy*. Dr. Boone held professorships over the years at Case Western Reserve University, University of Kansas Medical Center, University of Denver, and the University of Arizona (where he was a professor emeritus). Dr. Boone was a former president of the American Speech-Language-Hearing Association and held both a Fellowship and the Honors of that organization. He was the author of over 100 publications and was well known nationally and internationally for his many workshop presentations. Dr. Boone served as consultant to the Parkinson Voice Project in Dallas, TX, from 2011 until his death. Dr. Boone was perhaps best known for his love of his students and turning them on to the excitement of clinical voice practice.

STEPHEN C. McFARLANE is a professor emeritus at the School of Medicine at the University of Nevada, Reno. He was awarded ASHA Fellowship in 1982 and ASHA Honors in 1999. He received both his B.S. and M.S. degrees from Portland State University and his Ph.D. degree from the University of Washington. Dr. McFarlane has a long history of research interests in the area of voice disorders. Study of the outcomes from voice therapy and the development of new treatment techniques is of particular interest. His scholarly work has been published in dozens of books and journals, among them *Seminars in Speech and Language; American Journal of Speech Language Pathology; Phonoscope; and Current Opinion in Otolaryngology & Head and Neck Surgery*.

SHELLEY L. VON BERG teaches, practices, and researches in the areas of voice, dysphagia, and motor speech disorders in adults and children in the Department of Communication Sciences and Disorders at California State University, Chico, where she holds the rank of Professor. She earned her M.S. and Ph.D. degrees from the School of Medicine at the University of Nevada, Reno. She has presented on the assessment and intervention of neurogenic speech-language disorders nationally and abroad. She also teaches abroad on occasion. Dr. Von Berg has been published in the ASHA *Leader Series; Unmasking Voice Disorders; Language, Speech, and Hearing Services in Schools; Current Opinion in Otolaryngology & Head and Neck Surgery; Cleft Palate–Craniofacial Journal; and AAC Journal*.

RICHARD I. ZRAICK holds the rank of Professor and is the Director of the School of Communication Sciences and Disorders at the University of Central Florida. He was awarded ASHA Fellowship in 2014. He earned his doctorate at Arizona State University. Dr. Zraick is a clinician and teacher-scholar with over 30 years of experience in clinical practice and academia. His scholarship focuses on voice disorders, speech and voice perception, interprofessional education, healthcare simulation, and health communication. He regularly speaks about these topics at state, regional, national, and international scientific and professional conventions.
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Preface

New to This Edition

From the first publication of *The Voice and Voice Therapy* in 1971, the authors have attempted to maintain the book’s relevance to students and voice clinicians alike. Each edition has incorporated the most current scientific evidence from a variety of disciplines that supports the behavioral approaches to voice assessment and intervention that are core to the text. In this tenth edition, videos demonstrating voice assessment and Voice Facilitation Approaches appear liberally throughout the chapters, accompanied by clinically relevant sidebars that guide the reader through a series of thought-provoking exercises illustrating the principles of voice anatomy and mechanics. The tenth edition also incorporates hundreds of Self-Check quizzes that map onto the chapters’ learning outcomes. Each quiz is followed by feedback for all correct and incorrect answers. These pedagogical additions, along with the end-of-chapter Praxis Questions, help support the book’s use in the classroom and clinic. The culmination of these elements ensures that students and their instructors, or clinicians and their colleagues, have the most current resources they need for voice and voice related disorders in a single package. Some chapter-by-chapter highlights include:

- Chapter 1, “An Introduction to Voice Disorders and Their Management,” features current data on the incidence and prevalence of voice disorders in the general population and in specific populations. There are also expanded discussions of the classification of voice disorders and of the various approaches to managing the person with dysphonia.

- Chapter 2, “Normal Voice: Anatomy and Physiology Throughout the Lifespan,” has been expanded considerably. It features a more comprehensive description of the anatomy and physiology of normal voice production. The detailed, colored anatomical illustrations and accompanying captions make it easy for the reader to “put it all together.” This chapter can stand alone, thus eliminating the need for students, instructors, or clinicians to refer to outside source material.

