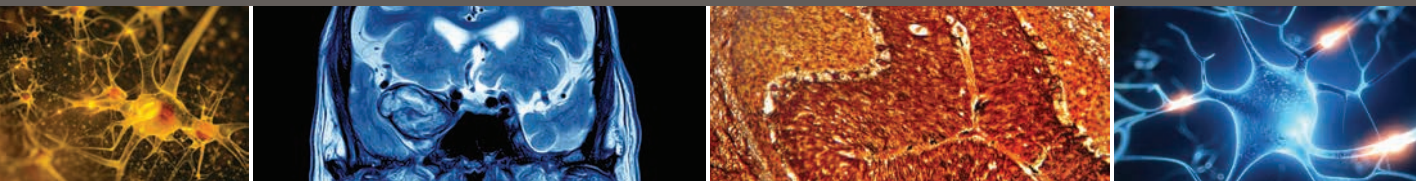


INTRODUCTION TO NEUROGENIC COMMUNICATION DISORDERS

SECOND EDITION



M. HUNTER MANASCO, PhD, CCC-SLP

Associate Professor
College of Health Sciences
Misericordia University
Dallas, Pennsylvania



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Jones & Bartlett Learning
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978-443-5000
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Editorial Assistant: Taylor Ferracane
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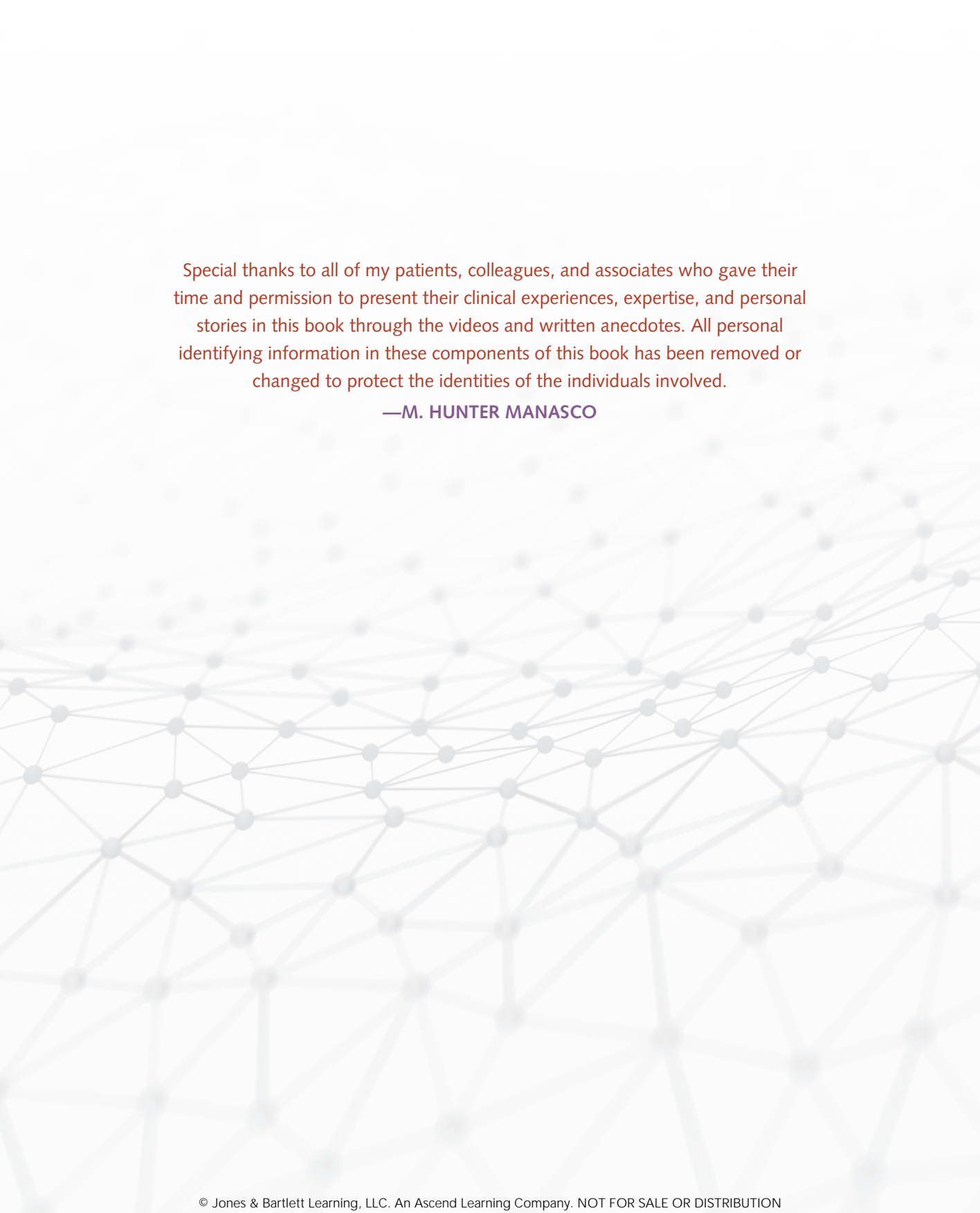
