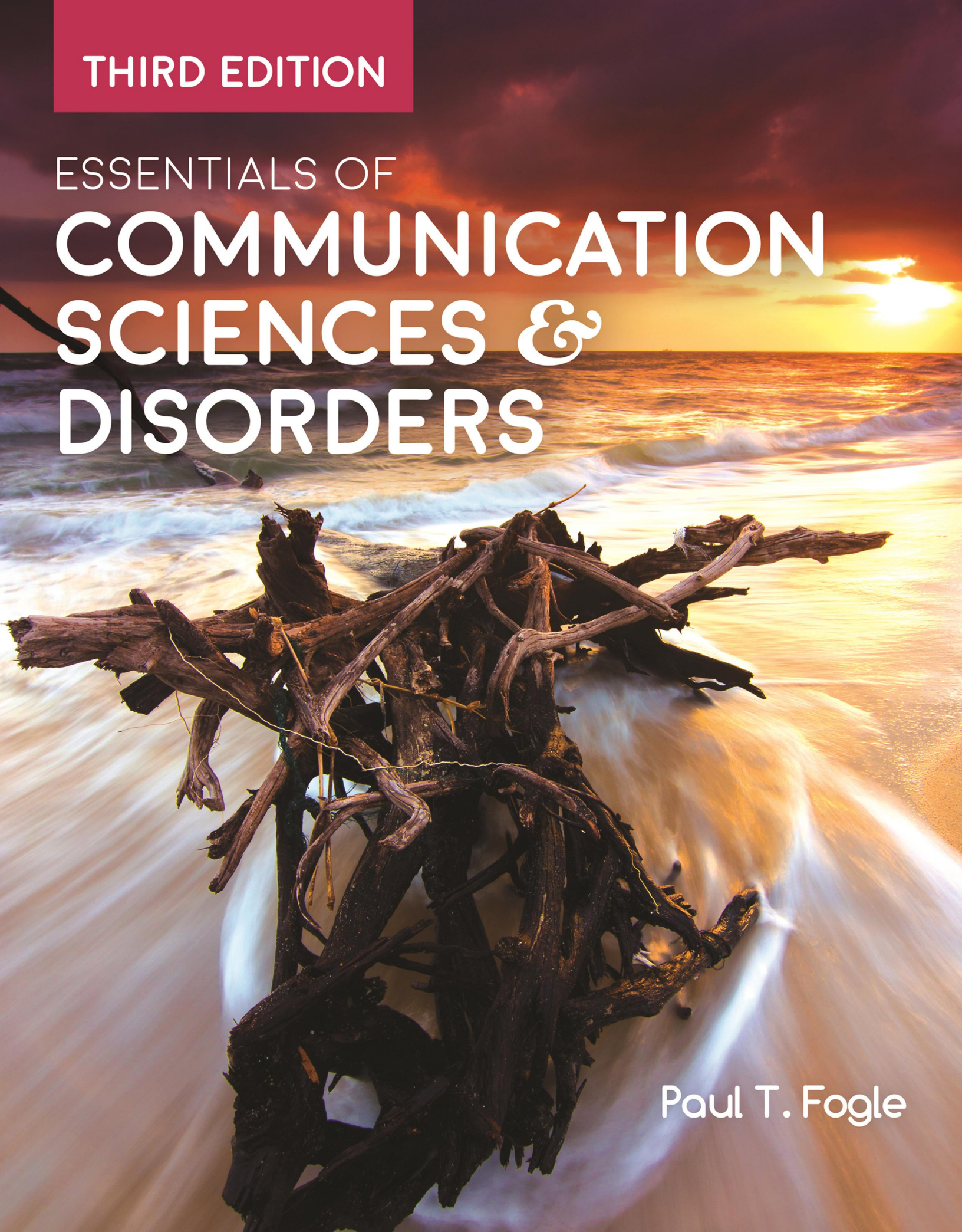
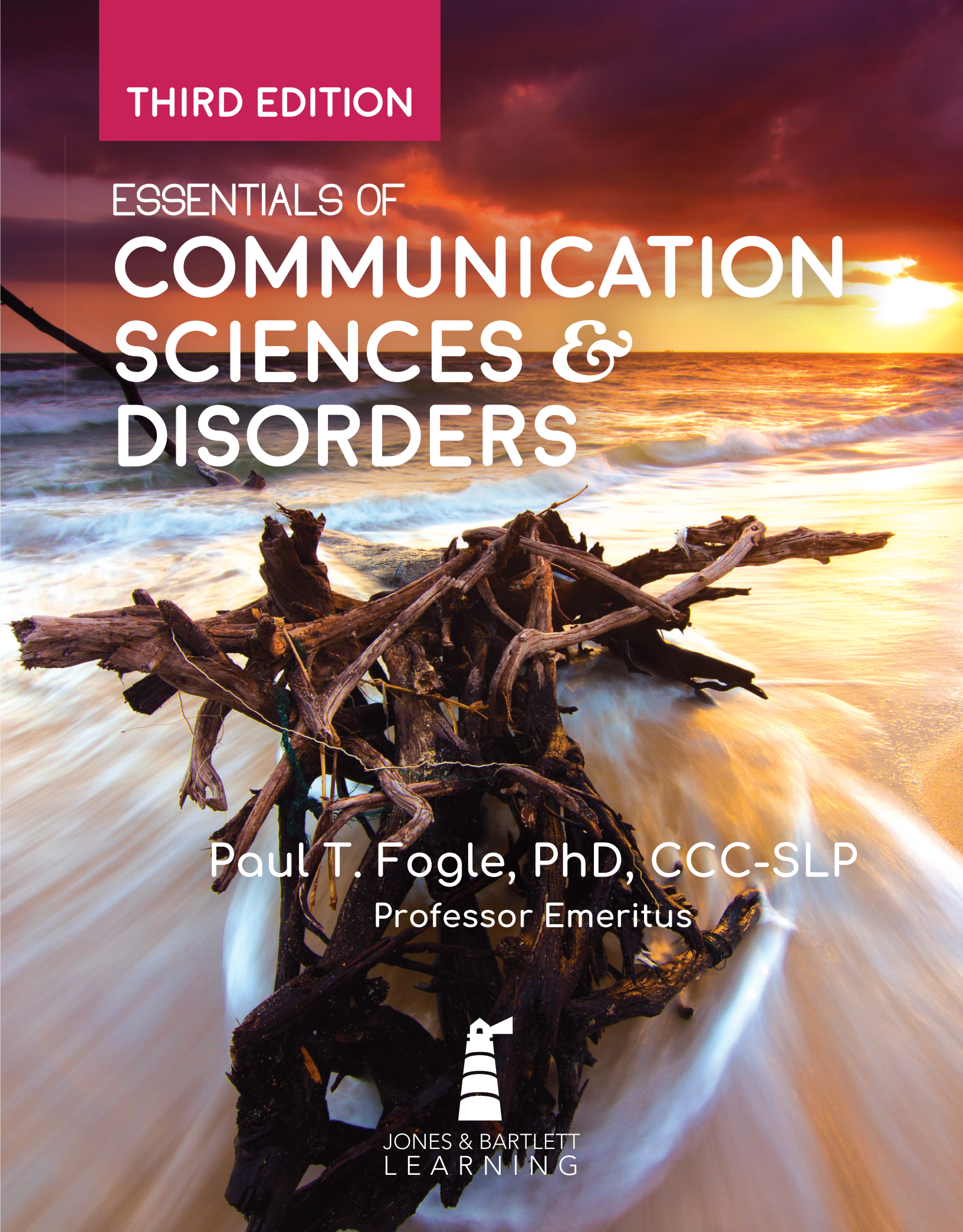
THIRD EDITION

ESSENTIALS OF COMMUNICATION SCIENCES & DISORDERS



Paul T. Fogle


THIRD EDITION
ESSENTIALS OF
COMMUNICATION SCIENCES & DISORDERS
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Brief Contents

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Preface

Introduction

Essentials of Communication Sciences and Disorders, Third Edition was written for students just beginning their education in speech-language pathology and audiology (communication sciences and disorders). The *Essentials* text focuses on what is considered to be the essential information that beginning students need and is based on the skills and knowledge specified in the American Speech-Language-Hearing Association's (ASHA) 2018 Standards for the Implementation Procedures for the Certificate of Clinical Competence (CCC) in Speech-Language Pathology and Audiology that address the Knowledge and Skills Acquisition Summary (KASA), as well as ASHA's 2020 Scope of Practice for Speech-Language Pathology and 2020 Scope of Practice for Audiology.

References

Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association. (2020a). *2020 Standards for the Certificate of Clinical Competence in Speech-Language Pathology.* www.asha.org/certification/2020-SLP-Certification-Standards.

Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association. (2020b). *2020 Standards for the Certificate of Clinical Competence in Audiology.* www.asha.org/certification/2020-Audiology-Certification-Standards/

Overview

This text was designed for students to learn and enjoy reading about the essentials of communication sciences and disorders. One thing students will immediately notice is that all the illustrations, photos, and figures are in full color. Students will also find the writing clear and understandable, with many colorful stories and examples of real-life cases. In other words, we have created an inviting place for students to learn.

The text presents the most recent literature in each chapter. It also cites literature that is not often mentioned in introductory texts. It includes many references from professional journals outside of speech-language pathology and audiology that are relevant to our professions. These resources were included to help students understand that important information from other professions and researchers around the world relates directly or indirectly to our work.

Notably, *Essentials* includes literature from numerous journals that are not usually cited by an American author. Many of the articles were written by researchers who publish in American or English language journals from numerous countries, such as Canada, United Kingdom, Australia, New Zealand, Israel, Argentina, Germany, China, France, Italy, Norway, the Netherlands, Ukraine, Pakistan, Iran, and others. This was done for several reasons. First, there is a vast amount of literature published in journals around the world that adds important information to our understanding of the many disorders we work with and provides directions for assessment and treatment. Second, this text was written for an international market: speech-language pathology and audiology are practiced in countries around the world. Third, it is important for students to realize that in many countries where they may choose to travel or live and work, they will have a fraternity of speech-language pathologists (SLPs) and audiologists with whom they can immediately relate.

Key Features

Essentials was carefully organized for the benefit of students and for ease in teaching. Each chapter begins with learning objectives, a list of key terms, a chapter outline, and an introduction.

When an important term is first introduced in the text, it is placed in bold type to highlight it. The terms are also defined in a comprehensive glossary.

Throughout the text, "Insight Questions" encourage students to consider how they might relate the information presented to their personal lives, or how the information may relate to them in ways they had not expected.

Chapters include both case studies and personal clinical stories that are relevant to the material. These features are intended to help paint a vivid picture of

our professions, long before students have the opportunity to participate in a clinical practicum.

Multicultural considerations are discussed in nearly all chapters, as the text material relates specifically to this important area.

Each chapter includes a summary that highlights some of the basic concepts discussed.

Numerous study questions are also provided at the end of each chapter that are based on Bloom's (1956) taxonomy of educational objectives. That is, three general levels of question difficulty are presented for each chapter: (1) remembering and understanding, (2) applying and analyzing, and (3) evaluating and creating. By answering these questions, students can demonstrate several levels of learning. Each chapter ends with an extensive list of references that students may use to research the information and concepts presented.

New to the Third Edition

This *Third Edition* has seen several changes:

- **Chapter 1** has updated information on Speech Sound Disorders, including articulation disorders and phonological disorders. Information on social communication disorders has also been added;
- **Chapter 2** contains a NEW! section on Cultural Competence and the diversity in professional and client interactions, and a section on Global Citizenship;
- **Chapter 3** contains several new high definition fiber tracking (HDFT) and diffuse tensor imaging (TDI) figures of the brain;
- **Chapter 5** contains a NEW! section on Orofacial Myofunctional Disorders, including common signs of OMDs;
- **Chapter 7** has been updated with information on reporting child and elderly abuse and neglect as a speech-language pathologist or audiologist;
- **Chapter 9** includes updated information on the prevalence of Attention-Deficit/Hyperactivity Disorder;
- **Chapter 10** contains updated information on the characteristics of the Autism Spectrum Disorder, including warning signs of possible development. A NEW! section on Neurodiversity has also been added, as well as a NEW! section on Bullying and Violence Against Children and Adults with Disabilities;
- **Chapter 11** has been extensively rewritten with new information and research on traumatic brain injuries in children and adolescents;
- **Chapter 12** contains new information on risk factors associated with persistent stuttering in children, as well as updated information on diagnosing cluttering in individuals;
- **Chapter 13** contains a NEW! section on Transgender Voice therapy;
- **Chapter 15** contains a NEW! section on Communication Partner Training;
- **Chapter 16** contains a NEW! section on Social Media and People with Cognitive-Communication Disorders, a NEW! section on Cognitive Reserve, and a NEW! section on Alzheimer's Disease Continuum;
- **Chapter 17** contains a NEW! section on General Tips for Dysarthria;
- **Chapter 21** contains new information on Microskills for Counseling to enable students to begin using these skills in their earliest clinical work.

Instructor and Student Resources

Essentials includes the following support tools:

- Videos of most of the disorders discussed in the book.
- Customizable PowerPoint slides for each chapter. The author has created slides for each chapter, which individual instructors can build on.
- A Test Bank for each chapter. Beyond the end-of-chapter study questions, the author has created a test bank of various kinds of questions (true/false, multiple choice, short answer, essay) with various levels of difficulty (easy, moderate, difficult).
- Open Education Resource Weblinks.

Please visit www.go.jblearning.com/Fogle3e for additional information on how to access these resources.

Audience

Some other groups of students (besides future SLPs and audiologists) will find the *Essentials* text helpful—students who take an introductory course in speech-language pathology and audiology who may not intend to major in communication sciences and disorders. During the years I taught the introductory course, students from a wide range of majors took the course because someone recommended it, it sounded interesting, or it just fit into their schedules. Some of these students find the information very interesting and change their majors. For them, the course was serendipitous.

These students often brought into their new major valuable perspectives from their past majors, such as pre-medicine, pre-dentistry, pre-pharmacy, education, psychology, business, and many others. The professions of speech-language pathology and audiology are all the richer for welcoming students from other majors. Nevertheless, students who take the introduction to communication sciences and disorders course and do not change their major will also benefit from having an understanding of how this course and this text can relate to their future professions and jobs, particularly in education and the healthcare fields. In addition, students later realize that much of what they learn can help their personal lives as parents and possible caregivers to family members. As instructors of the introductory course, we know the information we present relates to life in general, rather than just to the disciplines of speech-language pathology and audiology.

Conceptual Approach to the Text

The conceptual approach to this text is based on several considerations that are themes throughout the chapters:

- First and foremost, *Essentials* is evidence based—that is, it is built on the best available up-to-date research on theories, assessment, and treatment of the many disorders clinicians may encounter.
- The text has a life-span approach, covering age groups from newborns to individuals at the end of life.
- A team approach is emphasized, with the most important person on the team being the person with the communication disorder.
- Therapy always involves working with the central and peripheral nervous systems.
- People of all ages with communication impairments often have emotional and social reactions to their problems. As clinicians, we must work with our clients and patients holistically; in other words, we must work with the whole person and not just the disorders that we diagnose and treat. Likewise, the family members of our clients and patients often experience their own emotional and social effects from their loved one's problems.
- There is a joy in being a therapist—a person in a helping profession. As clinicians, we receive much satisfaction from our work. People recognize that we are excited about our work even after doing therapy for many years.

Acknowledgments

This text emphasizes the team approach when working with clients and patients. Likewise, the writing of this text was a team approach, with many people contributing their time, energy, and talents to my education, professional development, and ultimately this writing.

Mr. Rex Fisher, my high school biology and anatomy and physiology teacher, and eventually my friend, introduced me to the fascinating study of science and the human body. These lessons became the foundations of my life's work.

Dr. Joseph Sheehan and Mrs. Vivian Sheehan inspired my interest in stuttering, trained me well at the Psychology Adult Stuttering Clinic at the University of California, Los Angeles (UCLA), and encouraged me to pursue my doctorate in speech-language pathology. Dr. Dean Williams, professor and expert in stuttering at the Wendell Johnson Speech and Hearing Center, University of Iowa, was my mentor and dissertation advisor. His statement to the students in one of his classes remains an inspiration to me: "I hope all of you find someone who helps you become more than what you ever thought you could be." Dr. Williams was that someone for me.

Special acknowledgment and gratitude goes to Dr. Celeste Roseberry-McKibbin, Professor, California State University, Sacramento, ASHA Fellow, author of 50+ publications, including 6 textbooks, over 270 presentations at state, national, and international levels, and much more. Dr. Roseberry-McKibbin made significant contributions to Chapter 4, *Speech and Language Development*, particularly in the information on cultural-linguistic diversity.