- Chapter 3, “Functional Voice Disorders,” presents practical approaches to identifying and managing behaviorally based voice disorders across the age spectrum. The chapter includes expanded discussions of excessive laryngeal muscle tension and the benign laryngeal pathology that may develop as a result, as well as voice disorders with a psycho-emotional basis or overlay. Special attention is given to the emotional and/or behavioral issues that might result in children with functional voice disorders. We also review evidence-based practice (EBP) studies supporting the value of our Voice Facilitating Approaches in treating persons with functional or psychogenic dysphonia.

- Chapter 4, “Organic Voice Disorders,” presents practical approaches to identifying and managing organic voice disorders. The chapter includes significant updates on the risks for, and assessment and treatment of, gastroesophageal reflux diseases and laryngopharyngeal reflux. Endocrine changes and juvenile recurrent respiratory papilloma have also been expanded. We present current literature on the medical management of all organic disorders and on the role of the voice clinician in evaluation and therapy.
• Chapter 5, “Neurogenic Voice Disorders,” presents the latest research in the behavioral, pharmacological, and surgical management of neurogenic voice disorders. Emphasis is placed on interventions for unilateral vocal fold paralysis and adductor spasmodic dysphonia. We also review numerous evidence-based practice (EBP) studies supporting the value of our Voice Facilitating Approaches in treating the respiration, phonation, and resonance subsystems in persons with dysarthria. Behavioral approaches that increase the respiratory support and intelligibility in Parkinson’s disease are described and supported by strong clinical research.

• Chapter 6, “Evaluation of the Voice,” has been updated extensively. It features the latest approaches to the auditory-perceptual evaluation of the voice and to assessment of voice-related quality of life. Multiple case studies illustrate both instrumental and noninstrumental assessment of the voice across medical and educational settings. These case studies also provide a framework for report writing and special considerations for voice populations across the lifespan. New figures illustrate instrumental approaches to identifying and quantifying voice and resonance disorders. Over a dozen new tables present the student and clinician with normative data across the lifespan for a variety of acoustic, aerodynamic, and related voice measures. This chapter can stand alone, thus eliminating the need for students, instructors, or clinicians to refer to outside source material.

• Chapter 7, “Voice Facilitating Approaches,” continues to be the bedrock of this textbook. We have retained our core set of 25 Voice Facilitating Approaches and present the latest evidence-based practice (EBP) studies supporting their value in treating persons with dysphonia. Many of the cases illustrating the approaches have been updated to reflect the types of patients seen in current clinical practice, including applications for audiovisual feedback in therapy. We also discuss current literature on patient compliance and barriers to treatment.

• Chapter 8, “Therapy for Special Patient Populations,” features expanded discussions of the identification and management of children, adolescents, and older adults with dysphonia. In particular, we discuss in greater detail the professional voice user, notably educators, and the management of dysphonia in this increasing population of patients. We discuss in more detail the management of dysphonia in children and adults with hearing impairment and in those with a variety of respiratory-based conditions. The section on voice, speech and communication style adaptations for those pursuing gender identity change has also been expanded.

• Chapter 9, “Management and Therapy Following Laryngeal Cancer,” features detailed discussion of the medical management of patients with laryngeal cancer and the role of the voice clinician in evaluation and therapy. The illustrations and photographs that accompany the chapter are powerful learning tools for the student and clinician and can also serve as effective teaching tools for the patient. Communication options post laryngectomy are discussed in detail, including the artificial larynx, esophageal speech, and tracheoesophageal speech.

• Chapter 10, “Resonance Disorders,” features both the instrumental and noninstrumental assessment of persons with disorders of nasal or oral resonance. Hypernasality, hyponasality, and assimilative nasality are discussed in depth, along with medical and behavioral approaches to each disorder. We have expanded the chapter’s discussion of the team management of persons with cleft palate speech. Application of our Voice Facilitating Approaches to treatment of resonance disorders is illustrated.
Close to 1,200 references to other studies are included throughout the text. Cardinal literature from the past 40 years of voice science and care is included, as well as the most current literature from a variety of disciplines. Greater than half the references are new in this edition, with the majority representing advances in our field from the year 2012 to the present.