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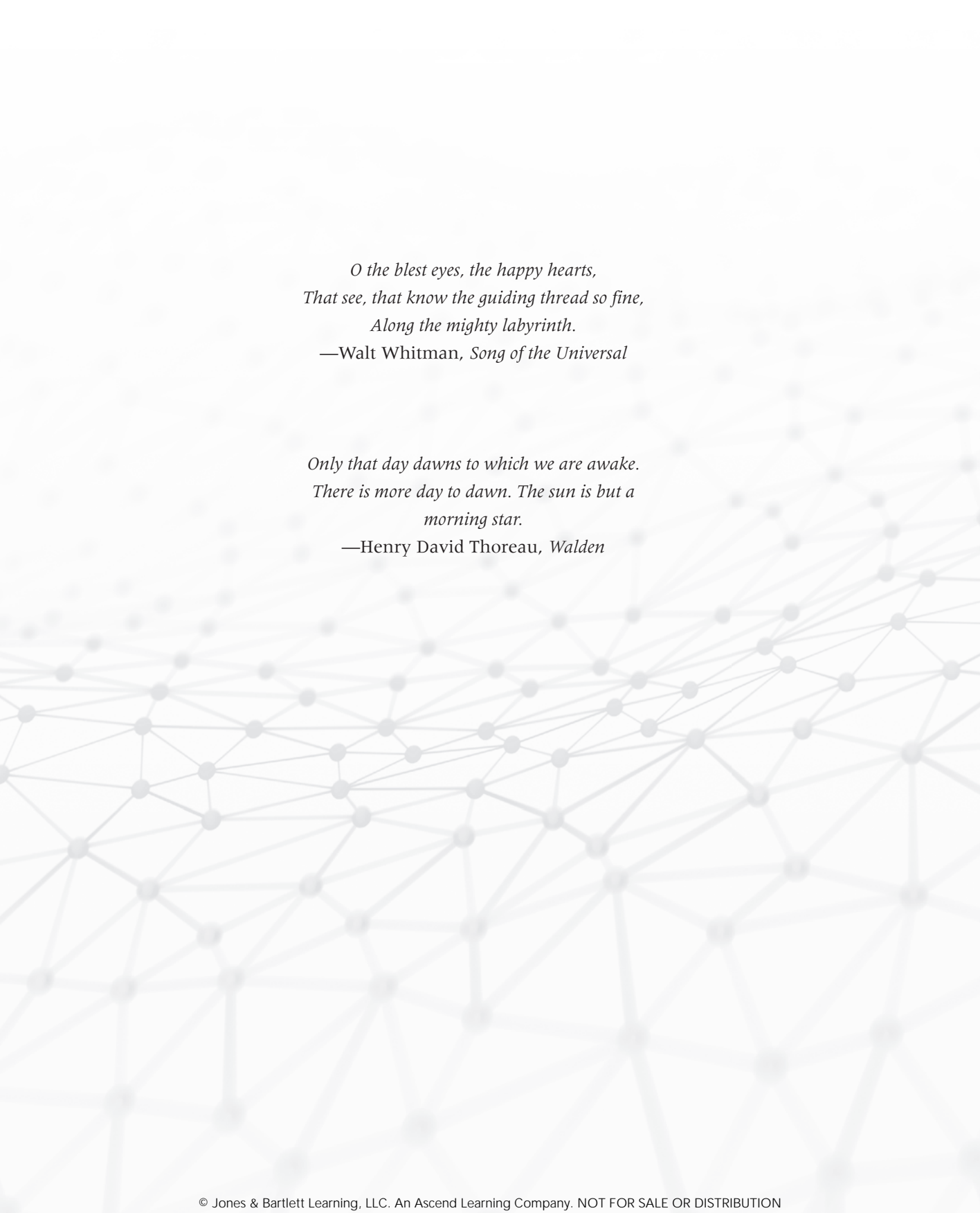
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Special thanks to all of my patients, colleagues, and associates who gave their time and permission to present their clinical experiences, expertise, and personal stories in this book through the videos and written anecdotes. All personal identifying information in these components of this book has been removed or changed to protect the identities of the individuals involved.