Marlene Salas-Provance, PhD, MHA, CCC-SLP, ASHA Fellow, FNAP, Vice Dean and Professor, A. T. Still University, School of Health Sciences, Mesa, AZ, contributed significantly to the multicultural considerations material throughout this text. Dr. Salas-Provance is a recipient of ASHA's Certificate of Recognition for Special Contributions in Multicultural Affairs and ASHA's Certificate of Recognition for Outstanding Contributions in International Achievement. She is past Coordinator of ASHA's Special Interest Group 14, Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations; past president of the Hispanic Caucus, an ASHA-related professional organization; a founding steering committee member and coordinator of ASHA's Special Interest Group 17, Global Issues in Communication Sciences and Related Disorders; and a past member of ASHA's Multicultural Issues Board. She is the president and CEO of Bilingual Advantage, Inc., a medical interpreter training company. She has traveled worldwide with a medical team serving children with cleft palate, spending the last 7 years developing sustainable services in Lima, Peru. She is coauthor, with Dr. Yvette Hyter, of the 2017 (1st ed.) and 2022 (2nd ed.) textbook *Culturally Responsive Practices in Speech, Language, and Hearing Sciences*.

Juliet Haarbauer-Krupa, PhD, Fellow of the American Congress of Rehabilitation Medicine, Researcher/Speech Pathologist, Rehabilitation Services, Children's Healthcare of Atlanta, Emory University School of Medicine, Department of Pediatrics, Senior Health Scientist, Division of Injury Prevention, Center for Disease Control and Prevention (CDC), contributed significantly to Chapter 11, *Traumatic Brain Injury in Children and Adolescents* and deserves special acknowledgment and appreciation for her vast contributions to our profession's knowledge and understanding of this very important area.

Rotary International and Rotaplast International Cleft Palate Teams provided opportunities for me to travel to Venezuela, Egypt, and India to work with infants, children, and adults with cleft lips and palates; photographs from those "missions" have been included in this text. Rotary International sent me to Oradea, Romania, in 2014 and 2017 to work with children on the autism spectrum at the Pyramid Learning Center with Ioana Corompaki and her therapists.

The libraries of Macquarie University, Sydney, Australia; Canterbury University, Christchurch, New Zealand; and the University of Reading, Reading, England, provided excellent facilities for research for the international emphasis of this text.

Nancy Barcal, M.A., CCC-SLP, owner of Granite Bay Speech in Roseville, California, generously

provided the many clients for videotaping, and Kimberli Door, B.S., SLPA, skillfully videotaped those clients, allowing students to view children and adults with various speech, language, and cognitive disorders.

United Cerebral Palsy of Sacramento, California, allowed me to interview and videotape two of their adult clients for students to better understand the adult lives of individuals with cerebral palsy, both congenital and acquired through a childhood traumatic brain injury.

Zachary Adams is the person who keeps my computers working and without his help and support, the manuscript for this text could not have been completed.

I would like to acknowledge Ashley Malone and the entire team at Jones and Bartlett Learning, with special appreciation for Roberta Sherman for all of her time and support that made this edition possible.

Carol Fogle, RN, my wife of more than 50 years, has given me love, support, and encouragement for all of my projects, allowing me to contribute to the profession I love. My daughters Heather Brooke Morris and Heather Lea Fogle are appreciated and loved for being such joys in my life. Carlos Ruiz and Jayne Morris, my birthparents, who never had the opportunity to know me, or me to know them, gave me life so that I may have opportunities to help others .

Finally, I would like to thank the following individuals for providing feedback that helped improve the third edition in many ways:

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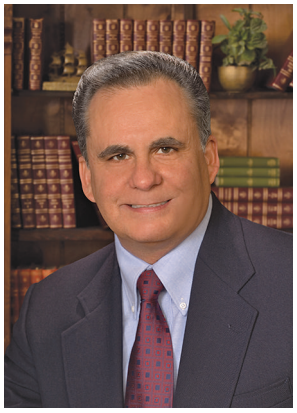
About the Author



Paul T. Fogle, PhD, CCC-SLP (Fogle is pronounced with a long o, as in FO-GULL), has been a speech-language pathologist for over 50 years. Although he earned all of his degrees in speech-language pathology, he minored in psychology throughout each degree. He earned his Bachelor of Arts in 1970 and his Master of Arts in 1971, both at California State University, Long Beach. After receiving his M.A., he worked for two years as an aphasia classroom teacher for the Los Angeles County Office of Education and started the first high school aphasia class in California, teaching and working with adolescents who had sustained traumatic brain injuries, strokes, and other neurological impairments.

Between 1970 and 1973, Dr. Fogle worked as a therapist at the University of California, Los Angeles (UCLA) Psychology Adult Stuttering Clinic, training under Dr. Joseph Sheehan and Mrs. Vivian Sheehan. Concurrently, he trained at Rancho Los Amigos Medical Center in Southern California performing human brain autopsies.

Dr. Fogle earned his doctorate in 1976 from the University of Iowa. He specialized in neurological disorders in adults and children and stuttering. His dissertation was directed by Dr. Dean Williams and he was awarded membership in Sigma Xi, the Scientific Research Society of North America, for his research. Although he minored in psychology throughout all of his degrees, in the early 1990s, he began training in counseling psychology, educational psychology, clinical psychology, and family therapy (Marriage, Child, Family Therapy). Most recently he has been studying neuropsychology.

Dr. Fogle is a Professor Emeritus. During his 35 years as a university professor, he taught undergraduate courses on Introduction to Speech-Language Pathology and Audiology, Anatomy and Physiology of Speech, Speech Science, and Organic Disorders. At the graduate level, he taught Neurology and Neurological Disorders in Adults, Motor Speech Disorders, Cerebral Palsy, Dysphagia/Swallowing Disorders, Gerontology, Voice Disorders, Cleft Palate and Oral–Facial Anomalies, and Counseling Skills for Speech-Language Pathologists.

Dr. Fogle has worked extensively in hospitals, including Veterans Administration Hospitals, university hospitals, and acute, subacute, and convalescent hospitals. He has maintained a year-round private practice for more than 40 years. He has presented numerous seminars, workshops, and short courses on a variety of topics at state, ASHA, and international conferences and conventions, including the International Association of Logopedics and Phoniatrics, the International Conference on Speech-Language Pathology, and the Asia-Pacific Society for the Study of Speech-Language Pathology and Audiology.

Dr. Fogle worked on Rotary International Cleft Palate Teams in Venezuela (2008), Egypt (2010), and India (2011), and was sent by Rotary International in 2014 and 2017 to work with children on the autism spectrum and teach at Pyramid Learning Center and the University of Oradea in Romania.

Dr. Fogle has presented all-day workshops in cities throughout the United States and in countries around the world on counseling skills for speech-language pathologists and audiologists, and on auditory processing disorders and attention-deficit disorders. He has worked on over 35 medical–legal cases as an expert witness in numerous states since 1985, testifying in depositions, court hearings, and court trials.

Dr. Fogle's primary publications have been textbooks and clinical materials. He is the author of *Foundations of Communication Sciences and Disorders* (Delmar Cengage Learning, 2008) and coauthor of *Counseling Skills for Speech-Language Pathologists and Audiologists* (1st edition 2004, 2nd edition 2012, Delmar Cengage Learning), *Ross Information Processing Assessment-Geriatric* (1st edition 1996, 2nd edition 2012, Pro-Ed), the *Classic Aphasia Therapy Stimuli* (CATS) Kit (Plural Publishing, 2005), and *The Source for Safety: Cognitive Retraining for Independent Living* (LinguiSystems [now Pro-Ed], 2008). His website is www.PaulFoglePhD.com and his email address is paulfoglephd@gmail.com.

Letter to Students

Dear Students,

Welcome! Thank you for purchasing this text for the beginning of your study about the professions of speech-language pathology and audiology. I hope you find not just interest in the information, but a genuine joy in its learning. If you do, there is a good chance that joy will remain with you throughout your education and life as you continue to learn about and work in these remarkable professions.

You will find several themes throughout this text that will help you in your learning and work as either a speech-language pathologist or an audiologist.

First, our work always follows a team approach. The most important person on the team is the person with the communication disorder, because without that person no other team members are needed.

Second, all of our therapy is "brain therapy." In other words, whether we are working with a child or an adult with an articulation disorder, language disorder, fluency disorder, neurological disorder, or other disorder, we are working with neurons, axons, dendrites, and synapses within the person's brain to change the muscles that relax and contract for specific behaviors to occur and the cognitive-communication processes to develop or redevelop more normal functioning. More subtly, when we are helping people change their attitudes, beliefs, feelings, and reactions toward their communication problems (e.g., stuttering), we are again working with the brain.

Third, people of all ages with communication impairments have emotional and social reactions to their problems. A problem may be physical (e.g., a cleft palate or a hearing loss), but there are always emotional and social effects of the problem. As clinicians, we must work with our clients and patients holistically—by addressing the whole person and not just the disorders that we diagnose and treat. Likewise, family members of our clients and patients commonly have their own emotional reactions to their loved one's problems. The therapy we provide one person often has subtle to profound effects on the lives of a constellation of people. If you become a speech-language pathologist or audiologist, you will touch countless lives.

Fourth, there is a joy to being a therapist, a person in a helping profession. We give our time, energy, and talents to others, but we receive back more than we give. Yes, you can make a living and support yourself with your profession. However, we go into our profession and stay in it not so much because of the income we derive from it, but because of the satisfaction we receive from knowing that we have helped others have better lives. Ultimately, that becomes our greatest reward.

I hope you enjoy reading and studying this text as much as I enjoyed writing it for you.

Best Wishes,
Paul T. Fogle, PhD, CCC-SLP
www.PaulFoglePhD.com

UNIT 1 COMMUNICATION DISORDERS AND THE PROFESSIONALS WHO WORK WITH THEM

CHAPTER 1

Essentials of Communication and Its Disorders

KEY TERMS

acquired disorder
aphasia
aphonia
articulate (articulation)
articulation disorder
audiologist
clinician
cluttering
cognition
cognitive communication disorder
cognitive disorder (cognitive impairment)
process (cognitive process)
communicate (communication)
communication disorder (communicative disorder)
conductive hearing loss
congenital disorder
consonant
context
dementia
disability
disorder
dysphonia
etiology
expressive language
fluency
fluency disorder
functional disorder
General American English (GAE)/ Standard American English (SAE)
grammar
habilitate (habilitation)
handicap
hearing loss/hearing impairment
hypernasality (hypernasal)
hyponasality (hyponasal)/denasality (denasal)
impairment
incidence
inner speech (self-talk)
intelligible (intelligibility)
language
language delay
language difference
language disorders
linguistics
literacy
modality
morpheme
morphology
motor speech disorder
organic disorder
phoneme
phonological disorder
phonology
pragmatics
prevalence
prosody (prosodic)/melody (melodic)
quality of life
receptive language
rehabilitate (rehabilitation)
resonance disorder
semantics
sensorineural hearing loss
social communication disorder
speech
speech disorders
speech-language pathologist (SLP), speech pathologist, speech therapist
speech sound disorder
stuttering (disfluency)
suprasegmentals
syllable
syndrome
syntax
traumatic brain injury (TBI)/head trauma
voice disorder (dysphonia)
vowel

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- State the modalities of communication.
- Describe the essential components of oral language: phonology, morphology, syntax, semantics, and pragmatics.
- Briefly explain each of the major communication disorders.
- Explain the emotional and social effects of communication disorders on the person and family.

CHAPTER OUTLINE

Communicate: Any means by which individuals relate their wants, needs, thoughts, feelings, and knowledge to another person.

Communication disorder: An impairment in the ability to receive, comprehend, or send messages, verbally, nonverbally, or graphically; any articulation, language, voice, resonance, cognitive, or hearing impairment that interferes with conveying or understanding a person's wants, needs, thoughts, feelings, and knowledge.

Clinician: Healthcare and rehabilitation professionals, such as physicians, nurses, respiratory therapists, physical therapists, occupational therapists, speech-language pathologists, audiologists, psychiatrists, or psychologists, involved in clinical practice who base their practice on direct observation and treatment of patients and clients. Public school speech-language pathologists (clinicians) are involved in children's speech, language, cognitive, fluency, voice, resonance, and hearing habilitation or rehabilitation.

Introduction

Welcome! You are beginning the study of a basic human need: the need to **communicate**. When two people are interacting, a message is always being communicated, even when neither person is speaking. The old adage still holds true: *We cannot not communicate.* Our ability to communicate is often taken for granted until we have some difficulty communicating or see someone else having difficulty. This text is about the difficulties that children and adults of all ages (newborns to end of life) have with **communication disorders**. As **clinicians**, we need to have a solid foundation in the understanding of the **modalities** of communication—that is, the various ways we communicate. Although **speech-language pathologists (SLPs)** and **audiologists** focus on the *auditory–verbal* modalities (hearing and speaking), *nonverbal modalities* (body language and facial expressions) are also essential to our ability to understand what a person is saying and communicate our own messages in return.

In a way, good communication is like a dance in which each person takes turns leading and following. The individuals try to stay "in step" with each other, "reading" every nuance of choice of words, tone of voice, *inflections* (variations of pitch during speech), pauses, hesitations, facial expressions, postures, and gestures (i.e., *total communication*) so that the conversation has an easy and enjoyable flow. When we meet someone new, it usually does not take long before we decide whether we can "dance" well together and whether we even want to try to dance again.

We use communication to survive and thrive in our homes, communities, schools, and workplaces. With a communication disorder, however, surviving and thriving can be much more difficult.

Basic Rules of Communication

The following basic rules of communication are seldom taught directly to children.

1. Be warm, attentive, and empathic.
2. Show that you are listening.
3. Use appropriate turn-taking and do not dominate the conversation.
4. Use an appropriate language level based on the listener's age and background.
5. Be congruent by having words, tone of voice, and non-verbal communication (facial expression, gestures, body language) in agreement (all giving the same message).

The Study of Human Communication

The evolution of communication from basic sounds and signs to more sophisticated systems is one of the most important developments in human history. Cave paintings of geometric symbols and animals, dated from more than 30,000 years ago, are among the earliest forms of communication designed to preserve human experiences. More than 3,000 years ago, Egyptians used pictographic hieroglyphs as a formal writing system, with symbols for words and letters of the Egyptian alphabet being carved into stone and later painted on papyrus.

In the modern era, Wolfgang von Kempelen (1734–1804), a Hungarian author and inventor, described, illustrated, and constructed mechanical devices that could produce speech sounds for words. His devices (**FIGURE 1-1**) were composed of bellows for the lungs, a vibrating reed for the vocal folds, and a leather tube the shape of which helped produce different vowel sounds, with constrictions controlled by fingers for generating consonants. To study the production of plosive sounds (e.g., p, b, t, d, k, g), von Kempelen included movable "lips" and a hinged "tongue" in his device. The device could produce intelligible whole words and short sentences. Von Kempelen may be considered the first speech scientist (Gedeon, 2006).

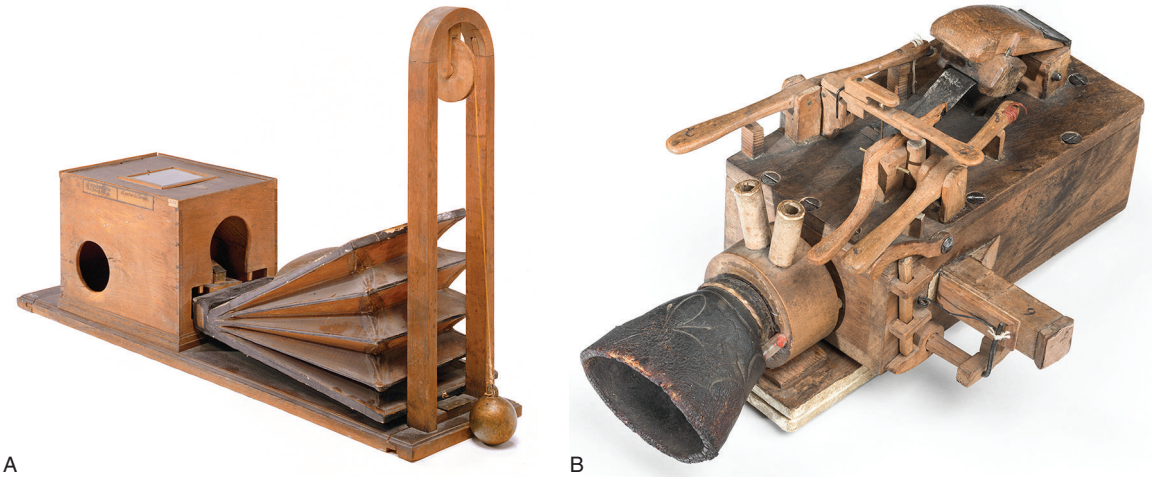
Insight Question

Much of your education in speech-language pathology and audiology involves learning professional terminology. How do you feel about that?

Modalities: Any sensory avenue through which information may be received, that is auditory, visual, tactile, taste, and olfactory (smell).

Speech-language pathologist: A professional who is specifically educated and trained to identify, evaluate, treat, and prevent speech, language, cognitive, and swallowing disorders.

