Introducing a new edition is always exciting and exhausting. In preparing a new edition, especially an introductory text, there is always the question of balance. Did we provide enough detail? Too much? Did we get the perspective correct? We hope that those of you who are familiar with the previous editions will agree with us that this edition is a worthy introduction to the field of speech pathology and audiology and one that contributes meaningfully to the education of speech-language pathologists and audiologists.

Within each chapter, we have attempted to describe a specific type of disorder and related assessment and intervention methods. In addition, we have included lifespan issues and evidence-based practice to provide the reader with added insights. Each type of disorder is illustrated by personal stories of individuals with that disorder. Further knowledge can be gained through the suggested readings provided at the conclusion of each chapter.

NEW TO THIS EDITION

This fifth edition of Introduction to Communication Disorders has many new features that strengthen the existing material in the previous edition. These include the following:

• Chapters have been reorganized and rewritten to help conceptualize the information differently so as to conform more to current clinical and educational categories. Several chapters have been reworked entirely.
• The reorganization of the entire book has resulted in fewer chapters—in part to respond to instructors’ concerns about covering the material in a semester. We do listen!
• Of course, the material in each chapter has been updated to reflect the current state of clinical research. Special attention has been paid to the growing body of evidence-based research and literature. A quick perusal of the references will verify the addition of hundreds of new professional articles.
• As in the past, we have worked to improve readability throughout the book and to provide the right mix of information for those getting their first taste of this field. Several professors and students have commented favorably on our attempt in previous editions to speak directly to the reader, and we have continued and expanded this practice.
• We have continued to provide evidence-based practices in concise, easy-to-read boxes within each chapter. This demonstrates our commitment to this practice begun in the previous edition. As with all the rest of the text, these boxes have been updated to reflect our best knowledge to date.
• Background information has been simplified and shortened, in response to input from professors who felt we had provided too much and that
this information would be covered in other introductory course in anatomy and physiology, language development, and phonetics. This change increases readability and decreases the burden on faculty who felt compelled to teach it all.

• In addition, for the first time, *Introduction to Communication Disorders* is presented in a whole new format as an eText.

**The eText Advantage**

The eText is an affordable, interactive version of the print text. Publication of *Introduction to Communication Disorders* in an eText format allows for a variety of advantages over a traditional print format, including a search function allowing the reader to efficiently locate coverage of concepts. **Boldface** key terms are clickable and take the reader directly to the glossary definition. Index entries are also hyperlinked and take the reader directly to the relevant page of the text. Navigation to particular sections of the book is also possible by clicking on desired sections within the expanded table of contents. Finally, sections of text may be highlighted, and reader notes can be typed onto the page for enhanced review at a later date.

To further enhance assimilation of new information, select video clips are interspersed throughout chapters to provide demonstration of text concepts in action. Websites provided are now active links to aid interested readers in additional research on a topic. At the end of major sections, readers can access multiple-choice or true/false **Check Your Understanding** questions to assess comprehension of text concepts. Immediate feedback is provided on the appropriateness of responses. **Thought Questions** pop up from the margins, fostering reflection and building connections between text concepts.

To learn more about the enhanced Pearson eText, go to www.pearsonhighered.com/etextbooks.

We hope that you’ll agree with us that this is a more user-friendly and informative text than the previous editions. Please feel free to contact us with suggestions for further strengthening our work.

**ACKNOWLEDGMENTS**

Robert Owens

I would like to thank the faculty of the Department of Communication Sciences and Disorders and the entire faculty and administration at the College of St. Rose in Albany, New York. What a wonderful place to work and to call home. The college places a premium on scholarship, student education, professionalism, and a friendly and supportive workplace environment and recognizes the importance of our field. I am indebted to all for making my new academic home welcoming and comfortable. I am especially thankful to President Margaret “Maggie” Kirwin, Interim School of Education Dean Margaret McLane, my chair Jim Feeney, and my colleagues in my department, fellow faculty members Dave DeBonis, Colleen Karow, Megan Overby, Jack Pickering, Anne Rowley, Jessica Kisenwether, and Julia Unger, and fellow clinical faculty members Kim Lamparelli, Elizabeth Baird,
Marisa Bryant, Wyndi Capeci, Sarah Coons, Elaine Galbraith, Julie Hart, Barbara Hoffman, Jackie Klein, Kate Lansing, Jessica Laurenzo, Melissa Spring, and Lynn Stephens. You have all made me feel welcomed and valued.

It is with some sadness that I remember my colleagues at my former institution, State University of New York at Geneseo and the demise of the Department of Communicative Disorders and Sciences due to a shortsighted college administration decision. These great folks include Rachel Beck, Irene Belyakov, Linda Deats, Brenda Fredereksen, Beverly Henke-Lofquist, Thomas House, Carol Ivsan, Cheryl Mackenzie, Doug MacKenzie, Dale Metz, Diane Scott, Gail Serventi, and Bob Whitehead. All of us are indebted to the chair Linda House, who helped us keep our dignity and our promise to students in the face of a terrible and demoralizing situation. Best to you all always.

I would be remiss if I did not acknowledge the continuing love and support I receive from Addie Haas. She was with us in the first and second editions and continues to be a source of inspiration.

Finally, my most personal thanks and love goes to my spouse and partner, who supported and encouraged me and truly makes my life fulfilling and happy. I’m looking forward to our life together.

Kimberly Farinella

I wish to sincerely thank Bob Owens, Dale Metz, and Steve Dragan for again including me on this new and exciting edition of the textbook. I remain perpetually in awe of the fact that I work with such brilliant people, and I’m truly grateful for the opportunity.