All new pedagogical elements supporting the use of the book for teaching include the following:

- The Learning Objectives at the beginning of each chapter have been expanded.
- Self-check multiple-choice quizzes are embedded in each chapter, complete with answer feedback for all correct and incorrect answers.
- Clinical Sidebars reinforce clinical application of material.
- Clinical Concepts at the end of select chapters reflect many of the learning objectives.
- Guided Reading exercises at the end of select chapters reference key clinical articles.
- Multiple-choice questions (Preparing for the PRAXIS™) at the end of select chapters help readers master the type of content covered in the Praxis II™ examination in speech-language pathology.
- An updated and robust instructor resource package, contains a wealth of supplemental materials, including PowerPoint slides for each chapter, an instructor resource manual, and a test bank.

**Enhanced Pearson eText**

The tenth edition is available as an Enhanced Pearson eText, emphasizing student-centered learning, with the following features:

- Video Examples. Embedded videos provide an illustration of a key principle or concept in action. These video examples show the authors demonstrating the use of Voice Facilitating Approaches with persons with voice disorders.
- Self-Checks. In each chapter, self-check quizzes help assess how well learners have mastered the content. The self-checks are made up of self-grading multiple-choice items that not only provide feedback on whether questions are answered correctly or incorrectly, but also provide rationales for both correct and incorrect answers.
- Preparing for the PRAXIS™. Every chapter ends with an exercise that gives learners an opportunity to answer multiple-choice questions similar to those that appear on many teacher licensure tests. Feedback is provided.

We are fascinated by the human voice and intrigued by the art and science of voice therapy. As the great American poet Henry Wadsworth Longfellow wrote,

“*Oh, there is something in that voice that reaches the innermost recesses of my spirit!*”

We invite you to join us as lifelong students of the human voice, and we hope that while you read this edition, you will share the passion we had for writing it.

Daniel R. Boone
Stephen C. McFarlane
Shelley L. Von Berg
Richard I. Zraick
We would like to thank our reviewers: Ramesh Bettagere, University of Southern Mississippi; Myna L. Burks, Jackson State University; Kenneth Tom, California State University - Fullerton; we’d also like to thank Nancy Solomon, Walter Reed National Military Medical Center, for her suggestions regarding the book’s content. This book contains material produced with our valued colleagues, as follows: (i) The Laryngeal Pathology Photo Gallery and Laryngeal Pathology Video Library are from the Voice and Swallowing Center in the Department of Otolaryngology—Head and Neck Surgery at the University of Arkansas for Medical Sciences (UAMS) (Little Rock, Arkansas). We are grateful to Dr. Ozlem Tulunay-Ugur for allowing their inclusion. (ii) The Voice Facilitating Approaches videos would not have been possible without the expertise of Mark Gandolfo and his team in Media Design and Production at Teaching and Learning Technologies at the University of Nevada, Reno. The medical illustrations were generated by the gifted hands of Maury Aaseng and Eiliana Hernandez. Sara Gray assisted with manuscript preparation. Douglas Kucera provided eagle-eyed manuscript scrutiny.

Daniel R. Boone
Stephen C. McFarlane
Shelley L. Von Berg
Richard I. Zraick
The Voice and Voice Therapy was first published by Prentice-Hall in 1971, emerging before cellphones or any hint of help from digital technology. Much of the early voice literature was dominated by otolaryngology for “organic” voice problems and by psychiatry for “functional” voice problems. Much of the voice disorders literature in the middle-1960s and earlier references were based on this organic-functional dichotomy. Prominent in the speech pathology literature were two “organic” voice disorders: (1) resonance problems with focus given to hypernasality and cleft palate, and (2) the clinical management after laryngectomy centered on the teaching of esophageal speech.

The “functional” voice disorders literature in the 1960s was based on the premise of dysphonias being caused by continuous abuse and misuse of the voice. Reactive to such excessive vocal effort, vocal fold tissue changes could develop, producing such physical lesions as nodules, polyps, or contact ulcers. However, many children and adults with such hyperfunctional voice problems seen in our clinics showed no laryngeal tissue changes. Their common voice problems were alterations in loudness, inappropriate pitch, poor voice quality, and faulty resonance.