Audiologist: A professional who is specifically educated and trained to identify, evaluate, treat, and prevent hearing disorders, plus select and evaluate hearing aids, and habilitate or rehabilitate individuals with hearing impairments.



A B

FIGURE 1-1 Von Kempelen's (1791) **A.** "lungs" and "voice box" and **B.** articulating mouth.

A: Courtesy of Deutsches Museum, Munich, Archive, CD29908; B: Courtesy of Deutsches Museum, Munich, Archive, BN37401.

Communication Modalities

Communication means conveying messages through one or more modalities (**FIGURE 1-2**). We have three primary modes to *receive* communications: auditory, visual, and tactile. Likewise, we have three primary modes to *send* communications: verbal (including grunts and other noises), graphic (including writing and illustrations), and gestural (including facial expressions, gestures, and body language). As clinicians, we learn to be increasingly aware of the interactions of these modalities and the effects of subtle to complete breakdowns in these modalities.

We normally think of communication as occurring between two or more people; however, much of what we "hear" every day is us talking to ourselves. We commonly have an internal monologue (known as **inner speech** or **self-talk**) going on inside our brains that we refer to as *thinking*. We silently (and sometimes not so silently) talk to ourselves and even argue with ourselves, wrestling with decisions ranging from the mundane ("Where am I going to have lunch?") to the profound ("What am I going to do with my life?"). Our verbal communication is mostly a reflection of our wants, needs, thoughts, feelings, and knowledge (i.e., sharing information).

Inner speech/self-talk: The nearly constant internal monologue a person has with himself at a conscious or semiconscious level that involves thinking in words; a conversation with oneself.

However, spoken words may communicate only a small portion of a person's total message. SLPs and audiologists also need to become skilled in "reading" facial expressions and nonverbal communication (Fogle, 2009). Burgoon, Guerrero, and Floyd (2009) reviewed more than 100 studies on verbal (oral) and nonverbal (body postures, gestures, eye contact, and facial expressions) communication and, among other points, determined the following:

- Verbal content is more important for factual, abstract, and persuasive communication; nonverbal content is more important for judging emotions and attitudes.
- When verbal and nonverbal channels conflict, adults rely more on nonverbal cues (i.e., people believe what they see more than what they hear).

When we think of communication disorders, we usually think of talking and listening. Indeed, most of your education and training in speech-language pathology and audiology will focus on these modalities. Nevertheless, because communication may involve three primary **language** input modalities (auditory, visual, and tactile) and three primary output modalities (verbal, graphic, and gestural), SLPs and audiologists work with more than just speech and hearing. Any or all of the input and output modalities may be involved in a communication disorder.

Language: A socially shared code or conventional system for representing concepts through the use of arbitrary symbols (sounds, letters, gestures), and rule-governed combinations of those symbols.

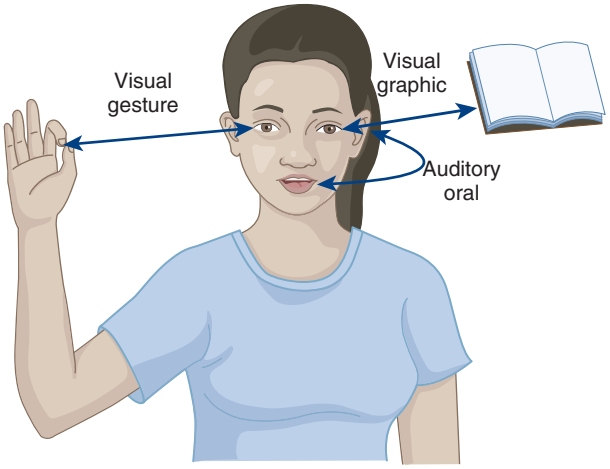


FIGURE 1-2 Modalities of communication.

Oral/Spoken Language

When sounds are organized into **syllables** and words are organized into grammatical sentences, spoken language is generated. Language has been defined as "a socially shared code or conventional system for representing concepts through the use of arbitrary symbols [sounds and letters] and rule-governed combinations of those symbols [grammar]" (Owens, 2019). Spoken language is our primary and usually most efficient form of communication. There are approximately 7,000 "living languages" (languages widely used as a primary form of communication by specific groups of people) and an unknown number of dead or extinct languages (Lewis, 2015).

Spoken language gives the listener not only the *content* (the words in the message) but also the **prosody (prosodic)/melody (melodic)** that helps the listener understand the true intent of the message by using voice inflections to emphasize or deemphasize aspects of the spoken language (e.g., the difference between "I scream" and "ice cream"). *Prosodic features* (**suprasegmentals**) are important in conveying the emotional aspects of messages, such as happiness, sadness, fear, and surprise. When we cannot see a person's face (e.g., while on the telephone), we usually can still discern the emotions behind the messages based on the prosody.

Syllable: Either a single vowel (V) or a vowel and one or more consonants (C); for example, V+ consonant (VC), VCC, CV, CCV, CVC, etc.

Prosody (prosodic)/melody (melodic): Voice inflections used in a language such as stress, intensity, changes in pitch, duration of a sound, and rhythm that help listeners understand the true intent of a message and that convey the emotional aspects of a message, such as happiness, sadness, fear, or surprise.

Suprasegmentals: Speech features such as stress, pitch, intonation, and rhythm that accompany or are added to consonants, vowels, syllable, words, or phrases that often provide the true meaning of the content words.

Linguistics

Linguistics is the scientific study of language, and *linguists* are individuals who ecialize in the study of linguistics. Traditionally, linguists divide language into several components: **phonemes** (sounds), **morphemes** (groups of sounds that form words or parts of words), **syntax** (rules for combining words into sentences), **semantics** (meaning of the language or message), and **pragmatics** (rules governing the use of language in social situations). *Linguistic competence* is a person's underlying knowledge about the system of rules of a language. Linguistic competence helps us recognize when a sentence is grammatically correct or incorrect.

Linguistics: The scientific study of the structure and function of language and the rules that govern language; includes the study of phonemes, morphemes, syntax, semantics, and pragmatics.

Phonemes: The shortest arbitrary unit of sound in a language that can be recognized as being distinct from other sounds in the language.

Morphemes: The smallest unit of language having a distinct meaning (e.g., a prefix, root word, or suffix).

Syntax: The rules that dictate the acceptable sequence, combination, and function of words in a sentence; the way in which words are put together in a sentence to convey meaning.

Semantics: The study of meaning in language conveyed by words, phrases, and sentences.

Phonology

Phonology is the study of **speech** sounds (phonemes) and the rules for using them to make words in a language. The English language has a limited number of phonemes, but an almost limitless variety of sound combinations can be used in words and to make up new words. Each year, hundreds of words are added to our language that must follow phonological rules. Consider, for example, all the new words that were created when televisions first arrived on the scene or when computers were being invented.

For new words to be accepted by the public, certain phonological rules for combining sounds must be followed. For example, a single letter is not used as a new word, nor is a combination of more than two **consonants** with no **vowels**. A combination of three or more vowels also is not considered to follow English phonological rules. Some foreign languages are difficult for English speakers to learn because their phonologies use consonant and vowel combinations not used in English. Also, many people trying to learn English as a second language find it difficult because the pronunciation of a word may vary considerably depending on the **context**, and the differences in the pronunciation can significantly change a word's meaning. Examples include "He could lead if he got the lead out," "The girl had tears in her eyes because of the tears in her dress," and "Since there is no time like the present, he decided to present the present."

Authors of fiction books sometimes create new words by following phonological rules of English. For example, J. R. R. Tolkien, in *The Lord of the Rings* trilogy, created a great number of new words, including *hobbit, glede,* and *Fallohides*.

Pragmatics: The rules governing the use of language in social situations; includes the speaker-listener relationship and intentions and all elements in the environment surrounding the interaction—the *context*.

Phonology: The study of speech sounds and the system of rules underlying sound production and sound combinations in the formation of words.

Speech: The production of oral language using phonemes for communication through the process of respiration, phonation, resonation, and articulation.

Consonant: Speech sounds articulated by either stopping the outgoing air stream or creating a narrow opening of resistance using the articulators.

Vowel: Voiced speech sounds from the unrestricted passage of the air stream through the mouth without audible stoppage or friction.

Context: The circumstances or events that form the environment within which something exists or takes place; also, the words, phrases, or narrative that come before and after a particular word or phrase in speech or a piece of writing that helps to explain its full meaning.

Morphology: The study of the structure (form) of words.

Grammar: The rules of the use of morphology and syntax in a language.

J. K. Rowling, the author of the *Harry Potter* books, also created *quidditch* and *muggle*. (*Muggle* is now in the *New Oxford English Dictionary.*) These words "sound like they could be words," just as any new technical word must follow accepted English phonological rules to eventually become part of our vocabulary (e.g., *byte, megabyte,* and *telecommunication*).

Morphology

Morphology is the study of the way words are formed out of basic units of language—morphemes. Morphemes are one or more letters or sounds that may be used as prefixes, such as *un*comfortable; base (root) words, such as *comfort*; or suffixes, such as *able*. When a morpheme is able to stand alone—that is, when it does not need any other morphemes attached to it to make it a true word—it is called a *free morpheme* (e.g., *culture*, *accept*, and *comfort*). Morphemes that cannot stand alone and must be attached to a free morpheme are referred to as *bound morphemes* (e.g., prefixes such as *pre-*, *dis-*, and *mis-*; suffixes such as the plural *-s,* the past tense *-d,* and the gerund *-ing*; and *base words* such as *-celerate-* and *audio-*). **TABLE 1-1** shows how prefixes, base words, and suffixes (morphemes) combine to make whole words.

Syntax

Syntax and morphology are the two major categories of language structure (i.e., **grammar**). Syntax refers to the rules for acceptable sequences (order) and word combinations in sentences. Various languages have different word orders for sentences. In an English declarative sentence, the subject comes before the verb: "David is going to work." However, when the subject (*David*) and the auxiliary or helping verb (*is*) are reversed in order, the sentence becomes a question: "*Is David* going to work?" English syntax has the adjective preceding the noun (e.g., the green room); in contrast, the syntax of Spanish and French has the adjective following the noun (e.g., the room green). Most English sentences flow from subject to verb to objects or complements.

Native speakers of a language develop a "grammatical intuition" that helps them recognize when a sentence is not quite grammatically correct, but they may have some difficulty pinpointing or explaining what is not correct about it. When people who have learned English as a second language are speaking, they may use some incorrect word order or omit morphemes (e.g., the plural *-s*) that a native speaker of English recognizes and may be a little uncomfortable with, feeling a need to correct the nonnative speaker.

Semantics

Semantics is the study of meaning in language that is conveyed by the words, phrases, and sentences communicated. Semantics may be thought of as the *content expressed* by the speaker and the *content understood* by the listener. Miscommunication

TABLE 1-1 Examples of Whole Words, Prefixes, Base Words, and Suffixes

Whole Word	Prefix	Base Word	Suffix
miscommunication	mis	communicate	tion
indefensible	in	defense	ible
disorienting	dis	orient	ing

Insight Question

How good is your grammatical intuition; that is, how easily do you automatically detect or recognize grammatical errors in other people's speech? In your own speech?

occurs when there is a discrepancy between the two. For example, if a person says, "I really need to go.", meaning that he needs to be somewhere else soon, but the listener felt the content expressed in the message was "He wants to get away from me.", the content of the message was misunderstood; that is, a miscommunication.

Social and cultural factors play significant roles in the way we use and understand language (Hyter & Salas-Provance, 2019; Rose, 2013; Roseberry-McKibbon, 2022). For example, a word's meaning in one region of the United States may be quite different from its meaning in another region. In many western regions of the United States, *dinner* is the evening meal; in contrast, in many midwestern and southern regions, *dinner* is the noon meal and *supper* is the evening meal. In English-speaking countries, significant differences also can arise in the use of different words for the same thing. For example, in England a *restroom* is called a *lavatory* or *water closet* (WC), and in Australia a *napkin* is a *diaper.* The differences in the semantic use of words and the meanings of words can certainly affect communication, even among people who do not have communication disorders.

Pragmatics

Pragmatics comprises the rules governing the use of language in social situations. Some elements included in pragmatics are the *relationship* of the people talking (e.g., friend, relative, or stranger), the context or environment they are in (e.g., social versus business), and the *intentions* of the communication (e.g., friendliness or hostility). The context in which a message is framed significantly affects its true meaning. Pragmatics places greater emphasis on the functions of language than on the structure of language.

Pragmatics is culturally based or influenced. For example, in some regions of the world, such as the Middle East, an initial business meeting may be devoted to sharing about family and friends, and the business may not be discussed until a later meeting. Also, the beginning of each new business meeting may be devoted to extended casual conversation rather than moving to the task at hand. When business people do not know the cultural traditions of the people with whom they are dealing, disastrous consequences may result.

Reading and Writing

Many speech-language pathologists, particularly in the public schools, are involved in the area of **literacy** with children who have reading and writing problems. Reading and writing may be more challenging for the brain to **process** (**cognitive process**) and, therefore, more difficult to develop than auditory–verbal abilities. In a way, we have two languages: listening–speaking (*auditory–verbal* or *aural–oral*) and reading–writing (*visual–graphic*). The auditory–verbal language is developed in the early years of life; however, the reading–writing language does not normally start developing until the early years of schooling. Also, a person may become verbal and be considered a good communicator, but that does not mean he is an equally good reader or writer.

Literacy: The ability to communicate through written language, both reading and writing.

Process (cognitive process): The things individuals do with their brains (minds) that involve attention, perception, memory, ideation, imagination, belief, reasoning, use of language, volition, emotion, and others; the process of thinking. The ability to take in information and transform it, store it, recover it, and use it.

Disorders of Communication

When we listen to someone talk, we typically (consciously or subconsciously) pay attention or notice several features. We notice the person's **articulation** and how clearly and easily we can understand him or her. We pay attention to the person's voice and whether we think it is appropriate for the person's age and sex, and whether it is relatively clear and pleasant. We hear whether a person has a

Articulation: The modifying of the airstream (voiced and unvoiced sounds) into distinctive sounds of a language to produce speech. In speech-language pathology, the movement of the *articulators* (mandible, lips, tongue, and soft palate) to produce sounds of speech.

resonance problem and sounds like she is either "talking through her nose" or has a "stuffy nose." We listen for the person's language skills and determine whether good syntax is being used with a reasonably appropriate choice of words. We notice whether the person's speech is relatively fluent or whether she has unusual pauses and hesitations, repetitions of sounds and words, or prolongations of sounds. We also notice whether the person's hearing is adequate when we are talking with her or whether we have to speak more loudly than normal or repeat ourselves often. We also may notice whether the person seems embarrassed or frustrated with her own communication. In social conversations, when we notice problems in any of these areas, we usually try not to let the speaker know that we are aware of them. However, in our professional work as speech-language pathologists and audiologists, we need to recognize, analyze, diagnose, and treat a person's communication disorders.

Definitions

A communication **disorder** may be defined as an impairment in the ability to receive, comprehend, or send messages, verbally, nonverbally, or graphically. Alternatively, based on the earlier definition of *communication* (i.e., any means by which individuals relate their wants, needs, thoughts, feelings, and knowledge to another person), a communication disorder may be defined as any speech, language, cognitive, voice, resonance, or hearing impairment that interferes with conveying or understanding a person's wants, needs, thoughts, feelings, and knowledge.

As professionals, SLPs and audiologists try to maintain objectivity in their definitions of terms and diagnoses of communication disorders. In reality, the subjective feelings of clients and patients and their listeners are what determine how much a communication disorder actually affects an individual. Some individuals have very negative reactions to even minor communication problems, whereas others appear (or try to appear) remarkably tolerant, unconcerned, or unaware of even fairly significant problems. In essence, a communication disorder can affect a person's **quality of life**, and the tasks of SLPs and audiologists are to **habilitate** or **rehabilitate** our clients and patients to help improve their quality of life, and the quality of life of their families. Note that the term **handicap** is generally avoided when referring to communication disorders because of its negative connotations, with the terms **disability** and **impairment** now more commonly used. The term *speech impediment* is never used by speech-language pathologist but remains in the general lay person's (i.e., not an SLP or other healthcare or educator) vocabulary.

Prevalence vs Incidence

The term **prevalence** refers to the estimated number of individuals diagnosed with a particular disorder, disability, or disease at a given time in a region or country. The term **incidence** refers to the total number of new diagnoses of a disorder, disability, or disease in the population of a region or country over a 1-year period.

It is impossible to determine the precise prevalence or incidence of any communication disorder in the United States or any country. Moreover, general estimates likely underestimate the number of individuals with any disorder because not all communication disorders are diagnosed or diagnosed with the same criteria, or systematically reported to calculate their totals. In the United States, nearly one in 12 children ages 3–17 has a disorder related to speech, language, voice, or swallowing in the past 12 months, and more than half of them receive intervention (Center for Disease Control and Prevention – CDC, 2012). The data indicate that of the ≈8% of children with a communication or swallowing disorder, 5% have

Disorder: As defined by the World Health Organization (WHO), any loss or abnormality of psychological, physiological, or anatomical structure or function that interferes with normal activities.