—M. HUNTER MANASCO



*O the blest eyes, the happy hearts,
That see, that know the guiding thread so fine,
Along the mighty labyrinth.*
—Walt Whitman, *Song of the Universal*

*Only that day dawns to which we are awake.
There is more day to dawn. The sun is but a
morning star.*
—Henry David Thoreau, *Walden*

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PREFACE

My goal for this book is to create an informal text that presents the included material in a way that is accessible to student readers while also displaying how exciting, interesting, and truly *human* this material is. If not pushed, most students fall easily into interpreting all material in a textbook as purely academic, merely facts on a page, nonemotional, and therefore not connected to real life. For the student of health science moving toward a helping profession, this is an ineffective position at best and a dangerous perception at worst. In our time of desensitization to violence, decreased face-to-face interactions, and seemingly general hardening of emotions, it is with increasing effort that the student of health science must be reminded to see and be pushed to be attentive to the human reality of the information presented in textbooks and classrooms.

The information, conditions, and diseases discussed in this book are not simply academic problems—they are also nonacademic and emotional. It is one thing to read about and recognize intellectually that there is no effective treatment for Alzheimer’s disease. It is quite another to *know* this as you view a video of a man with this disease and hear his wife explain her attempts to stall her husband’s steady deterioration in cognition and describe the effects of this disease on their lives. This furthering of students’ early knowledge by emphasizing the relevant effects on humanity creates more enthusiastic and more knowledgeable students who become more enthusiastic and knowledgeable professionals.

The use of clinical anecdotes in teaching health sciences had been out of style for some time, though the medical and psychological sciences have historically relied on this teaching method with good reason. I have found that by presenting academic facts *and* clinical reality, I can permanently burn into students’ minds more relevant knowledge using a single 5-minute anecdote than an hour-long lecture. Hence, throughout this text I take the liberty of inserting the first person *I* to recount interesting facts, events, or anecdotes or refer readers to video clips posted online. My hope is that these additions to the text work to illustrate, inform, humanize, and reinforce the primary material for students.

Toward this goal, this second edition includes more content as well as personal and clinical anecdotes. Sections have been added on: the Fregoli delusion, Guillain-Barré syndrome, visual field deficits, locked-in syndrome, crossed aphasia, as well as recent research on chronic traumatic encephalopathy in athletes and more. This edition also comes packaged

with far more illustrative video footage available online. The videos pull this book together as a whole. One can watch a single video and have the threads of knowledge running through multiple chapters of this book pulled together and tied into a holistic and functional understanding of the material, whereas before these threads may have remained disparate and unconnected. New videos have been added that focus on dementia with Lewy bodies, cervical dystonia, early-onset Parkinson's disease, the cognitive effects of Parkinson's disease, the off/on effects of levodopa, as well as the effects of aphasia, stroke, apraxia of speech, and degenerative diseases on activities of daily living. The second edition now includes a new, full-color design to help illustrate key concepts.

I would like to remind my student readers that healthcare professionals are individuals who deal in humanity. This work can be performed humanely or inhumanely. Almost everyone has a story about themselves or a loved one being grossly misused, abused, or neglected somehow in a healthcare setting by a healthcare professional. Similarly, anyone who has spent time receiving health care also has opposite stories of being treated with extreme kindness by their healthcare workers. So, I ask my student readers openly:

Which of these is the more effective approach to patient care?

