Tenth Edition

The Voice and Voice Therapy

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Pearson
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.
## Contents

Preface xi  
Acknowledgments xiv  
Prologue xv

1 An Introduction to Voice Disorders and Their Management 1

The Biological Function of the Larynx 2  
The Emotional Function of the Larynx 3  
The Linguistic Function of the Voice 4  
Prevalence of Voice Disorders in the General Population 5

Prevalence of Voice Disorders in Special Populations 7

- Prevalence of Voice Disorders in Children 7  
- Prevalence of Voice Disorders in the Elderly 8  
- Prevalence of Voice Disorders in Teachers and Student Teachers 8  
- Prevalence of Voice Disorders in SLPs and Future SLPs 9

Kinds of Voice Disorders 10

- Functional Voice Disorders 11  
- Organic Voice Disorders 12  
- Neurogenic Voice Disorders 13

Management and Therapy for Voice Disorders 14

Summary 17

Clinical Concepts 17  
Guided Reading 17  
Preparing for the Praxis™ 18

2 Normal Voice: Anatomy and Physiology Throughout the Lifespan 19

Normal Aspects of Voice 19  
Normal Processes of Voice Production 20  
The Respiratory System 20  
Structures of Respiration 20

- The Bony Thorax 21  
- The Muscles of Respiration 22  
- The Inspiratory Muscles 23  
- The Expiratory Muscles 26  
- The Tracheobronchial Tree 26

Control of Breathing 27

- The Respiratory Cycle (Inhalation and Exhalation) 27
  - Passive Forces 28  
  - Active Forces 29

- Respiratory Volumes and Capacities 31  
- The Effects of Aging on the Respiratory System 31

- Breathing for Life Versus Breathing for Speech 32  
- The Phonatory System 33

Anatomy of Phonation 33

- The Laryngeal Framework 34  
- The Extrinsic Laryngeal Muscles 34

- The Supplementary Laryngeal Muscles 34  
- Laryngeal Cartilages 35  
- Extrinsic Laryngeal Ligaments and Membranes 37

- The Laryngeal Cavity 38  
- Laryngeal Joints 39

- Intrinsic Laryngeal Ligaments and Membranes 40  
- The Intrinsic Laryngeal Muscles 41

- The Ventricular (False) Vocal Folds 44  
- The True Vocal Folds 44  
- Laryngeal Blood Supply and Lymphatic Drainage 46

- Nervous System Control of the Larynx 46

- Lifespan Changes in the Larynx 49

Voice Production 50

- One Cycle of Vocal Fold Vibration 50  
- Body-Cover Theory 51

- Modern Modeling of Phonation 52

- Laryngeal Adjustments for Speech 52  
- Voice Registers 52

- How We Change Vocal Pitch 54  
- How We Change Vocal Loudness 55  
- How We Change Vocal Quality 55

Resonance 57

- Structures of Resonance 57

Mechanism of Resonance 60

Summary 61

Clinical Concepts 62  
Guided Reading 63  
Preparing for the Praxis™ 63
3 Functional Voice Disorders

Excessive Muscle Tension Disorders
- Muscle Tension Dysphonia (MTD)
- Ventricular Dysphonia

Benign Pathologies Resulting from Excessive Muscle Tension Disorders
- Vocal Fold Nodules
- Vocal Fold Polyps
- Reinke’s Edema
- Laryngitis

Voice Characteristics with Excessive Muscle Tension Disorders
- Diplophonia
- Phonation Breaks
- Pitch Breaks

Psychogenic Voice Disorders
- Puberphonia
- Functional Aphonia
- Functional Dysphonia
- Somatization Dysphonia

Summary

Clinical Concepts

Guided Reading

Preparation for the Praxis™

4 Organic Voice Disorders

Congenital Abnormalities
- Laryngomalacia
- Subglottic Stenosis
- Esophageal Atresia and Tracheoesophageal Fistula

Acid Reflux Disease

Contact Ulcers (Granulomas)

Cysts

Endocrine Changes

Hemangioma

Hyperkeratosis

Infectious Laryngitis

Leukoplakia

Recurrent Respiratory Papillomatosis

Pubertal Changes

Sulcus Vocalis

Webbing

Laryngeal Cancer

Summary

Clinical Concepts

Guided Reading

Preparing for the Praxis™

5 Neurogenic Voice Disorders

A Working View of the Nervous System

The Central Nervous System, the Cortex, and Its Projections
- Pyramidal and Extrapyramidal Tracts
- Thalamus, Internal Capsule, and the Basal Ganglia
- Neurotransmitters
- The Brainstem and the Cerebellum

The Peripheral Nervous System (PNS)
- Cranial Nerves (IX, X, XI, XII)

Conditions Leading to Neurogenic Dysphonia

Vocal Fold Paralysis
- Unilateral Vocal Fold Paralysis (UVFP)
- Medical Management of UVFP
- Bilateral Vocal Fold Paralysis (BVFP)

Spasmodic Dysphonia (SD)
- Judgment Scales for SD
- Voice Therapy for SD
- Botulinum Toxin Type A (BTX-A) Injections
- Surgical Approaches to ADSD

Essential Voice Tremor

Differences Between SD, Essential Voice Tremor, and Muscle Tension Dysphonia

Parkinson’s Disease (PD)