Quality of life: A global concept that involves a person's standard of living, personal freedom, and the opportunity to pursue happiness; a measure of a person's ability to cope successfully with the full range of challenges encountered in daily living; the characterization of health concerns or disease effects on a person's lifestyle and daily functioning.

Habilitate: The process of developing a skill or ability to be able to function within the environment; the initial learning and development of a new skill. (See Rehabilitate.)

Rehabilitate: Restoration to normal or to as satisfactory a status as possible of impaired functions and abilities.

Handicap: As defined by the World Health Organization (WHO), loss or limitation of opportunities to take part in the life of the community on an equal level with others; a congenital or acquired physical or intellectual limitation that hinders a person from performing specific tasks.

Disability: As defined by the World Health Organization (WHO), any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being; the impairment, loss, or absence of a physical or intellectual function; *physical disability* is any impairment that limits the physical functions of limbs or gross or fine motor abilities; *sensory disability* is impairment of one of the senses (e.g., hearing or vision); *intellectual disability* encompasses intellectual deficits that may appear at any age (e.g., Down syndrome or following a severe TBI).

speech disorders, ≈3.5% have language disorders, ≈1.5% have voice disorders, and 1% have swallowing disorders. Of the children with communication or swallowing disorders, approximately one-third of children ages 3–10 and one-quarter of children ages 11–17 have more than one disorders. The CDC (2018) reported there are approximately 640,000 children seen in emergency departments each year for a mild to severe **traumatic brain injury (TBI; head injury)**. More than 25% of all children with learning or physical disabilities (e.g., *cerebral palsy*) also have one or more communication disorders (e.g., speech, language, literacy, cognitive, and/or hearing). Males are more likely to have communication disorders at all ages than females (ASHA, 2015); Bitsko, Holbrook, Robinson, et al., 2016; Catts & Kamhi, 2012).

Classification of Communication Disorders

There are numerous approaches to classification of **speech disorders** and **language disorders**. (In addition to the term *disorder*, clinicians often use the words *impairment* or *disability*, or more colloquially, *problem* or *difficulty*.) In general, communication disorders are divided into those affecting speech sounds (articulation disorders, phonological disorders, and motor speech disorders), *language* (receptive language and expressive language), *fluency* (stuttering and cluttering), *voice* (aphonia and dysphonia), *resonance* (hypernasality and hyponasality), *cognition* (developmental and acquired disorders [e.g., TBI]), *literacy* (reading and writing disorders), and *hearing* (conductive, sensorineural, and mixed losses) (**FIGURE 1-3**). Although a *swallowing disorder* (discussed in the *Swallowing Disorders/Dysphagia* chapter) is not technically a communication disorder, it is a major area of concern for SLPs, especially in medical settings. Swallowing disorders are often associated with motor speech disorders, particularly dysarthria.

SLPs and audiologists often try to determine *dichotomies* (i.e., either this or that) when classifying disorders. For example, a disorder may be considered *congenital* or *acquired*, *organic* or *functional*, an *articulation disorder* or a *phonological disorder*, a *receptive language disorder* or an *expressive language disorder*, a *child communication disorder* or an *adult communication disorder*, or a *stroke* or *traumatic brain injury,* etc. In many cases, two or more disorders may occur concurrently (i.e., a *mixed*, *coexisting*, or *comorbid* disorder), such as in a child who has articulation and language disorders or in an adult who has both language and cognitive disorders.

Congenital disorders are those that are present at birth and are usually considered either hereditary (e.g., some **syndromes**, such as Down syndrome), problems caused during pregnancy (e.g., maternal drug or alcohol abuse), or a complication at birth (e.g., fetal *anoxia* [no oxygen] or *hypoxia* [inadequate oxygen]). **Acquired disorders** are those that begin after an individual has developed normal communication abilities, such as a hearing loss from loud noise exposure, or a speech, language, or cognitive disorder caused by a traumatic brain injury (TBI; head trauma).

When considering the **etiology** or cause of a disorder, some clinicians use the terms **functional disorder** and **organic disorder**. A functional disorder is a problem or impairment that has some behavioral or emotional components but no known anatomic, physiologic, or neurological basis. An organic disorder has an anatomic, physiologic, or neurological basis and may have behavioral or emotional components. In some cases, it is difficult to clearly determine whether a disorder is purely or primarily an organic disorder or a functional disorder. (Organic disorders commonly have functional components.)

Impairment: Any loss or abnormality of an anatomical structure or physiological, neurological, or psychological function.

Prevalence: The estimated total number of individuals diagnosed with a particular disorder at a given time in a population, or the percentage of people in a population with the disorder.

Incidence: The rate at which a disorder appears in the normal population over a period of time, typically 1 year.

Traumatic brain injury (TBI)/head trauma: An acquired injury to the brain caused by an external force that results in partial or total functional disability, including physical, communication, cognitive, and psychosocial impairments.

Speech disorders: Any deviation or abnormality of speech outside the range of acceptable variation in a given environment.

Language disorders: An impairment of receptive and/or expressive linguistic symbols (morphemes, words, semantics, syntax, or pragmatics) that affects comprehension and/or expression of wants, needs, thoughts, feelings, or knowledge through the verbal, written, or gestural modalities.

Congenital disorders: A disorder that is present at birth.

Syndrome: A complex of signs and symptoms resulting from a common etiology or appearing together that presents a clinical picture of a disease or inherited anomaly.

Acquired disorders: A disorder that begins after an individual has developed normal communication abilities, such as a hearing loss from loud noise exposure or a speech, language, or cognitive disorder caused by a traumatic brain injury.

Etiology: The cause of an occurrence (e.g., a medical problem that results in a disorder or disability).

Functional disorder: A problem or impairment with no known anatomical, physiological, or neurological basis that may have behavioral or emotional causes or components (i.e., idiopathic—no known cause).

Organic disorders: An underlying motor/neurological disorder (e.g., childhood apraxia of speech and dysarthria), structural (e.g., cleft/lip/palate and other structural deficits or anomalies), or sensory/perceptual disorder (e.g., hearing impairment); a problem or impairment with a known anatomical, physiological, or neurological basis.

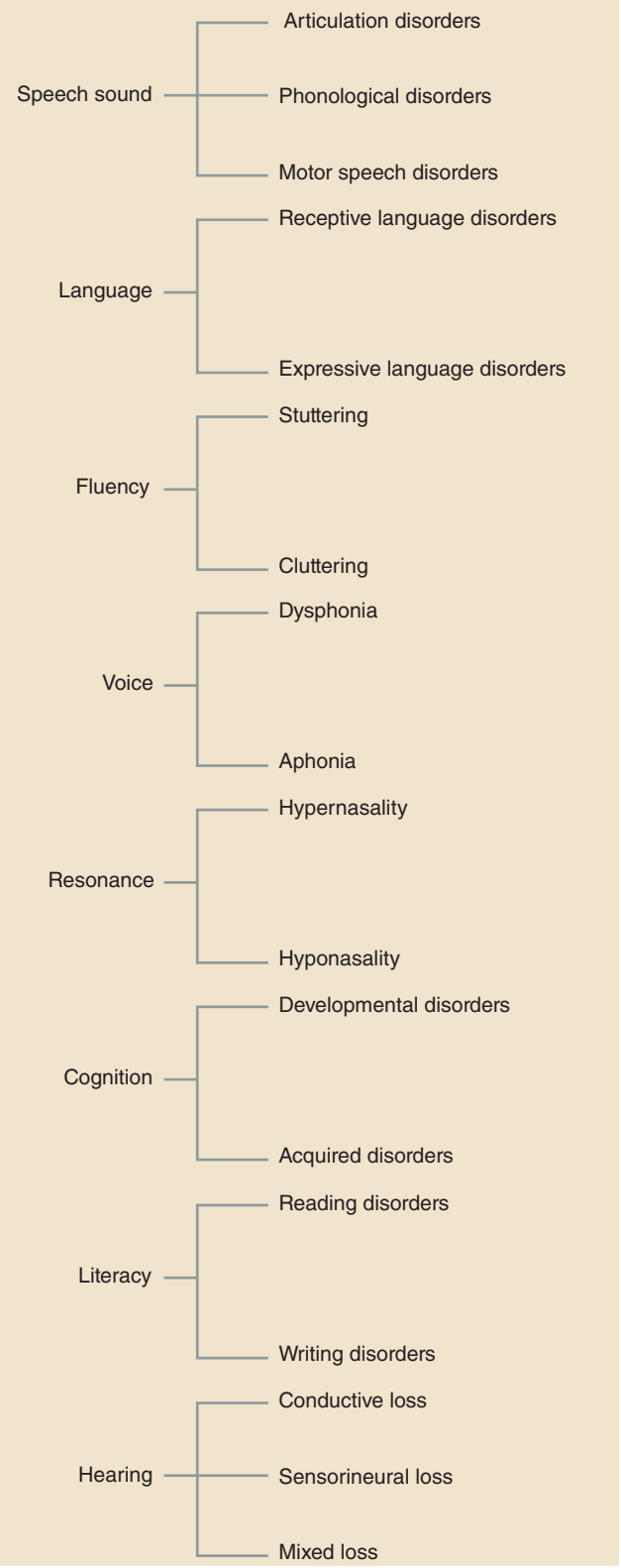


FIGURE 1-3 Major categories of communication disorders.

Speech Sound Disorders

Speech sound disorder: An umbrella term referring to any difficulty or combination of difficulties with perception, motor production, or phonological representation of speech sounds and speech segments—including phonotactic rules governing permissible speech sound sequences in a language.

ASHA (ASHA Practice Portal: Speech Sound Disorder, n.d.) defines a **speech sound disorder** as an umbrella term referring to any difficulty or combination of difficulties with perception, motor production, or phonological representation of speech sounds and speech segments—including phonotactic rules governing permissible speech sound sequences in a language.

A speech sound disorder is present when a child cannot correctly *produce* (say) speech sounds used in the child's language and is less intelligible than other children of the same age in the absence of an obvious sensory (e.g., hearing), structural (e.g., cleft palate), or neurological (e.g., cerebral palsy) etiology (Brosseau-Lapre & Schumaker, 2020; Koch, 2019). Speech sound disorders can be organic or functional in nature.

Functional speech sound disorders include those related to the articulation of speech sounds—that is, an **articulation disorder**. An articulation disorder is the incorrect production of speech sounds due to faulty placement, timing, direction, pressure, speed, or integration of the movements of the mandible, lips, tongue, or velum. Most articulation disorders are the result of inaccurate placement of the tongue. A **phonological disorder** is present when errors are predictable and rule-based (e.g., fronting, stopping, and final consonant deletion) that affect more than one sound and form phoneme patterns in which a child simplifies individual sounds or sound combinations (i.e., the child is unintentionally trying to make the sounds easier for himself to say). It is often difficult to clearly differentiate between articulation and phonological disorders; therefore, clinicians and researchers prefer to use the broader term *speech sound disorder* when referring to speech errors of unknown cause. *Organic speech sound disorders* include those resulting from motor/neurological disorders (e.g., childhood apraxia of speech and dysarthria), structural abnormalities (e.g., cleft lip/palate), and sensory/perceptual disorders (e.g., hearing impairment) (ASHA Practice Portal: Speech Sound Disorder, n.d.).

Articulation disorder: The incorrect production of speech sounds due to faulty placement, timing, direction, pressure, speed, or integration of the movements of the mandible, lips, tongue, or velum.

Phonological disorder: Predictable, rule-based (e.g., fronting, stopping, and final consonant deletion) errors that affect more than one sound and form phoneme patterns in which a child simplifies individual sounds or sound combinations.

Motor speech disorders occur in some children (*childhood apraxia of speech* and *dysarthria*) but are more commonly observed in adults. Motor speech disorders are the result of neurological impairments or differences that affect *motor* (i.e., movement) planning (programming), coordination, rate of speech (including pausing), or the strength of the articulators for the rapid and complex movements needed for smooth, effortless, and **intelligible**, well-articulated speech (Murray, Iuzzini-Seigel, Maas, Terband, & Ballard, 2020). In adults, motor speech disorders are most often caused by strokes, TBIs, or *neuromuscular diseases* (diseases of the nervous system that affect the muscles), such as Parkinson's disease (Duffy, 2012).

Motor speech disorder: Impaired speech intelligibility that is caused by a neurological impairment or difference that affects the motor (movement) planning or the strength of the articulators needed for rapid, complex movements in smooth, effortless speech.

Intelligible: The degree of clarity with which an utterance is understood by the average listener, which is influenced by articulation, rate, fluency, vocal quality, and intensity (loudness) of voice.

Disorders of Language

Many children have difficulty developing normal language abilities, and these difficulties may become increasingly apparent as the child gets older and more sophisticated language is expected. Adults who have had normal language all their lives may have acquired language impairments because of neurological disorders such as strokes or head injuries.

Language Disorders in Children

ASHA (ASHA, Practice Portal: Spoken Language Disorders, n.d.) defines a spoken language disorder (oral language disorder) as representing a significant impairment in the acquisition and use of language across modalities due to deficits in comprehension and/or production across any of the five language domains (i.e., phonology, morphology, syntax, semantics, pragmatics). Language disorders may persist across the lifespan and symptoms may change over time.

Language disorders in children—developmental language disorders (DLD)/specific language impairment (SLI)—can vary greatly in how they manifest during language development in both **receptive language** (how well a child understands what she hears) and **expressive language** (how well a child can verbally communicate her messages), with age of a child being a significant factor. Children who have difficulty understanding language commonly have difficulty

Receptive language: What a person understands of what is said.

Expressive language: The words, grammatical structures, and meanings that a person uses verbally.

Language delay: An abnormal slowness in developing language skills that may result in incomplete language development.

expressing themselves. Some children are slow to develop language and may be considered to have a **language delay**, but then develop normal language. Parents and pediatricians often refer to these children as "slow talkers" and "late talkers." Language disorders are associated with more than 75% of children who have learning disabilities (McDowell, 2018).

Causes of language disorders may include hearing loss, autism spectrum disorder, various genetic syndromes, intellectual disabilities, and traumatic brain injury. Most children with such disorders have articulation disorders in conjunction with their language disorders or language delays. Approximately 87% of SLPs working in schools report that they work with children who have language impairments (ASHA, 2020).

Language difference: Variations in speech and language production that are the result of a person's cultural, linguistic, and social environments.

General American English (GAE)/Standard American English (SAE): The speech of native speakers of American English that is typical of the United States and that excludes phonological forms easily recognized as regional dialects (e.g., Northeastern or Southeastern) or limited to particular ethnic or social groups, and that is not identified as a nonnative American accent; the norm of pronunciation by national radio and television broadcasters.

Children's culturally and linguistically diverse backgrounds can significantly affect their expressive language. However, expressive language affected by cultural and linguistic diversity is not a disorder—it is a *difference*. **Language differences** are variations in speech and language production that are the result of a person's cultural, linguistic, and social environments (Saad, 2009). When determining whether a particular child's language is a disorder or a difference, we must consider two norms: **General American English (GAE)**, also known as **Standard American English (SAE)**, and the cultural norms of the child (Paul, Norbury, & Gosse, 2018). A 1983 American Speech-Language-Hearing Association position paper on social dialects stated, "No dialect variety of English is a disorder or a pathological form of speech or language. Each social dialect is considered adequate as a functional and effective variety of English" (p. 24).

Social communication is the use of language in social contexts. It is the ability to use language that is appropriate to the context. It encompasses social interaction, social cognition, pragmatics, and language processing. Social communication skills include the ability to vary speech style, take the perspective of others, understand and appropriately use the rules for verbal and nonverbal communication, and use the structural aspects of language (e.g., vocabulary, syntax, and phonology) to accomplish these goals. Social communication skills are needed for language expression and comprehension in both spoken and written modalities. Spoken and written language skills allow for effective communication in a variety of social contexts and for a variety of purposes (Greenslade, 2020). **Social communication disorders** are characterized by difficulties with the use of verbal and nonverbal language for social purposes. Primary difficulties are in social interaction, social cognition, and pragmatics. Specific deficits are seen in a persons ability to:

Social communication disorder: Difficulties with the use of verbal and nonverbal language for social purposes such as social interactions, social cognition (thinking about social interactions), and pragmatics (e.g., appropriately matching communication to the social context, following rules of communication, and understanding nonliteral [implied] messages).

- communicate for social purposes in ways that are appropriate for the particular social context;
- change communication to match the context or needs of the listener;
- follow rules for conversation and storytelling;
- understand nonliterate or ambiguous language; and
- understand what is not explicitly stated.

Social communication disorder can result in far-reaching problems, including difficulty participating in social settings, developing peer relationships, achieving academic success, and performing successfully on the job. Social communication disorder may be a distinct diagnosis or may co-occur with other conditions, such as developmental disabilities, autism spectrum disorders, language disorders, traumatic brain injury, and others (ASHA Practice Portal: Social Communication Disorder).