Which of these experiences will you work to create in the lives of others?

Is it surprising to think that *deliberate* kindness to others must be encouraged as a learned behavior among students and healthcare professionals? Need we look far into the past, or even beyond the present, or our own personal experiences to find instances of total abandonment of this ideal?

I encourage my students to recall a quote by the physician William Osler each time they are about to enter a hospital room or deal with a client or patient:

Ask not what disease the person has, but rather what person the disease has.

CONTRIBUTORS

Nicholas A. Barone, PhD, CCC-SLP

Assistant Professor
Communication Disorders Program
University of Virginia
Charlottesville, Virginia

Orlando R. Barone, MA

Instructor and Coach at the Wharton School
of the University of Pennsylvania
Instructor at the Temple University Fox School
of Business
Philadelphia, Pennsylvania

Cari M. Tellis, PhD, CCC-SLP

Associate Professor
Speech-Language Pathology Department
Misericordia University
Dallas, Pennsylvania

REVIEWERS

Jessica R. Bonner, PhD, CCC-SLP

Associate Professor
Governors State University
University Park, Illinois

Nancy Carlino, MA, CCC-SLP

Assistant Professor
California University of Pennsylvania
California, Pennsylvania

Violet O. Cox, PhD

Professor
Cleveland State University
Cleveland, Ohio

Tamara B. Cranfill, PhD

Graduate Program Director, College
of Education
Associate Professor
Eastern Kentucky University
Richmond, Kentucky

Neila J. Donovan, PhD, CCC-SLP

Associate Professor, Graduate Program Director
Louisiana State University
Baton Rouge, Louisiana

Regina Enwefa, PhD

Professor
Southern University and A & M College
Baton Rouge, Louisiana

Donna M. Fitzgerald-DeJean, PhD, CCC-SLP

Associate Professor
Program Director
Nicholls State University
Thibodaux, Louisiana

Ana Claudia Harten, PhD, CCC-SLP

Associate Professor
Eastern Michigan University
Ypsilanti, Michigan

Daniel Kempler, PhD

Professor and Program Director
Emerson College
Boston, Massachusetts

Kelly A. Kleinhans, PhD

Assistant Professor
Academic Director, Center for
Communication Disorders
Murray State University
Murray, Kentucky

Mary Ellen Koay, PhD

Professor
Director of Graduate Studies
West Virginia University
Morgantown, West Virginia

Jerry Koller, MA, CCC

Professor
Touro College in Israel
Jerusalem, Israel

Jamie Mayer, PhD, CCC-SLP

Associate Professor
Northern Illinois University
DeKalb, Illinois

Cynthia R. O'Donoghue, PhD, CCC-SLP

Professor
James Madison University
Harrisonburg, Virginia

Jane Pimentel, PhD, CCC-SLP, BC-ANCDS

Associate Professor
Department of Communication Disorders
Eastern Washington University
Spokane, Washington

Jana Proff, MS, CCC-SLP

Senior Lecturer
Texas State University
San Marcos, Texas

Vanessa Raynor, SLPD

Program Coordinator
Shaw University
Raleigh, North Carolina

Carmen Russell, PhD, CCC-SLP

Chair, Associate Professor
Fontbonne University
Clayton, Missouri

Daniel Valentine, PhD, CCC-SLP

Assistant Professor
University of Montevallo
Montevallo, Alabama

Lura H. Vogelman, MS, CCC-SLP

Affiliate Faculty, Professor
Loyola University Maryland
Baltimore, Maryland

Brent Thomas Wilson, PhD

Assistant Professor
State University of New York at Cortland
Cortland, New York

Richard I. Zraick, PhD, CCC-SLP

Professor and Chair
University of Central Florida
Orlando, Florida

Additional expert feedback from anonymous reviewers was also considered.



FEATURES OF THIS TEXT

Introduction to Neurogenic Communication Disorders, Second Edition incorporates a number of engaging pedagogical features to aid in the student's understanding and retention of the material.