Cerebrovascular Accident (CVA)

Traumatic Brain Injury

Summary

Clinical Concepts

Guided Reading

Preparing for the Praxis™

6 Evaluation of the Voice

Screening for Voice Disorders

Medical Evaluation of the Voice-Disordered Patient
- The Roles of the SLP and Physician and the Need for a Medical Evaluation
- Evaluation of the Voice-Disordered Patient by the SLP

Review of Auditory and Visual Status

Case History
- Description of the Problem and Cause
- Onset and Duration of the Problem
Variability of the Problem 142
Description of Vocal Demands 143
Additional Case History Information 143
Behavioral Observation 144
Auditory-Perceptual Ratings 144
Voice-Related Quality of Life 145
The Oral-Peripheral Mechanism Examination 151
Laryngoscopy/Phonoscopy 151
The Clinical Voice Laboratory 153
Acoustic Analyses and Instrumentation 154
Sound Spectrography 154
Fundamental Frequency 156
Frequency Variability 157
Maximum Phonational Frequency Range (MPFR) 158
Average/Habitual Intensity 158
Intensity Variability 159
Dynamic Range 159
The Voice Range Profile (Phonetogram) 160
Vocal Perturbation Measures 161
Vocal Noise Measures 163
Electroglottographic Analysis and Instrumentation 164
Aerodynamic Measurements and Instrumentation 164
Lung Volumes and Capacities 166
Air Pressure 166
Airflow 167
Laryngeal Resistance 167
Phonatory–Respiratory Efficiency Analyses and Instrumentation 169
Maximum Phonation Time (MPT) 169
s/z Ratio 169
Voice Dosage Analysis and Instrumentation 171
Case Studies 173
Assessment 173
Perceptual and Noninstrumental Observations 173
Summary 175
Recommendations 175
Assessment 176
Perceptual and Noninstrumental Observations 176
Voice Facilitating Approaches 176
Summary and Recommendations 176
Effects of Disability on Participation in General Curriculum 177
Short-Term Objectives 177
Evaluation Plan 177
Assessment 178
Perceptual and Noninstrumental Observations 178
Endoscopic Evaluation 180
Summary 180
Recommendations 181
Summary 181
Guided Reading 181
Preparing for the Praxis™ 182

7 Voice Facilitating Approaches 183
Voice Compliance and Emerging Technologies in Voice Intervention 184
Voice Facilitating Approaches 185
1. Auditory Feedback 187
2. Change of Loudness 189
3. Chant-Talk 192
4. Chewing 193
5. Confidential Voice 195
6. Counseling (Explanation of Problem) 198
7. Digital Manipulation 199
8. Elimination of Abuses 202
9. Establishing a New Pitch 204
10. Focus 206
11. Glottal Fry 210
12. Head Positioning 212
13. Hierarchy Analysis 214
14. Inhalation Phonation 216
15. Laryngeal Massage 218
16. Masking 220
17. Nasal-Glide Stimulation 223
18. Open-Mouth Approach 224
19. Pitch Inflections 226
20. Redirected Phonation 227
21. Relaxation 230
22. Respiration Training 233
23. Tongue Pronunciation /i/ 236
24. Visual Feedback 237
25. Yawn-Sigh 240
Summary 241
Preparing for the Praxis™ 242

8 Therapy for Special Patient Populations 243
Voice Therapy for Particular Populations 243
The Aging Voice 243
Pediatric Voice Problems 247
Professional Voice Users 251
9 Management and Therapy Following Laryngeal Cancer 267

Risk Factors, Incidence, and Demographics in Head and Neck Cancer 267
Historical Review of Laryngeal Cancers 268
Modes of Cancer Treatment 269
Case Examples 269
Voice Facilitating Approaches 272
Vocal Hygiene 273
Laryngectomy 273
Tumor Staging 274
Surgical Advances and Organ Preservation Protocols 277
Preoperative Counseling 277
Postlaryngectomy Communication Options 278
The Artificial Larynx 279
Esophageal Speech (ES) 280
The Injection Method 281
The Inhalation Method 282
Tracheoesophageal Puncture (TEP) 284
Overview of the Pharyngoesophageal (PE) Segment 288

10 Resonance Disorders 291

Resonance Defined 291
Disorders of Nasal Resonance 292
Hypernasality 292
Hyponasality 292
Assimilative Nasality 293
Evaluation of Nasal Resonance Disorders 293
Perceptual Analysis of Speech 294
Hoarseness 295
Simple Clinical Instrumental Assessment 296
Stimulability Testing 296
Articulation Testing 297
The Oral Examination 297
Laboratory Instrumentation 298
Aerodynamic Instruments 299
Nasometry and Nasalance 299
Spectrography 300
Imaging Studies 301
Endoscopy 301
Treatment of Nasal Resonance Disorders 303
Hypernasality 303
Surgical Treatment for Hypernasality 305
Prosthetic Treatment of Hypernasality 306
Voice Therapy for Hypernasality 308
Hyponasality 311
Assimilative Nasality 312
Therapy for Oral-Pharyngeal Resonance Problems 313
Reducing the Strident Voice 314
Improving Oral Resonance 315

Summary 318
Guided Reading 318
Preparing for the Praxis™ 318

References 320
Index 354
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
Acknowledgments

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.

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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*

*The University of Arizona*