Language Disorders in Adults

Impaired language (verbal comprehension and expression or written comprehension or expression) in adulthood may be a continuation of the language problems

of a child or adolescent. Nevertheless, we typically think of language disorders in adults as being acquired because of neurological impairments such as strokes and traumatic brain injuries. Strokes and aphasia are more common after age 65, although they can occur in much younger adults, but rarely in adolescents and children. Adults have lived their entire lives, often at very high functioning levels, and then because of medical problems or accidents develop communication disorders that they could never have imagined. Damage to the brain's left hemisphere can cause both language impairments (**aphasia**) and motor speech disorders (apraxia of speech and dysarthria (Coppens & Patterson, 2018; Manasco, 2021). It is estimated that the incidence is ≈180,000 new cases of aphasia each year in the United States and the prevalence is ≈1 million people living with aphasia (National Institute of Deafness and Other Communication Disorders [NIDCD], 2015).

Aphasia: An impairment in language processing that may affect any or all input modalities (auditory, visual, and tactile) and any or all output modalities (speaking, writing, and gesturing).

Disorders of Fluency/Disfluency/Stuttering

Fluency refers to continuity, smoothness, rate, and effort in speech production. All speakers are disfluent at times. They may hesitate when speaking, use fillers ("like" or "uh"), or repeat a word or phrase. These are called typical disfluencies or nonfluencies. A **fluency disorder** (**disfluency/stuttering**) is an interruption in the flow of speaking characterized by atypical rate, rhythm, and disfluencies (e.g., repetitions of sounds, syllables, words, and phrases; sound prolongations; and blocks), which may also be accompanied by excessive tension, speaking avoidance, struggle behaviors, and secondary mannerisms. People with fluency disorders also frequently experience psychological, emotional, social, and functional impacts as a result of their communication disorder (Tichenor & Yaruss, 2019a).

Fluency: The continuity, smoothness, rate, and effort in speech production.

Fluency disorder: An interruption in the flow of speaking characterized by atypical rate, rhythm, and disfluencies (e.g., repetitions of sounds, syllables, words, and phrases; sound prolongations; and blocks), which may also be accompanied by excessive tension, speaking avoidance, struggle behaviors, and secondary mannerisms.

Stuttering (disfluency) is likely the most common problem people think of when they think of a speech disorder. Probably most adults have encountered someone who stutters, and the media (including cartoons) have parodied people who stutter countless times. Stuttering is usually heard as repetitions of sounds, syllables, or words; prolongations of sounds; and abnormal stoppages or "silent blocks" while a child or adult is talking. There can be visible tension and struggle behaviors, such as blinking the eyes, looking away just at the moment of stuttering, and a variety of facial grimaces and unusual arm, hand, and other body part movements. Stuttering can be one of the most emotionally difficult communication disorders (Bloodstein & Bernstein Ratner, 2008; Jackson, Yaruss, Quesal, Terranova, & Whalen, 2015). Approximately 5% of preschool-age children have episodes of disfluency, and in the general population approximately 1% of school-age children and adults stutter (Yairi & Ambrose, 2013).

Stuttering (disfluency): A disturbance in the normal flow and time patterning of speech characterized by one of more of the following: repetitions of sounds, syllables, or words; prolongations of sounds; abnormal stoppages or "silent blocks" within or between words; interjections of unnecessary sounds or words; circumlocutions (talking around an intended word); sounds and words produced with excessive tension; or the substitution of a sound or word that is easier to say than the intended or desired sound or word.

Cluttering is considered a fluency disorder that shares some characteristics of stuttering but differs in several important ways. Cluttered speech is abnormally fast, with omissions of sounds and syllables so that words sound compressed or *truncated* (reduced in length). A person who clutters has abnormal patterns of pausing and phrasing, and has bursts of speech that may be unintelligible (St. Louis, 2020).

Cluttering: Speech that is abnormally fast with omission of sounds and syllables of words, abnormal patterns of pausing and phrasing, and often spoken in bursts that may be unintelligible; frequently includes abnormalities in syntax, semantics, and pragmatics.

Disorders of Voice

A **voice disorder (dysphonia)** occurs when the loudness, pitch, or quality (i.e., "smoothness") of a person's voice is outside the normal range for the person's age, gender, or the speaking environment, or when the voice is unpleasant to hear. Children and adults can have severe voice disorders that leave them without a functional voice for communicating essential messages. Most voice disorders in children and adults are diagnosed as **dysphonias** in which the person's voice sounds rough, raspy, or hoarse. Dysphonia may be caused by laryngitis, masses on the vocal folds (e.g., vocal nodules [cheerleader's nodules]), neurological damage

that causes weakness of the vocal folds, or psychological causes, such as tension in the vocal mechanism (*larynx*) (Stewart, Kling, & Allen, 2016). In children, voice disorders are significantly more prevalent in males than females; however, in adults, the prevalence is much higher in females than males (Martins, so Armaral, Tavares, Martins, Goncalves, et al., 2016). **Aphonia** is a complete loss of voice, which is rare, and typically has psychological causes such as emotional stress. Following the complete loss of voice, the person may use whispering or writing to communicate and often avoids communicating (Ferrand, 2019).

Voice disorder (dysphonia): Any deviation of loudness, pitch, or quality of voice that is outside the normal range of a person's age, gender, or geographic cultural background that interferes with communication, draws unfavorable attention to itself, or adversely affects the speaker or listener.

Dysphonia: A general term that means a voice disorder, with the person's voice typically sounding rough, raspy, or hoarse.

Aphonia: A complete loss of voice followed by whispering for oral communication that typically has psychological causes such as emotional stress.

Disorders of Resonance

Speech resonance is the result of the transfer of sound produced by the vocal folds through the vocal tract comprised of the pharynx, oral cavity, and nasal cavity. Normal resonance is achieved through an appropriate balance of oral and nasal sound energy, based on the intended speech sound. **Resonance disorders** (**hypernasality (hypernasal)**, **hyponasality (hyponasal/denasality/denasal)**) involve abnormal structures or functioning of the *hard* and *soft palates* (the roof of the mouth, front to back) that cause the voice to be directed inappropriately into the *oral cavity* (mouth) for *oral sounds* or directed into the *nasal cavities* for *nasal sounds* (i.e., /m/, /n/, and "ng"). Resonance disorders result from too much or too little nasal and/or oral sound energy in the speech signal. They can result from structural (e.g., *cleft palate*) or neurogenic (e.g., weakness of the soft palate) causes and occasionally are due to mislearning (e.g., articulation errors that can lead to the perception of a resonance disorder). Most resonance disorders in children are the result of cleft palates, which have an overall prevalence of approximately 0.001% to 0.002% in the general population (i.e., 1 to 2 per 1,000 live births) (Bloomfield & Liao, 2015; Kummer, 2020).

Resonance disorder: Abnormal modification of the voice by passing through the nasal cavities during production of oral sounds (*hypernasality*) or not passing through the nasal cavities during production of nasal sounds /m/, /n/, or /ŋ – ng/ (*hyponasality*).

Hypernasality occurs when there is sound energy in the nasal cavity during production of voiced, oral sounds. In hypernasality, oral consonants and vowels that should exit the mouth instead pass into the nasal passages, where they are *resonated* (i.e., increased vibration and amplification of sounds). Listeners perceive the person's speech as though the person is "talking through his nose." **Hyponasality** (**denasality**) occurs because of partial or complete obstruction of the nasal passages (e.g., enlarged adenoids), causing the /m/, /n/, and "ng" sounds to not have their normal nasal resonance (Kummer, 2020; Peterson-Falzone, Hardin-Jones, & Karnell, 2009). Acquired resonance disorders in adults are usually the result of a weak soft palate (as in dysarthria) that is caused by strokes and head injuries.

Hypernasality (hypernasal): A resonance disorder that occurs when oral consonants and vowels enter the nasal cavity because of clefts of the hard and soft palates or weakness of the soft palate, causing a person to sound like he is "talking through his nose."

Hyponasality (hyponasal/denasality/denasal): Lack of normal resonance for the three English phonemes (/m/, /n/, and /ŋ - ng/) caused by partial or complete obstruction in the nasal tract.

Disorders of Cognition

Cognition is a term referring to the mental processes involved in gaining knowledge and the act or process of thinking and learning that involves attention, perceiving stimuli, memory, organization and categorization of information, abstraction, generalization, reasoning, judgment, and problem solving; it is closely related to intelligence (American Psychological Association, 2018).

Cognitive disorders in children are usually associated with intellectual disabilities. The majority of children who have intellectual disabilities also have mild to profound language delays, with some children never developing functional language skills or the ability to live independently. Relatively intact cognitive abilities are important for development of both speech and language (Goswami, 2019).

Cognitive communication disorders are defined as "difficulty with any aspect of communication that is affected by disruption of cognition" (American Speech-Language Hearing Association, 2005). Cognitive communication disorders

Cognition: The mental processes involved in gaining knowledge and the act or process of thinking and learning that involves attention, perceiving stimuli, memory, organization and categorization of information, abstraction, generalization, reasoning, judgment, and problem solving; closely related to intelligence.

are commonly seen in individuals of all ages who have sustained a traumatic brain injury. It is often the combination of cognitivecommunication impairments that have the most profound effects on a child's ability to function independently (Lundine & Barron, 2019).

Adults may have acquired cognitive disorders, which are usually the result of damage to the right hemisphere or the frontal lobes of the brain. Cognitive disorders affect attention, perception of stimuli, organization and categorization of information, memory, reasoning, judgment, and problem solving—in a word, *thinking*. Mild to moderate TBIs can result in significant cognitive disorders in individuals of all ages, and severe neurological impairments can result in any combination of aphasia, motor speech disorders, and cognitive disorders (Manasco, 2021). Approximately 1% to 2% of children and adults have TBIs that result in long-term disability (Finnanger, Olsen, Skandsen, Lydersen, Vic, et al., 2015; Fuentes, Wang, Haarbaurer-Krupa, Yeates, Durbin, et al., 2018).

Many elderly people develop **dementia**, a neurological disorder that is a progressive deterioration of cognitive functioning and personality. Alzheimer's disease is just one form of dementia (Robnett, Brossoie, & Chop, 2020). Approximately 8% to 15% of people between 65 and 70 years of age have some level of dementia; this percentage increases significantly with every additional 5 years of age (Powers, Bennet, Turner, Dowling, Ciarleglio, et al., 2020).

Cognitive disorder: An impairment of the mental processes involved in gaining knowledge and the act or process of thinking and learning that involves attention, perceiving stimuli, memory, organization and categorization of information, abstraction, generalization, reasoning, judgment, and problem solving.

Cognitive communication disorder: Difficulty with any aspect of communication that is affected by disruption of cognition; often seen in traumatic brain injuries.

Dementia: A neurological disease that causes intellectual, cognitive, and personality deterioration that is more severe than what would occur through normal aging.

Hearing Loss/Hearing Impairment

Hearing is the foundation for development of speech and language. **Hearing loss (hearing impairment)** can cause numerous speech and language delays and disorders in children that can affect them throughout their lives. Hearing loss is the most common of all physical impairments. Of 35 congenital disorders detected through newborn screening, hearing loss is the most prevalent, affecting ≈1.5% of U.S. infants (CDC, 2018). In addition, 83 out of every 1,000 school-age children have a significant hearing loss (ASHA, 2008b; Mehra, Eavey, & Keamy, 2009). Approximately 4.5% of adults 18 to 44 years of age, 14% of adults 45 to 64 years of age, and 54% of adults 65 years of age and older have some degree of hearing loss (Hoffman, Dobie, Losonczy, Therman, & Flamme, 2017).

Hearing loss/hearing impairment: Abnormal or reduced function in hearing resulting from an auditory disorder.

Adults may acquire hearing impairments at any age from loud noises, medical problems that affect the ear, or the progressive hearing losses that often come with age. The two primary types of hearing impairments are conductive and sensorineural. A **conductive hearing loss** is a decrease in the loudness of a sound because of poor conduction of sound through the outer or middle ear. Conductive hearing losses can have numerous causes, including malformations of the outer ear, occlusion (blockage) of the ear canal from ear wax, damage to the eardrum or the three small bones in the middle ear, or middle ear infections (Welling & Ukstins, 2019).

Conductive hearing loss: A reduction in hearing sensitivity because of a disorder of the outer or middle ear.

In a **sensorineural hearing loss**, a reduction of hearing sensitivity occurs because of a disorder of the inner ear or the auditory nerve that carries the information to the brain. This type of hearing loss typically results in difficulty discriminating speech sounds. Infants may be born with sensorineural hearing losses, or they may develop losses in childhood because of infections such as measles, mumps, and chickenpox. In older children, adolescents, and young adults, sensorineural hearing losses are often caused by listening to loud music for long periods of time. (The most likely cause of hearing loss among teens and college students is the use of MP3 and MP4 players and headphones or earbuds that can present loud music to the ears without disturbing other people [ASHA, 2016; Moore, 2010]). In older adults, sensorineural hearing losses are common with advancing age (Welling & Ukstins, 2019).

Sensorineural hearing loss: A reduction of hearing sensitivity produced by disorders of the cochlea and/or the auditory nerve fibers of the vestibulocochlear (VIII cranial) nerve.

Emotional and Social Effects of Communication Disorders

Communication disorders can have untold emotional and social effects on people of all ages. Many of these effects are likely undocumented and even unacknowledged by the individuals. However, beyond the individuals with the communication disorders are the parents, grandparents, siblings, husbands and wives, and other family members who are bewildered and anguished by their loved one's communication problems. A communication disorder affects a family—not just the person who has it. Thus, it is essential to educate the family about the communication disorder that their loved one has (Flasher & Fogle, 2012; Tye-Murray, 2012). Each chapter in this text that deals with a disorder has a discussion of the emotional and social effects of that disorder on the person and the family.

As clinicians, we always need to keep in mind the entire person (and the family) with whom we are working, rather than focusing solely on the disorder the person has. We need to place considerable importance on developing good, caring, working relationships with clients and their families to optimally carry out therapy and provide the necessary family education and training. Good people skills and counseling skills are essential when working with clients of all ages and their families (Flasher & Fogle, 2012).

Chapter Review

Chapter Summary

Speech-language pathologists and audiologists work with all areas of communication, including hearing, speaking, reading, writing, and nonverbal communication. We work with all areas of speech and language, including phonology, morphology, syntax, semantics, and pragmatics. Communication disorders may affect articulation, language, fluency, voice, resonance, cognition, and hearing. Communication disorders can have untold emotional and social effects on children, adolescents, and adults, and their families. Although a swallowing disorder is not a communication disorder, it is a major area of concern for SLPs, especially in medical settings.

Study Questions

Knowledge and Comprehension

1. List the four speech systems.
2. Explain morphology. In two three-syllable words, indicate each morpheme.
3. Define pragmatics and explain some of its elements.
4. Define communication disorder.
5. Explain receptive language and expressive language.

Application

1. When talking with clients and their families, discuss why it is helpful to understand that verbal content is usually more important for factual communication and nonverbal content is more important for judging emotions and attitudes.
2. Explain how prosody helps us communicate.
3. Discuss the importance of good pragmatics when working with clients and their families.
4. Discuss how being familiar with the major categories of communication disorders could be helpful in your personal life.
5. Discuss the importance of appreciating and understanding the emotional and social effects of language disorders in children

Analysis and Synthesis

1. Explain what is meant by this statement: "We cannot not communicate."
2. Explain the differences between speech and language.
3. Compare the similarities and differences of *linguistic competence* and *grammatical intuition*.

4. Discuss how determining dichotomies might be helpful in diagnosing a speech or language disorder.
5. Discuss how cognitive disorders in children might affect their language abilities.

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CHAPTER 2

The Professionals

KEY TERMS

acute care hospital
American Speech-Language-Hearing Association (ASHA)
clinical fellowship year (CFY)
skilled nursing facility (SNF)/ convalescent hospital
cultural competence
diagnosis
evaluation (assessment)
evidence-based practice (EBP)
inpatient
National Student Speech-Language-Hearing Association (NSSLHA)
outpatient
scope of practice
signs
speech-language pathology assistant (SLPA)
subacute hospital
swallowing disorders (dysphagia)
symptoms
telecommunication devices for the deaf (TDD)

LEARNING OBJECTIVES

After studying this chapter, you will be able to:

- List the people whom speech-language pathologists and audiologists help beyond the clients and patients directly receiving therapy.
- Explain the importance of the American Speech-Language-Hearing Association to the professions of speech-language pathology and audiology.
- List the people who may be involved in the team approach in a school setting and a hospital setting.
- Explain the basics of the scope of practice of speech-language pathologists and audiologists.
- List the variety of work settings in which speech-language pathologists and audiologists practice.

CHAPTER OUTLINE

Introduction

Speech-language pathology and audiology are wonderful professions filled with caring and amiable professionals who serve interesting people with challenging delays, disorders, and impairments. You will likely find these professions to be increasingly fascinating as you study them. In these fields, it eventually becomes nearly impossible to separate the individual from the profession: The knowledge and skills you learn as a speech-language pathologist or audiologist become an important part of who you are as a person and how you interact and communicate with others.