Throughout the text, key points are explained and important information is highlighted to ensure comprehension and to aid the study of critical material. Clinical anecdotes, a full-color, engaging layout, and high-quality art coalesce in this accessible resource to enable easy reading and support the retention of important concepts. Each chapter includes bold-faced **Key Terms** and shaded definition boxes for student reference and review.

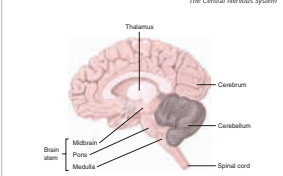
Video content is a key element of this valuable resource. Illustrative footage is included with every new print copy of *Introduction to Neurogenic Communication Disorders, Second Edition* or can be purchased separately. The **Video Icon** integrated within the text directs students online to see the accompanying videos.

In every chapter, boxed features further explore critical points and emphasize application of clinical content. These elements enable the student to understand the experience of both the patient and the clinician:

Author's Notes provide engaging insight into key points, making abstract concepts and challenging material easily comprehensible through accessible language and examples.

Clinical Notes present illustrative anecdotes from the author's real-world experience. These illuminating case vignettes give students a window into how clinical conditions affect real people and will impact their future practice.

The Central Nervous System
21



Cerebral cortex: The most superficial layer of the cerebrum.

Gray matter: Unmyelinated neurons responsible for the processing and regulating of information within the nervous system.

White matter: Myelinated neurons responsible for transmission of impulses from one area of the brain to another.

Amyelin: An insulating layer of protein and fatty substances that forms a layer around the axons of certain neurons, which allows for the fast and effective transmission of neural impulses.

Cerebellum: The most superficial layer of the cerebrum.

Brain stem: Consists of the midbrain, pons, and medulla.

Spinal cord: Extends from the base of the brain down the back.

FIGURE 2.2 Cerebrum, brain stem, and cerebellum.

language and cognition and organize body movements. The surface tissue of the cerebrum is known as the **cerebral cortex**. The cortex is the most superficial layer of the cerebrum (FIGURE 2.2).

The cerebral cortex is gray and folded and marked by various ridges and valleys. The cerebrum is folded in on itself so that more neural tissue can be packed into a much smaller space. The gray coloration of the surface of the cerebral cortex results from the gray color of the cell bodies of the neurons and is therefore said to consist of gray matter. **Gray matter** is

Stroke: Cerebrovascular Accident
49

amnesia to cause permanent cell death within the brain. It is therefore extremely important to be able to recognize quickly when an individual is experiencing a stroke so that appropriate medical care can be acquired.

There are two main forms of stroke: ischemic and hemorrhagic. The term **ischemia** means a blockage of or restriction in a blood vessel. The term **hemorrhagic** is derived from the word **hemorrhage**, which means to bleed. The majority of strokes are ischemic in nature. Typically, strokes can produce immediate deficits in cognition and language as well as weakness and difficulty seeing, hearing, and balancing.


Ischemic Stroke

An **ischemic stroke** occurs when a blood vessel supplying blood flow to the brain becomes occluded (FIGURE 2.3 and FIGURE 2.4). An occlusion in a blood vessel deprives brain tissue of the blood supply necessary for survival of the tissue. Symptoms of ischemic stroke typically develop over minutes or hours. Early warning signs or symptoms of an ischemic stroke include "loss of strength or sensation on one side of the body, problems with speech and language, or changes in vision or balance" (AHA, 2017, p. 11). See the videos *Brain Stem Stroke: Recovering from Stroke* and *Nonfluent Aphasia, and Living with Chronic Nonfluent Aphasia* for descriptions of the effects of ischemic strokes.

There are three main forms of ischemic stroke. The first is a **thrombotic stroke**. A **thrombus** is an occlusion that forms slowly in an artery.