As physicians began referring more people with either “organic” or “functional” voice disorders, the typical speech-language pathologist (SLP) experienced a larger caseload of patients with voice disorders. With this growing demand for voice therapy, many SLPs increased their search for more knowledge about voice disorders and their treatment. Literature search was supplemented by increasing attendance at voice disorder workshops scattered around the country. I can well remember attending such workshops—receiving excellent descriptions of the vocal mechanisms, but sorely lacking about voice therapy strategies and demonstrations of therapy procedures.

As a young professor in the 1960s teaching voice disorders, I developed a voice therapy file for each of three clinical voice components: respiration, phonation, and resonance disorders. My sources for the therapy procedures came from the workshops, from a scant literature including clinical texts, from other SLPs and voice scientists in my profession, from drama and singing teachers, and observations of a few superior users of voice. Since there were no smartphones, emails, web pages, nor Google-type resources available for therapy suggestions, my therapy file showed me what to do and how to do it.

I used this therapy file and other parts of my voice course materials when writing The Voice and Voice Therapy. I selected 25 therapy techniques, labeling them in the text as “Facilitating Techniques.” Four subheadings under each technique illustrated the kind of problem for which the approach could be useful, its procedures, a case history example, and an evaluation of the approach. The SLP would apply a therapy technique with the patient. If it worked, it would remain as part of the therapy regimen. If it were not helpful, it was replaced by another of the techniques. The 25 facilitating approaches became a feature of the first edition and have proved popular in all editions since. Incidentally, Prentice-Hall informed me many years ago that this therapy chapter was probably the most photocopied chapter in their total inventory of texts.
While the varying lists of 25 voice facilitating approaches have grown over the years, the relevance of The Voice and Voice Therapy has grown remarkably. As each new invited coauthor brought his or her expertise to the conceptualizing and writing of the book, the text continually grew. Now, this tenth edition presents cutting-edge references supporting the latest information on normative voice function and on the present clinical evaluation/management of voice disorders. Pictorial and video clips supplement well the narrative text. The organic–functional dichotomy was modified in many chapters to show a useful blend of management effectiveness. The therapeutic challenge of evidence-based practice and its impact on vocal management and therapy becomes clearer through the praxis exams following each chapter.

Thanks to our three coauthors, I can say without reservation that we may have produced one of the best voice disorders and therapy books ever written. I could not be prouder than I am of the tenth edition of The Voice and Voice Therapy.

Daniel R. Boone, Ph.D., Professor Emeritus
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The Voice and Voice Therapy has been added to your Cart. Add to Cart. Buy Now. Dr. McFarlane has a long history of research interests in the area of voice disorders. Study of the outcomes from voice therapy and the development of new treatment techniques are of particular interest. His scholarly work has been published in dozens of books and journals, among them Seminars in Speech and Language; American Journal of Speech Language Pathology; Phonoscope; and Current Opinion in Otolaryngology & Head and Neck Surgery. The best-selling voice therapy text on the market, The Voice and Voice Therapy enters its eighth edition with extensive revisions, including thoroughly expanded content, updated pictures and figures, and improved teaching pedagogy elements. In addition, the new edition includes an updated DVD that brings voice problems and therapy to life for students. Still the most complete voice treatment textbook available, The Voice and Voice Therapy boasts the most up-to-date evidence-based practice and outcomes assessment and voice therapy facilitation techniques available today, while the comprehensive Physiopathologic pathways of voice therapy techniques: “Increasing vocal tract inertance” “Enlarging resonance capacity” “Enlarging the striking zone of vocal folds vertically” “Elongating the contact length of vocal folds longitudinally” “Providing optimum tonus of laryngeal intrinsic muscles” “Providing optimum tonus of laryngeal extrinsic muscles” “Providing the optimal tension at vocal fold mucosa for the most effective.” It is a holistic and cognitive approach which gives a multichannel biofeedback. The technique uses multiple mechanisms at the same time without forcing “even without thinking!” Instructions of lax vox voice therapy technique. I-Relaxing and focusing on posture and breathing.