Beginning Your Study of Speech-Language Pathology and Audiology

This text is designed to answer your questions about speech-language pathology and audiology. As you journey through its chapters, you will likely recognize that the scope of these professions is broader than you initially imagined. Speech-language pathologists and audiologists learn and are concerned about people from the moment of conception to their last breath of life. At every age, infants, children, adolescents, young adults, middle-aged adults, and elderly adults may experience unique challenges that affect their speech, language, cognitive, hearing, and swallowing functions. You will learn about many of these challenges through this course and this text. If you decide to major in communication sciences and disorders (CSD), you will learn about each of the areas introduced in this text in more depth. Conversely, if you choose to take only this course, you will still find this information to be invaluable throughout your adult life.

Some clinicians believe that speech-language pathology and audiology are the best majors for preparing students for adult life and parenthood. During their education and training, students learn about the following subjects:

- Normal and abnormal development of infants and children
- How to work with children both on a one-on-one basis and in small groups of two or three
- How to talk with children about what is bothering them as well as how to talk with parents regarding their concerns about their children
- How to motivate children to work hard to improve their communication and academic skills
- How to work with children who are fearful of failure and who need special care to learn to trust you and themselves
- How to work with adults and elderly people with a variety of neurological problems
- How to handle the sensitive and sometimes emotional issues that accompany impairment or loss of communication abilities

- The problems faced by hearing-impaired individuals of all ages, and how these problems affect not only the child with a hearing loss but also the parents and family of the child
- How to be a patient, active listener—a trained listener—which is perhaps the most important interpersonal skill you can develop

Communication disorders can affect people throughout the life span. For example, children may be born with hereditary disorders and syndromes, cleft lips and palates, hearing impairments, auditory processing disorders, and cerebral palsy. Adults with acquired communication disorders caused by stroke or traumatic brain injury may never be able to communicate easily and effectively again, which can prevent them from returning to work or force them to work at a lower-level (and lower-paying) job.

The person with a communication disorder is, in a way, the tip of an iceberg. A child or an adult with a communication disorder affects the family around that individual, as well as countless other people with whom the child or adult tries to communicate (**FIGURE 2-1**). Therefore, when we help individuals improve their communication abilities, we are also helping many other people, both directly and indirectly—most of whom we never meet.

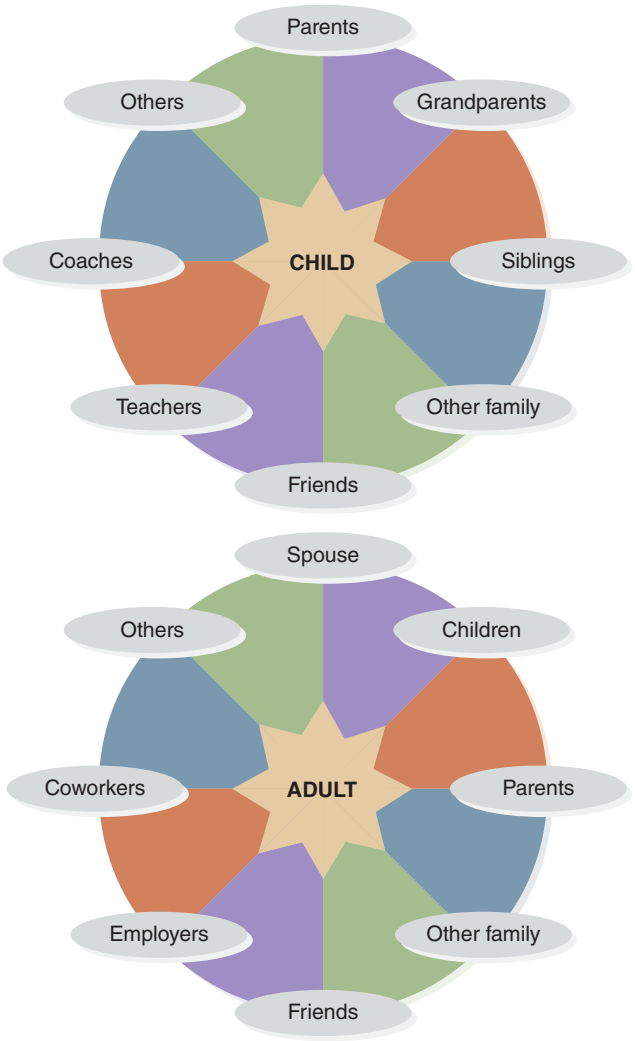

FIGURE 2-1 Who is really helped?

Insight Question

Have you ever had a "problem" by which other people referred to you (e.g., "Big ears!" "Skinny!" "Fatty!")? How did you feel about being referred to primarily as a problem and secondarily as a person?

Person-First Language

Students and professionals in speech-language pathology and audiology must keep in mind that the problems individuals experience do not define who they are. People are not their problems; problems are something people experience. Therefore, as clinicians and researchers, we follow the "person-first" convention as closely as possible; in other words, we refer to "a boy with an articulation disorder," "a girl with a hearing impairment," "a client/patient with a voice disorder," and so on. Professionally, we avoid statements such as "He's an articulation client," "She's hearing impaired," "She's a voice case," and so on, because such wording implies that the person's problem is his or her identity. It is easy to slip into the habit of referring to the problem that the person has rather than to the person who has a problem. We need to learn early and maintain our vigilance to always use person-first language.

PERSONAL STORY: Walter Reed Army Medical Center

Several years ago, I was invited to present an in-service about counseling with patients and family members to the team of speech-language pathologists working with injured active duty soldiers and veterans at Walter Reed Army Medical Center. Upon entering the Medical Center, I had to check in with the front office. During the checking in process, a young wounded active duty soldier with his head wrapped in a large bandage came up to the desk to ask a question of another clerk. After giving her his name, she looked up at him and said, "Oh, you're the new TBI." I watched him lower his head and eyes as if he was saying to himself, "Oh, that's all I am now. I'm not a person anymore. I'm just a TBI." I began my in-service with the team of speech-language pathologists on the importance of remembering that patients are first and foremost people and not the injuries, disorders, or disabilities they have.

A Brief History of the Professions

The professions of speech-language pathology and audiology are relatively new compared to medicine and education. These professions have common origins: They can be traced back to Alexander Graham Bell, whose father and grandfather had been *elocutionists* (individuals who studied formal speaking in pronunciation, grammar, style, and tone) in Edinburgh, Scotland, in the 1860s. A. G. Bell and his father were interested in people who were deaf or hard of hearing (A. G. Bell's mother and wife were both deaf) and developed and applied a formal system of speech rehabilitation for the deaf. In doing so, A. G. Bell recognized the need for the professions that would later be called speech-language pathology and audiology.

In the early 1900s, groups with special interests in *speech correction* in the United States were formed within the National Association of Teachers of Speech (NATS), a professional society for individuals with interests in rhetoric, theater, and public speaking. In 1925, the American Academy of Speech Correction (AASC) was unofficially chartered by a group within NATS. The AASC members included physicians, psychologists, professors of English and speech, phonetician, and *speech correctionists*. The AASC eventually evolved to become the American Speech and Hearing Association. In the 1970s, when language disorders became an essential area of the profession, the organization changed its name to the **American Speech-Language-Hearing Association (ASHA)** but retained the abbreviation ASHA.

American Speech-Language-Hearing Association (ASHA): The professional organization that represents speech-language pathologists and audiologists and sets standards for their education, training, and certification. The organization was formerly called the American Speech and Hearing Association, and retained the ASHA abbreviation.

Moeller (1975), in her book *Speech Pathology and Audiology: Iowa Origins of a Discipline*, discussed the roots of our professions in psychology and medicine. In 1924, Lee Edward Travis, a doctoral student at the University of Iowa with training in psychology and medicine, became "the first individual in the world to be trained by clearly conscious design at the doctoral level for a definite and specific professional objective of working experimentally and clinically with speech and hearing disorders" (p. 14).

Rehabilitation is a relatively new concept. Even after World War I, when thousands of injured soldiers were released from hospitals, little rehabilitation was provided. Most certainly, there was no speech, language, and cognitive therapy for traumatic brain injuries caused by bullets, shrapnel, and explosions, or hearing aids for the hearing losses caused by acoustic trauma from explosions experienced by many of these soldiers. If soldiers were medically able to be discharged, they were sent home; how they functioned when they arrived there was not the concern of the medical personnel or the military. After World War II, however, rehabilitation of injured men and women (including those with head injuries) became an important focus of their overall treatment.

In the United States, special education and special services for children struggling educationally were not federally mandated and widespread until the 1960s. During that decade and the following decades, important federal legislation was enacted to provide the necessary services to school-age and even preschool children:

- 1965: The *Elementary and Secondary Education Act (Public Law 89-10)* was enacted. This law required states to provide funds so that students with special needs, including the gifted, would be evaluated and appropriately educated.
- 1975: The *Education of All Handicapped Children Act (Public Law 94-142)* mandated that all school-age children with disabilities must be provided a free and appropriate education in the least restrictive environment. This included providing all related services, such as speech-language therapy, physical therapy, and occupational therapy, for children to maximally benefit from their education.
- 1986: The *Education of the Handicapped Amendments (Public Law 99-457)* provided federal funds to states to develop programs for children with disabilities from birth through 2 years of age, and the provisions of Public Law 94-142 were extended to children with disabilities between 3 and 5 years of age.
- 1990: The *Individuals with Disabilities Act (IDEA)* came into being. In addition, the *Americans with Disabilities Act (ADA) (Public Law 101-336)* mandated improved access for individuals with handicaps to buildings and facilities and provided for effective communication for people with disabilities, including the use of interpreters, sign language, and **telecommunication devices for the deaf (TDD)**.
- 1999: The reauthorized *Individuals with Disabilities Act* included a special category for children and adolescents with traumatic brain injuries. Children and adolescents with TBI who qualify for special education must be provided with appropriate education, regardless of the severity of their disability.

Telecommunication devices for the deaf (TDD): Telephone systems used by those with significant hearing impairments in which a typewritten message is transmitted over telephone lines and is received as a printed message.

In 1997, the Commission for Accreditation of Rehabilitation Facilities (CARF®) established new standards for the accreditation of Pediatric Family-Centered (PFC) rehabilitation programs. These standards helped change the face of rehabilitation and represent both the beginning and end of the rehabilitation continuum of care and are particularly relevant to the TBI population. Pediatric family-centered programs must serve children with functional limitations as a result of acquired or congenital impairments. The programs must demonstrate that they are culturally sensitive, interdisciplinary, coordinated, and outcome focused. The standards

Swallowing disorder (dysphagia): Difficulty swallowing that occurs when impairments affect any of the four phases of swallowing (oral preparatory, oral, pharyngeal, or esophageal), which places a person at risk for aspiration of food and/or liquid and potential aspiration pneumonia.

mandate that each child's treatment program is individualized and geared toward the child's age and stage of development.

The professions of speech-language pathology and audiology have grown as the services they provide have been increasingly valued and funded. From the early years of emphasis on stuttering, articulation, and hearing disorders, these professions expanded until they touched every communication problem known to science. With the addition of **swallowing disorders (dysphagia)** to their scope of practice, speech-language pathologists can work with disorders of anatomy and physiology that involve the oral, pharyngeal (*pharynx*), laryngeal (*larynx*), and respiratory systems, regardless of a person's communication abilities.

Professional Organizations

Before discussing professional organizations, we should first explain what a *professional* is. A professional is a person engaged in one of the learned professions and possesses comprehensive knowledge and distinctive qualifications that allows the person to work independently within the scope of his/her profession. Being a professional involves how you communicate, move, develop relationships with colleagues and clients, manage time, organize yourself, and utilize technology. How you present yourself professionally influences the way others will judge you and your competence in your field (Dantuma, 2021).

The American Speech-Language-Hearing Association (ASHA) is the primary scholarly and professional organization for individuals in the fields of communication sciences and disorders in the United States. ASHA is committed to ensuring that all people with speech, language, cognitive, hearing, and swallowing disorders receive appropriate services to help them communicate effectively and have a safe and functional swallowing mechanism. ASHA provides professional support, public awareness, opportunities for professional growth, and advocacy for the professions and the individuals whom they serve.

ASHA considers communication sciences and disorders to be a single discipline with two separate professions: speech-language pathology and audiology. ASHA also publishes two documents that outline the scope of these professions: "Scope of Practice in Speech-Language Pathology" and "Scope of Practice in Audiology." These documents are available on the ASHA website (www.asha.org).

ASHA's Certificates of Clinical Competence (CCC) in Speech-Language Pathology (CCC-SLP) and Audiology (CCC-A) are nationally recognized professional credentials that indicate individuals have met rigorous academic and professional standards, and that they have the knowledge, skills, and expertise to provide high-quality clinical services. SLPs and audiologists must engage in ongoing professional development to keep their certification current.

As the need for speech-language pathology and audiology services has increased, membership in ASHA has steadily grown. As of 2020, ASHA had 218,000 members and affiliates, including members from countries other than the United States. Children and adults worldwide experience communication disorders, and perhaps in countries where there is the greatest need (the "developing countries"), there are the fewest professionals and resources to provide help.

Dantuma (2021) discusses benefits of being an ASHA professional. A few of the benefits include:

- Connection to other professionals occurs in person at annual conventions (both state and national). Information regarding the latest research, clinical skills, and techniques are presented through workshops, presentations, and poster sessions.

- Access to several journals:
  - *American Journal of Audiology* (AJA)
  - *American Journal of Speech-Language Pathology* (AJSLP)
  - *Journal of Speech, Language, and Hearing Research* (JSLHR)
  - *Language, Speech, and Hearing Services in Schools* (LSHSS)
  - *Special Interest Group (SIG) articles and research*
- Access to clinical resources, such as ASHA's Practice Portals.
- Advocacy for the profession through the Public Policy Agenda for health care, schools, professional practice and workplace issues, and patient, client, and student issues. ASHA's Federal and Political Affairs Team advocates on legal and regulatory issues at the federal level.

State Organizations

All U.S. states have their own state associations (e.g., California Speech-Language-Hearing Association [CSHA]) that provide many of the same services as ASHA, albeit at the state level. Both the state associations and the national ASHA organization hold annual conventions and conferences and provide numerous opportunities for continuing education and professional development. Individual state licensing boards also regulate the practice of speech-language pathology and audiology, with the state licensing requirements generally following the requirements for ASHA certification.

Insight Question

How could attending state and national conferences and conventions be valuable to your professional development and career?

International Organizations

Each country around the world that educates and trains individuals to work in these professions has its own national association—for example, Speech-Language and Audiology Canada (SAC), Australian Association of Speech and Hearing (AASH), Chinese International Speech-Language and Hearing Association (CICHA), and Egypt Society for Phoniatrics and Logopedics (ESPL). Note that many countries around the world use *phoniatics* and *logopedics* as their terms for speech and language, respectively, in their association titles.

Audiology Organizations

In addition to being members of ASHA, many audiologists are members of the American Audiological Association (referred to as "Triple A"—AAA). AAA is separate from ASHA and has its own national conventions designed to meet the needs of audiologists.

Student Organizations

Students can join the **National Student Speech-Language-Hearing Association (NSSLHA)**: the ASHA-recognized national organization for undergraduate and graduate students interested in the study of human communication and related disorders and disabilities. NSSLHA's mission is to promote unity and fellowship among students and sponsor professional development opportunities for these students. They are undergraduate or graduate students (full- or part-time, national or international). NSSLHA (www.nsslha.org) provides students with a closer affiliation to professionals in the discipline, as well as monthly professional publications and other support designed specifically for them. NSSLHA also has developed an excellent manual for students, titled *Communication Sciences Student Survival Guide* (NSSLHA, 2010), which provides, among other things,

National Student Speech-Language-Hearing Association (NSSLHA): The ASHA-recognized national organization for undergraduate and graduate students interested in the study of human communication and related disabilities. NSSLHA's mission is to promote unity and fellowship among students and sponsor professional development opportunities for these students.

information on financing your education and advice (from students' perspectives) about enhancing your education and involvement in the profession throughout your education.

Professional Ethics

Ethics: The principles of conduct governing an individual or group; the process of deciding what is the right thing to do in a moral dilemma.

To be nationally certified professionals, members of a profession must adhere to a code of ethics. **Ethics** is the principles of conduct governing an individual or group; the process of deciding what is the right thing to do in a moral dilemma (Aiken, 2020). Ethics are rational and systematic reflection on matters of morality, right, wrong, and good. Ethics are the standards of conduct that guide professional behavior. They define acceptable versus unacceptable behaviors and promote high and consistent standards of practice (Swisher & Royeen, 2020)

The establishment of a code of ethics has been a major function of ASHA since its founding in 1925. For speech-language pathologists and audiologists, ethical practice transcends employment settings, levels of experience, and nature of the clientele. Once a speech-language pathologist or audiologist signs the agreement to follow the ASHA Code of Ethics and holds a current Certificate of Clinical Competence, he or she must abide by the ASHA Code regardless of the certification held or the location where services are provided. Failure to abide by the Code of Ethics could result in loss of certification or licensure (Handelsman, 2021). Refer to ASHA's website (www.asha.org) for a copy of the Code of Ethics.