Video Icon

CLINICAL NOTE **Phineas Gage**



Perhaps the most famous case documenting personality change following damage to the frontal lobes is that of Phineas Gage. Mr. Gage was a railway construction worker who lived in the mid-1800s. He was known to those around him to be moderate in his habits and in possession of self-restraint, and he was rarely known to be profane (MacMillan, 2000). In 1848, while Mr. Gage was packing explosive powder into a hole to clear away rock for a railway, the explosives ignited unexpectedly and blew the metal tamping rod he was using beneath his chin, impaling it through the frontal lobes of the top of his skull damaged both his left eye. It is generally not known that he had lost control of his behavior after the injury. Mr. Gage recovered after 3 months. It was noted by personality changed

dramatically after his accident. He was reported to have become very uninhibited and had difficulties not indulging in all his desires. He also had significant memory loss. His employers found that he could no longer complete his previous duties in railway construction. Years after his death, his skull was exhumed, and it was determined that the areas of Mr. Gage's brain that were damaged by the metal rod were within the frontal cortex, the parts of the brain responsible for inhibiting socially inappropriate behavior.




FIGURE 2.13 Phineas Gage. © National Library of Medicine.

AUTHOR'S NOTE **Playing Piano**



To illustrate the differences between the volitional pyramidal motor plans transmitted along the DAP and nonvolitional extrapyramidal motor plans transmitted along the IAP, let us take the example of a person playing the piano (FIGURE 2.3). The impulses of fine motor movements of voluntary and skilled finger movements are generated in the pre-, primary, and supplementary motor cortices of the cerebral hemispheres. These impulses are then transmitted from the major motor cortices along the DAP. The DAP transmits impulses of fine motor plans from the brain through the CNS to the LMNs. The LMNs then activate the muscles in the manner specified by these motor plans, which allows the person to play the keys in the necessary sequence, with the appropriate speed, and with the appropriate strength.

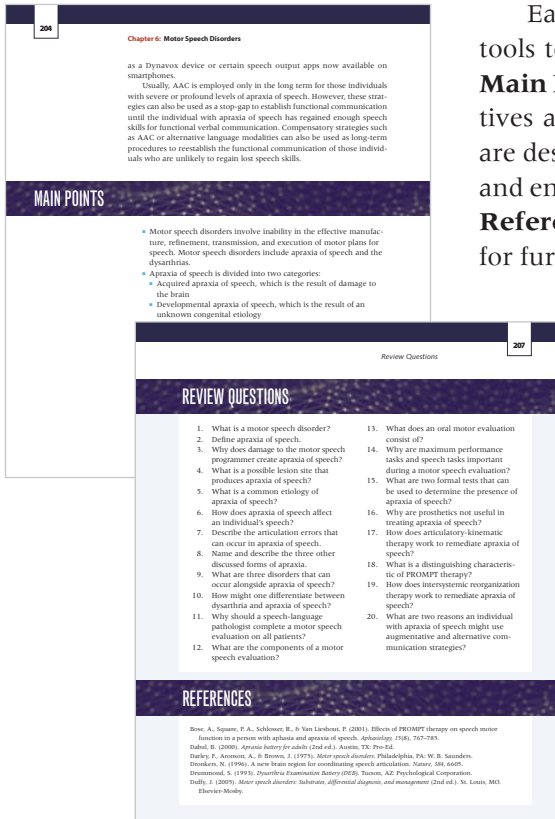
As the person plays the piano, muscles contract not just in the fingers but all over the body to keep appropriate tone and posture so that the person remains upright and appropriately positioned. These are the extrapyramidal impulses of tone maintenance and postural support, which are generated by the basal ganglia and then transmitted along the IAP. The IAP then delivers these impulses of muscle tone maintenance and postural support to the LMNs. The LMNs activate the muscles in the manner specified by the motor plans of tone maintenance and postural support.

Keep in mind that the LMNs work to activate muscles for DAP and IAP motor plans simultaneously to allow a person to execute all the necessary movements of the fingers while still remaining sitting upright at the piano.



FIGURE 2.3 Playing piano.

Features of This Text



Each chapter ends with useful learning and teaching tools to support student understanding, study, and review.

Main Points are included to summarize key learning objectives and emphasize crucial concepts. **Review Questions** are designed to help students assess what they have learned and engage thoughtful consideration of the content. Finally, **References** provide a bibliography for important resources for further learning and study.

Qualified professors can also receive the full suite of **Instructor Support Resources**, including Slides in PowerPoint format, Test Bank, and Answer Key for Review Questions. To gain access to these valuable teaching materials, contact your Health Professions representative through go.jblearning.com/Manasco2e.