Cultural Competence

Cultural competence: The understanding and appropriate responding to the unique combination of cultural variables—including ability, age, beliefs, ethnicity, experience, gender, gender identity, linguistic background, national origin, race, religion, sexual orientation, and socioeconomic status—that the professional and client/patient bring to interactions.

As a profession and as individual speech-language pathologists and audiologists, we are very concerned with and involved with **cultural competence**. Cultural competence involves understanding and appropriately responding to the unique combination of cultural variables and the full range of dimensions of diversity that the professional and client/patient/family bring to interactions. "Culture and cultural diversity can incorporate a variety of factors, including but not limited to age, disability, ethnicity, gender identity (encompasses gender expression), national origin (encompasses related aspects e.g., ancestry, culture, language, dialect, citizenship, and immigration status), race, religion, sex, sexual orientation, and veteran status. Linguistic diversity can accompany cultural diversity." (ASHA, 2017). (Note: The ASHA Office of Multicultural Affairs celebrated its 50th anniversary in 2021.)

The client/patient population reflects a wide array of differences and similarities across cultural variables. Professional competence requires that speech-language pathologists and audiologists practice in a manner that considers each client's/patient's/family's cultural and linguistic characteristics and unique values so that the most effective assessment and intervention services can be provided (ASHA, 2004, 2006). Developing cultural competence is a dynamic and complex process requiring ongoing self-assessment and continuous expansion of one's cultural knowledge. It evolves over time, beginning with an understanding of one's own culture, continuing through interactions with individuals from various cultures, and extending through one's own lifelong learning. Cultural competence in service delivery is increasingly important to (ASHA, n.d., Cultural Competence):

- respond to demographic changes in the United States;
- eliminate long-standing disparities in the health status of people based on racial, ethnic, and cultural backgrounds;

- improve the quality of services and health outcomes; and
- meet legislative, regulatory, and accreditation mandates.

Responsiveness to the cultural and linguistic differences that affect identification, assessment, treatment, and management includes the following (ASHA, n.d., Cultural Competence):

- Completing self-assessment to consider the influence of one's own biases and beliefs and the potential impact on service delivery
- Identifying and acknowledging limitations in education, training, and knowledge and seeking additional resources and education to develop cultural competence via continuing education, networking with community members, and so forth
- Seeking funding for and engaging in ongoing professional development of cultural competence throughout one's career
- Demonstrating respect for an individual's age, disability, ethnicity, gender identity, national/regional origin, race, religion, sex, sexual orientation, and veteran status
- Integrating clients'/patients'/families' traditions, customs, values, and beliefs in service delivery
- Identifying the impact of assimilation and acculturation on communication patterns during identification, assessment, treatment, and management of a communication disorder/difference
- Assessing/treating each client/patient/family as an individual and responding to his/her unique needs, as opposed to anticipating cultural variables based on assumptions
- Identifying appropriate intervention and assessment strategies and materials that do not violate the client's/patient's/family's unique values and/or create a chasm between the clinician and client/patient/family and his/her community
- Using culturally appropriate communication with clients/patients, caregivers, and family so that information presented during counseling is provided in a health literate format consistent with clients'/patients' cultural values
- Referring to/consulting with other service providers with appropriate cultural and linguistic proficiency, including using a cultural informant or broker
- Upholding ethical responsibilities during the provision of clinically appropriate services

Global Citizenship

Global citizenship refers to the concept that all people have civic responsibilities to the world as a whole rather than just their local communities and countries. Many students studying speech-language pathology and current professionals will work or have worked in countries beyond where they are educated and trained, some in low-income countries with limited resources. These countries usually have extreme poverty, high levels of disability, limited access to health and education (especially for women), low levels of technology, limited access to current best practice health service provisions, and few allied health professionals. Preparing for and being a speech-language pathologist working with diversity requires more than cultural competence. This work requires awareness, knowledge and skills that can be defined as global citizenship (Millar, Mathisen, Carey, & Fortune, 2017).

Insight Question

How might your own biases and beliefs potentially impact your interactions with patients/clients, their family members, and colleagues?

Students with Accents and Disabilities

Students from many countries and with many accents and nonstandard dialects choose to become speech-language pathologists or audiologists. ASHA's 1998a and 1998b position statements state that students and professionals in the communication sciences and disorders professions who speak with accents and/or dialects can effectively provide speech, language, and audiological services as long as they have:

- the expected level of knowledge in normal and disordered communication,
- the expected level of diagnostic and clinical case management skills, and
- if modeling is necessary, the ability to model the target phoneme, grammatical feature, or other aspect of speech and language that characterizes the client's particular problem (ASHA, 1998a, p. 1).

The preceding statement was reaffirmed in the ASHA (2011) Professional Issues Statement on The Clinical Education of Students with Accents (http://www.asha.org/policy/PI2011-00324.htm). That statement further provides specific "Strategies for Supporting Students When There Are Concerns About Their Accents."

The Team Approach/Interdisciplinary Team

As professionals working with communication disorders, we are members of a team—in all of our work, we use the team approach (interdisciplinary team) (Ellis, Kubalanza, Simon-Cereijido, Munger, & Fuligni, 2020). We typically work with other professionals as well as with family members of clients and patients. At a minimum, the people on the team are the client/patient and the clinician, with the client/patient always being the most important team member. After all, without the client or patient, there would be no need for any other team members (**FIGURE 2-2**).

FIGURE 2-2 The team approach always includes the client/patient, family, and other professionals.

Typical treatment teams for different settings include the following members:

- University clinic: Client, family or caregivers, student clinician, and supervisor, as well as other support people, such as speech-language pathologist or audiologist, clinic director, and department chairperson
- School: Child, family or caregivers, speech-language pathologist or audiologist, classroom or special education teacher, school psychologist, reading specialist, and others
- Hospital: Patient, family or caregivers, physician(s), nurse(s), speech-language pathologist or audiologist, clinical supervisor or department head, audiologist, physical therapist (PT), occupational therapist (OT), respiratory therapist (RT), dietitian, social worker, and others
- Rehabilitation center or clinic: Client/patient, family or caregivers, speech-language pathologist or audiologist, clinical supervisor or department head, and possibly other rehabilitation specialists such as occupational therapist and physical therapist
- Private practice: Client, family or caregivers, speech-language pathologist or audiologist, supervisor/director or owner of practice

Countless other people are indirectly involved with helping clients and patients, including secretarial and administrative staff, custodial and maintenance workers, and kitchen workers. The list of the "behind the scenes" people is long, and if any of these people are not doing their job well, that deficiency or limitation can affect the person we are trying to help. After clinicians have been working for a while, they begin to realize that what often makes the "machinery" of the work environment function smoothly are the people who are the least acknowledged for their contributions. As communication specialists, we need to show our appreciation for all people who are part of the big picture of helping people with communication disorders.

PERSONAL STORY: Summers in Hospitals

While teaching at my university, I spent many summers working full-time in acute, subacute, or convalescent hospitals (skilled nursing facilities) as a staff speech-language pathologist. I always made it a point to get to know all the medical and rehabilitation staff I would be working with, and in addition, the maintenance and custodial people. At the end of the summer, on my last day before going back to teaching, I always brought a treat (trays of an assortment of sliced bagels and cream cheese—everyone loves those, much more than chocolates) to all the rehabilitation departments and nursing stations I had worked with. I also took trays of the bagels and cream cheese to the maintenance workers and custodians, and they were always very appreciative and very surprised someone actually thought of them.

Communication Disorders Professionals

The field of communication disorders involves interrelated professionals who begin by earning a bachelor's degree (either a B.A. or a B.S., depending on the institution) in speech-language pathology, communication (communicative) sciences and disorders, or speech and hearing sciences. (Other terms may be used.) Students also may earn an undergraduate degree in another major and then begin their education at the graduate level, although they must take a series of undergraduate speech-language pathology and audiology courses to prepare for the more advanced courses in this field. At the graduate school level, they begin to specialize in either speech-language pathology or audiology. The entry-level requirement for speech-language pathologists to work professionally is an M.A. (Master of Arts) or

M.S. (Master of Science). The entry-level requirement for audiologists is a doctoral degree, either a Ph.D. (Doctor of Philosophy) or Au.D. (Doctor of Audiology).

After receiving a master's degree, passing the national examination, and becoming nationally certified and state licensed (to be discussed later), individuals become independent practitioners. In some countries (e.g., the United Kingdom, Australia, and New Zealand), a bachelor's degree in speech-language pathology (therapy or logopedics) is a professional degree; however, students in these programs begin their education in speech-language pathology in their freshman year of college, and their senior year is roughly equivalent to a graduate year in the United States.

Some individuals in speech-language pathology choose to continue their graduate education after their master's degree by pursuing a Doctor of Philosophy (Ph.D.), Speech-Language Pathology Doctorate (SLP-D), or Doctor of Education (Ed.D.), which usually takes 3 to 5 years of additional education and training. SLPs and audiologists with doctorates have a range of opportunities as professors, clinicians, and researchers in a wide variety of settings, such as universities, hospitals, clinics, rehabilitation centers, laboratories, and corporations. The following is a brief explanation of the work of speech-language pathologists and audiologists.

Speech-Language Pathologists

The American Speech-Language-Hearing Association has designated use of the professional title *speech-language pathologist*; however, many other English-speaking countries prefer to use the designation *speech-language therapist* (e.g., England, Ireland, and New Zealand). What we are called by other professionals, clients, patients, and their families depends somewhat on the setting in which we are working. In public schools, we are more likely to be called speech therapists, speech-language therapists, speech teachers (mostly by children), or speech and hearing specialists. In medical settings, we are commonly referred to by physicians, nurses, and patients as speech therapists or speech pathologists. (Rarely are we referred to as speech-language pathologists by other professionals.)

Clinical fellowship year (CFY): A 36-week full-time (35 hours per week) or the equivalent part-time mentored clinical experience totaling a minimum of 1,260 hours begun after all academic coursework and university clinic training are completed; required by ASHA to be eligible for the Certificate of Clinical Competence (CCC).

The education, coursework, and clinical training of SLPs are specified by ASHA. The national professional organization specifies coursework and clinical training requirements and standards to help maintain consistency in the quality of new professionals throughout the United States. Upon completion of an M.A. or M.S. in their major, individuals are eligible to take the national *Praxis Examination* administered by Educational Testing Service (ETS). In addition, to earn ASHA certification, individuals must complete a 36-week **clinical fellowship year (CFY)**, which involves full-time work. After successful completion of all of these requirements, the person becomes a nationally certified speech-language pathologist.

Scope of Practice

Scope of practice: ASHA's delineation of the general and specific areas in which speech-language pathologists and audiologists may engage with the appropriate and necessary education, training, and experience.

The **scope of practice**, or work of speech-language pathologists, may be described in a few words: We identify, evaluate, diagnose, and treat people of all ages who have communication and swallowing disorders. The following is a brief description of the primary roles in which speech-language pathologists may be involved when working with clients and patients.

Evaluation of Communication and Swallowing Disorders

Evaluation (assessment): The overall clinical activities designed to understand an individual's communication abilities and disorders before a treatment program is determined and established.

When a speech-language pathologist suspects or identifies a communication or swallowing impairment, a thorough **evaluation (assessment)** is in order. (*Evaluation* refers to the process of examination and *assessment* refers to its result. However, the terms are often used interchangeably and are listed as synonyms for each other in some dictionaries.) These evaluations always need to follow

evidence-based practice (EBP) guidelines (for further details, see the discussion of the "Treatment of Communication and Swallowing Disorders"). The evaluation generally includes an interview and standardized or *clinician-devised* assessments (i.e., nonstandardized tests designed for specific patients). The purposes of the evaluation are to determine the following elements:

- The cause of the problem
- The nature of the problem
- Whether the problem is progressive or static
- The characteristics of the problem
- What makes the problem better and what makes it worse
- The severity of the problem
- Treatment goals
- The potential for habilitation or rehabilitation

Evidence-based practice (EBP): The integration of (a) external scientific evidence [research], (b) clinical expertise/expert opinion, and (c) client/patient/caregiver perspectives to providing high-quality services reflecting the interests, values, needs, and choices of the individuals served.

Diagnosis: The determination of the type and cause of a speech, language, cognitive, swallowing, or hearing disorder based on the signs and symptoms of the client or patient obtained through case history, observations, interviews, formal and informal evaluations, and other methods.

Signs: Objective findings (based on an evaluation) of a disorder, disability, disease, or change of condition as perceived by an examiner, such as an SLP, PT, OT, nurse, or physician.

Symptom: A subjective indication of a disorder, disability, disease, or change of condition as perceived by a client, patient, or other nonmedical or rehabilitation specialist, such as a family member.

Diagnosis of Communication and Swallowing Disorders

Determining a **diagnosis** means the SLP makes a professional decision as to the specific diagnostic terms that may be used to best represent the client's or patient's communication, cognitive, or swallowing problems. The diagnosis is based on the **signs**, **symptoms**, and test results of the client or patient. For reimbursement by insurance companies, Medicare, or other third-party payers, specific descriptive terms and identifying codes (i.e., American Medical Association [AMA] Current Procedural Terminology [CPT]) and World Health Organization (WHO) *International Classification of Functioning, Disability, and Health*, [ICD-10]) must be included in billing. A written description of a client's or patient's problems in a formal report is essential, as is *documentation* (reporting) of all therapy goals, rationales, and treatment procedures. (The terms *therapy*, *treatment*, and *intervention* are often used interchangeably by authors, although most SLPs use the term *therapy* when talking among themselves—for example, "I have some therapy to do.")

Treatment of Communication and Swallowing Disorders

Most speech-language pathologists love doing therapy and developing creative strategies for helping clients and patients. Our evaluations and therapy always need to have evidence-based practice (EBP) as their foundation. Evidence-based practice is the integration of (1) external scientific evidence (research), (2) clinical expertise or expert opinion from highly regarded clinicians, and (3) client/patient/caregiver perspectives to providing high-quality services reflecting the interests, values, needs, and choices of the individuals whom we serve. Because EBP is client/patient/family centered, the clinician's task is to interpret the best current evidence from systematic research in relation to an individual client/patient, including that individual's preferences, environment, culture, and values regarding health and well-being. Ultimately, the goal of evidence-based practice is to provide optimal clinical service to a client/patient on an individual basis. Because evidence-based practice is a continuing process, it is a dynamic integration of ever-evolving external scientific evidence and clinical expertise in day-to-day practice (ASHA, 2012; Finestack & Betz, 2021).

The ASHA (2005) Joint Coordinating Committee on Evidence-Based Practice established the following position regarding EBP:

> It is the position of the American Speech-Language-Hearing Association that audiologists and speech-language pathologists incorporate the principles of evidence-based practice in clinical decision making to provide high quality clinical care. The term *evidence-based practice* refers to an approach in which current, high-quality research evidence is integrated with practitioner expertise and client preferences and values into the process of making clinical decisions.

By engaging in evidence-based clinical practice, audiologists and speech-language pathologists accomplish the following goals:

- They recognize the needs, abilities, values, preferences, and interests of the individuals and families to whom they provide clinical services, and they integrate those factors with the best current research evidence and their own clinical expertise in making clinical decisions.
- They acquire and maintain the knowledge and skills necessary to provide high-quality professional services, including the knowledge and skills related to evidence-based practice.
- They evaluate prevention, screening, and diagnostic procedures, protocols, and measures to identify maximally informative and cost-effective diagnostic and screening tools, using recognized appraisal criteria described in the evidence-based practice literature.
- They evaluate the efficacy, effectiveness, and efficiency of clinical protocols for prevention, treatment, and enhancement using criteria recognized in the evidence-based practice literature.
- They evaluate the quality of evidence appearing in any source or format, including journal articles, textbooks, continuing education offerings, newsletters, advertising, and web-based products, prior to incorporating such evidence into clinical decision making.
- They monitor and incorporate new and high-quality research evidence having implications for clinical practice.

Work Settings

Acute care hospital: A hospital where patients are treated for brief but severe episodes of illness, injury, trauma, or disease, or during recovery from surgery.

Subacute hospital: A level of care needed by patients who do not require acute care but who are medically fragile and require special services (e.g., respiratory therapy, intravenous tube feeding, and complex wound management care).

Skilled nursing facility [SNF] (convalescent hospital (): A medical facility that provides long-term medical, nursing, or custodial care for individuals (e.g., during the course of a chronic illness or the rehabilitation phase after an acute illness or injury).

Inpatient: A patient who has been admitted to a hospital or other healthcare facility for at least an overnight stay.

Outpatient: A patient who is not hospitalized but is being treated in an office, clinic, or medical facility.

Speech-language pathologists work in a variety of work settings, with considerable diversity among their clients and patients. These work environments can roughly be divided into educational and medical settings. The largest employer of SLPs is the public schools, which are legally mandated in the United States to provide these services to every child from birth to 21 years of age, and to students who are in adult transition programs who need and qualify for services. Many SLPs also work in infant and early childhood programs funded by local and state agencies. Speech-language pathologists are working with increasingly complex clinical cases, including children with multiple handicaps.

At the other end of the educational spectrum, increasing numbers of speech-language pathologists are being employed by community colleges to provide services to older students and to direct or be involved with programs for people of all ages who have sustained neurological damage. Some speech-language pathologists also provide clinical supervision in university training programs and may do some clinical teaching.

Many SLPs work in medical settings of all types, including **acute care hospitals**, **subacute hospitals**, **skilled nursing facilities [SNF]** (**convalescent hospitals**), and **inpatient** and **outpatient** clinics. *Home health care* (i.e., therapy provided in the patient's home) is an increasingly popular employment opportunity for SLPs. Home health care is designed to provide rehabilitation services without the high cost of hospitalization. *Private practice* provides opportunities for SLPs to work with a variety of clients or to specialize in a specific age group or disorder. Private practice also allows speech-language pathologists to have considerable independence and flexibility in their work schedules and to develop their entrepreneurial skills (Fogle, 2001).

The aging population presents an increasing number of clinically complex cases with multiple impairments. For example, it is not uncommon to see a patient with a hearing loss, stroke, heart disease, cancer, and visual impairments, along

with arthritis and diabetes mellitus. Because speech-language pathologists are good communicators with good to excellent interpersonal skills, they are often advanced into administrative positions in various work settings, which increases their opportunities in a variety of ways (Hudson & DeRuiter, 2021).

Speech-language pathologists can devote their time to the age groups they most enjoy—for example, early childhood, school-age, adolescence, adult, or elderly. Many SLPs enjoy working in more than one setting. For example, some clinicians work in public schools during the day as their primary job, but then work in hospitals or their own private practice for a few hours after leaving the school in the afternoon.

In 2013, ASHA reported that almost 56% of SLPs in the United States are employed in educational settings, with 53% working in schools and 3% working in colleges and universities. Almost 40% are employed in healthcare settings, including 13% in hospitals, 10% in *residential healthcare facilities* (skilled nursing facilities/convalescent hospitals, assisted living facilities), and 16% in *nonresidential healthcare facilities* (homes [home-health care], clinics, rehabilitation centers, doctors' offices). Nearly one-fifth (19%) are employed full- or part-time in private practice. Private practice allows SLPs to be entrepreneurial and make their own decisions about their schedules, caseloads, and target populations.

SLPs are employed in local, state, and federal government agencies, such as public health departments where they work with underserved populations. Clinicians and research scientists are employed by Public Health services, providing services to underserved populations.

Job opportunities in countries throughout the world are available and often plentiful, with many having shortages of qualified speech-language pathologists. In addition, military bases worldwide often provide speech-language pathologists for the dependents of service members who are being educated in schools on the base. Many military and Veteran Administration (VA) hospitals have speech-language pathologists on staff.

FIGURE 2-3 shows the primary employment settings of speech-language pathologists in 2013.

The SLP Annual Salaries and Hourly Wages 2020 ASHA School Survey revealed that 90% of SLPs worked a 9 or 10 month academic year and are paid an annual salary.

Insight Question

Many people are surprised by SLPs' relatively broad scope of practice, the variety of clients and patients with whom SLPs work, and the array of work settings in which SLPs are employed. Are there any surprises for you?

Employment Outlook

According to the October 2016 issue of *The ASHA Leader*, only 1% of ASHA-certified speech-language pathologists were unemployed and seeking work at the end of 2015. This figure, which is below the current national unemployment rate of 5%, has remained steady over the past 10 years, even as the overall U.S. unemployment rate rose to 10% in 2009. *U.S. News and World Report* (2020) ranked speech-language pathologists number 6 in its Best Health Care Jobs category and number 8 in its 100 Best Jobs in the U.S. category. ("Good jobs are those that pay well, challenge us, are a good match for our talents and skills, are not too stressful, offer room to advance, and provide a satisfying work–life balance.") *US News and World Report* (2020) also ranks the Job Market for speech-language pathologists as 10/10, Future Grown as 8/10, Personal Stress as 4/10, and Work-Life Balance as 6/10. The median salary for SLPs in 2018 was $77,510; the best paid 25% earned $97,770, and the lowest paid 25% earned $60,570. SLPs typically have a high job-satisfaction level. According to the U.S. Department of Labor's Bureau of Labor Statistics, in its *Occupational Outlook Handbook* (2020), the job outlook is very good for speech-language pathologists for the years 2019–2029, with a 25% increase in SLP positions expected ("much faster than average for all occupations"). The median annual wage for speech-language pathologists in May 2019 was $79,120 ($38.04 per hour).

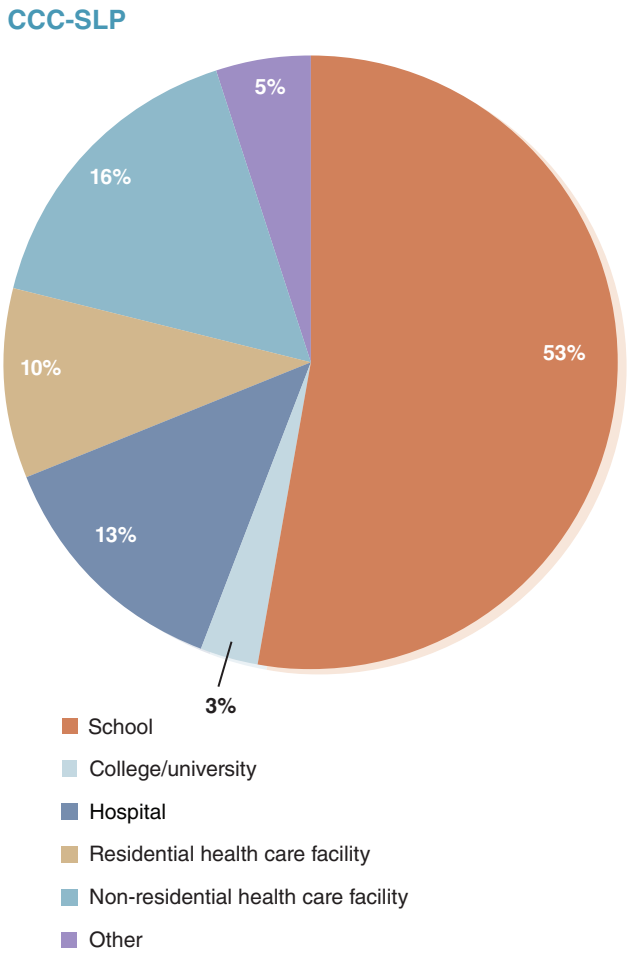

FIGURE 2-3 ASHA-certified speech-language pathologists by primary employment setting.
Data from ASHA Summary Membership and Affiliation Counts for Year-Ending 2013.

Elementary, secondary, and special education, as well as other federally mandated services, provide employment opportunities for speech-language pathologists in schools. Also, because of the increasing number of premature (i.e., less than 5 pounds [2.7 kg]) and micropremature (i.e., less than 2 pounds [0.91 kg]) infants who now survive, there will be increased needs for SLP services throughout much of these children's early development and education. There will continue to be a long-term shortage of SLPs in inner cities, rural, and less densely populated areas. The number of jobs in all types of medical settings will continue to increase for SLPs, partly because of the growing elderly population's susceptibility to strokes.

As healthcare professionals and the public become more aware of the importance of identifying and diagnosing speech, language, cognitive, swallowing, and hearing problems, SLPs in clinics, home health care, and private practice are expected to see increasing needs for their services. As a speech-language pathologist, having a job you enjoy should never be a problem.

Audiologists

Audiologists are professionals who, "by virtue of academic degree, clinical training, and license to practice and/or professional credential, are uniquely qualified to provide a comprehensive array of professional services related to . . . the audiologic identification, assessment, diagnosis, and treatment of persons with impairments of auditory and vestibular function, and to the prevention of impairments associated

with them" (AAA, 2004). ASHA, in conjunction with the American Academy of Audiology, determines the education, coursework, and clinical training of audiologists. Audiologists must earn either a Ph.D. or Au.D., complete a clinical fellowship in audiology, and pass the national (ASHA) examination in audiology. Audiologists need to be licensed, credentialed, or both in their state of employment and must earn continuing education units (CEUs). In some states, for audiologists to work with and dispense hearing aids, they must also become licensed hearing instrument specialists.

Scope of Practice

Audiologists evaluate an individual's hearing loss to determine the type and extent of the loss. They further assess the benefits of amplification (e.g., hearing aids) and habilitation or rehabilitation to maximize the person's hearing ability. Many audiologists can sell and dispense hearing aids or other amplification devices as part of their practice.

Most states have enacted legislation requiring universal screening of newborn infants for hearing loss, which has become an important new area of practice for audiologists. Another area of practice for some audiologists involves testing for balance disorders that may be associated with inner ear (vestibular) problems. As with speech-language pathologists, the scope of practice of audiologists is expanding.

Work Settings

Audiologists work in a variety of settings, including public schools, hospitals, clinics, private practices, and industry. Some audiologists also function as consultants to various agencies and help determine appropriate hearing conservation and protection requirements for state and local government employees, as well as industry standards. Some audiologists work in two or more settings in any one week—for example, private practice, industry, and consulting.

Audiologists also teach and supervise in university programs. Even when a university does not offer an audiology program, an audiologist still must provide the basic coursework and training in audiology and aural rehabilitation for the speech-language pathology majors.

FIGURE 2-4 shows the primary employment settings of audiologists in 2010.

Employment Outlook

U.S. News and World Report (2020) ranked audiologists number 26 in its Best Health Care Jobs category. *US News and World Report* (2020) also ranks the Job Market for audiologists as 6/10, Future Grown as 4/10, Personal Stress as 6/10, and Work-Life Balance as 6/10. The median salary for audiologists in 2018 was $75,920; the best paid 25% earned $94,900, and the lowest paid 25% earned $63,400. Audiologists typically have a high job-satisfaction level. Upward mobility, stress level, and job flexibility were all rated as "average" for audiologists. The 2020 *Occupational Outlook Handbook* from the U.S. Department of Labor's Bureau of Labor Statistics reported that the job outlook is very good for audiologists, projecting that between 2019 and 2029 there will be approximately a 13% increase in these jobs ("much faster than average for all occupations"). The median annual wage for audiologists in May 2019 was $77,600 ($37.31 per hour).

The number of jobs in all types of medical settings will continue to increase for audiologists, partly because of the growing elderly population in the United States; these individuals are highly susceptible to hearing losses. At the other end of the age spectrum, micropremature infants tend to have increased needs for audiological services throughout much of their early development and education. Audiologists will become increasingly in demand as healthcare professionals and

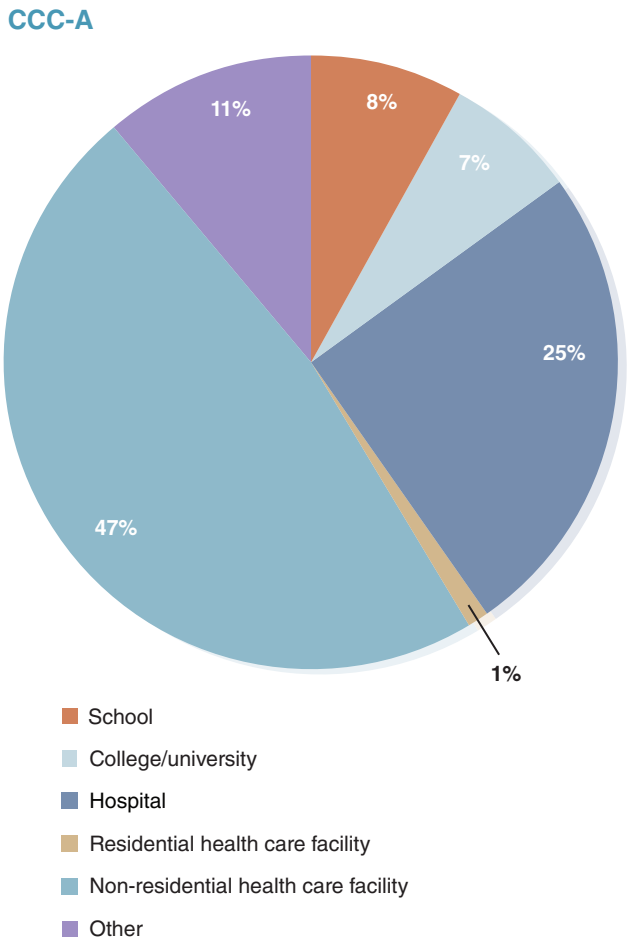

FIGURE 2-4 ASHA-certified audiologists by primary employment setting.
Data from ASHA Summary Membership and Affiliation Counts for Year-Ending 2013.

the public become more aware of the importance of protecting hearing, identifying and diagnosing hearing problems, and wearing hearing aids as willingly as most people wear contact lenses or eyeglasses.

Audiologists also can expect to see their employment opportunities in schools expand if enrollment increases in elementary, secondary, and special education classes. The long-term shortage of audiologists in inner cities and less densely populated areas, including rural communities, is likely to continue. Overall, audiologists are and will be needed in many work settings and most communities worldwide.

Speech, Language, and Hearing Scientists

Speech, language, and hearing scientists investigate the anatomic, physiological, and perceptual factors that form the baes of and contribute to the production and comprehension of speech and language. However, speech, language, and hearing scientists account for a relatively small portion of the speech-language pathology and audiology professions (less than 5%). They have doctorates and mostly work in universities, although some are employed in government agencies, research centers, laboratories, or industry. Some also provide clinical services in either speech-language pathology or audiology. Depending on their specialty (speech, language, or hearing), these scientists usually are involved with *basic research*—that is, investigating the anatomy and physiology of the speech and hearing mechanisms, the physics and acoustics of speech-sound production, or the acquisition and structure of language. In many cases, they generate grants to carry on their research.

Speech, language, and hearing scientists represent the skeletal framework of the speech-language pathology and audiology professions: Without them, the normative data would not be available for clinicians to compare the normal with the abnormal or to understand the scientific rationales for many clinical procedures. The research data collected by scientists are essential to those who provide direct services to clients and patients of all ages. A firm grounding in normal communication processes through courses such as anatomy and physiology and speech and hearing science provides the foundation from which clinicians can better understand, diagnose, and treat communication disorders and delays.

Speech-Language Pathology Assistants

For individuals who do not want to or cannot pursue a B.A. and M.A. in speech-language pathology, ASHA established the role of **speech-language pathology assistant (SLPA)**. SLPAs are support personnel who, following academic and/or on-the-job training, perform tasks prescribed, directed, and supervised by ASHA-certified speech-language pathologists. According to ASHA guidelines and state licensure laws, no speech-language pathologist can employ an SLPA without a certified speech-language pathologist as a supervisor. SLPAs are more commonly employed in school-based programs than in medical settings or clinics.

Speech-language pathology assistant (SLPA): A support person who performs tasks as prescribed, directed, and supervised by ASHA-certified SLPs.

ASHA's Assistants Certification Program helps improve patient/client access to speech-language pathology services by creating a pipeline of qualified professionals who meet uniform standards of competency and are committed to delivering high-quality care. The program also (a) establishes a uniform standard for the knowledge and skill level expected of assistants and (b) ensures that all ASHA-certified assistants meet the same rigorous requirements (Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association (2020) (See httpw://www.asha.org/assistant-certification program/slpa-faqas/).

ASHA (2020) established a Speech-Language Pathology Assistants Certification (C-SLPA), which requires candidates to complete specific course work and education requirements, have supervised clinical experience, follow the Assistants Code of Conduct and ASHA Code of Ethics, pass the C-SLPA national examination, and follow all Maintenance of Certification Assessment (MOCA) guidelines at the end of their 3-year certification maintenance interval to show continued competency.

To become an SLPA, an individual may earn an Associate of Arts degree (AA) in speech-language pathology assistant training programs or a B.A. in communication sciences and disorders, acquire 100 hours of supervised clinical field work, and pass a written SLPA examination. ASHA is the credentialing body that offers a national registration process to ensure that basic knowledge and competencies are developed for those wanting to become SLPAs. Many SLPAs eventually choose to pursue a B.A. and M.A. to become state licensed and ASHA-certified speech-language pathologists (Ostergren, 2019).

The following list of SLPA responsibilities was developed by ASHA (2000):

- Assist the SLP with speech-language and hearing screenings (without interpretation).
- Follow documented treatment plans or protocols developed by the supervising SLP.
- Document patient/client performance (e.g., tally data for the SLP to use; prepare charts, records, and graphs) and report this information to the supervising SLP.
- Assist the SLP during assessment of patients/clients.
- Assist with informal documentation as directed by the SLP.