I would also like to thank the faculty, staff, and students in the Department of Communication Sciences and Disorders at Northern Arizona University for their help and support of this current edition of the textbook. I especially want to thank my dear friend and colleague, Dr. Emi Isaki, for her contributions to the Disorders of Swallowing chapter, and also to our graduate assistants at NAU, Susan Williams and Sonia Mehta, for their photo contributions.

I want to thank my family, especially my parents, for their continued support of my career, and I want to express my gratitude to my significant other and future spouse, Tom Parker. I look forward to a long and happy life with you with plenty of skiing in the beautiful mountains of Flagstaff, Arizona!

The following reviewers offered many fine suggestions for improving the manuscript: Tausha Beardsley, Wayne State University; Wendy Bower, State University of New York at New Paltz; Louise Eitelberg, William Paterson University. Their efforts are sincerely acknowledged.
When you have finished this chapter, you should be able to:

• Describe communication impairment

• Describe the roles of audiologists, speech-language pathologists, and speech, language, and hearing scientists

• Outline the history of changing attitudes toward individuals with disabilities over the centuries and legislation over the past several decades

• Describe how evidence-based practice (EBP) influences clinical decisions
Can you imagine life without communication? No talking, no listening, no interacting with others? Communication is part of what makes us human. Even minor or temporary problems with communication, such as laryngitis, are often frustrating. Many of us have experienced a problem in speaking or listening at some time in our lives.

We hope through this text to explore the nature of communication disorders. In this first chapter, we’ll introduce the professionals who work with individuals who have communication disorders. These are audiologists, speech-language pathologists, or speech/language scientists. We’ll also explore the roles of other professional team members, where speech-language pathologists and audiologists work, and what they do, plus we’ll explain the nature of EBP. This first chapter also provides a historical perspective and outlines the laws that mandate appropriate care for those in need. Along the way, we’ll explore why people choose these careers.

HELPING OTHERS TO HELP THEMSELVES

Why does someone decide to become a speech-language pathologist (SLP) or audiologist? It is mostly because of the satisfaction they receive from helping others to live a fuller life. Many—maybe even you—first became interested through a personal or family encounter with a communication disorder or through a work or volunteer experience with individuals with communication disorders. SLPs and audiologists may also have chosen their careers because they want to be useful to society, to contribute to the general good.

COMMUNICATION DISORDERS

We’ve mentioned communication disorders, but we haven’t been very specific. It’s always good to agree on our topic in any type of communication, so let’s begin here.

A communication disorder impairs the ability to both receive and send, and also process and comprehend concepts or verbal, nonverbal and graphic information. A communication disorder may affect hearing, language, and/or speech processes; may range from mild to profound severity; and may be developmental or acquired. One or a combination of communication disorders may be presented by an individual and may result in a primary disability or may be secondary to other disabilities.

That’s a lot. In short, a communication disorder may affect any and all aspects of communication, even gesturing. A communication disorder may affect hearing, language (the code we use to communicate), and/or speech (our primary mode or manner of communication). This is reflected in American Speech Language Hearing Association’s (ASHA) name. (The Appendix describes ASHA’s role in more detail.) But communication impairments can affect much more as you are about to explore through this book and the course you’re taking. For example, SLPs are also involved in feeding and swallowing assessment and intervention.

A speech disorder may be evident in the atypical production of speech sounds, interruption in the flow of speaking, or abnormal production and/or
absences of voice quality, including pitch, loudness, resonance, and/or duration. A **language disorder**, in contrast, is an impairment in comprehension and/or use of spoken, written, and/or other symbol systems. Finally, a **hearing disorder** is a result of impaired sensitivity of the auditory or hearing system. No doubt you’ve heard individuals referred to as deaf or hard of hearing. In addition, auditory impairment may include **central auditory processing disorders**, or deficits in the processing of information from audible signals.

It’s appropriate to note here that communication disorders do not include communication difference, such as dialectal differences or multilingualism. If you’ve been to a country where you don’t speak the language well, you know that this can impede communication. While these differences may lead to communication difficulties, they are not disorders.

Another communication variation is **augmentative/alternative communication** systems. Far from being communication impairments, these systems, whether signing or the use of digital methods, are attempts often taught by SLPs to compensate and facilitate, on a temporary or permanent basis, for impaired or disabled communication disorders.

As you can see, communication disorders cover a wide range of problems with varying severities and are related to several other disorders. Our purpose in preparing this text is to help you understand and appreciate the many different disorders included in communication impairment. Maybe you began a few pages ago with some vague recollection of an SLP in your elementary school who mostly worked with children correcting their production of difficult speech sounds. That’s part of disordered communication, but it’s only a small part, as you are about to find out.

**THE PROFESSIONALS**

Today, professionals who serve individuals with communication disorders come from several disciplines. They often refer clients to one another or work together in teams to provide optimal care. Specialists in communication disorders are employed in early intervention programs, preschools, schools, colleges and universities, hospitals, independent clinics, nursing care facilities, research laboratories, and home-based programs. Many are in private practice. SLPs and audiologists receive similar basic training, but in their advanced study, they concentrate on one profession or the other.

**Audiologists**

**Audiologists** are specialists who measure hearing ability and identify, assess, manage, and prevent disorders of hearing and balance. They use a variety of technologies to measure and appraise hearing in people from infancy through old age. Although they work in educational settings to improve communication and programming for people with hearing disabilities, audiologists also contribute to the prevention of hearing loss by recommending and fitting protective devices and by consulting with government and industry on the effects and management of environmental noise. In addition, audiologists evaluate and assist individuals with **auditory processing disorders (APD)**, sometimes...
called central auditory processing disorders, and select, fit, and dispense hearing aids and other amplification devices and provide guidance in their care and use (DeBonis & Moncrieff, 2008). Licensed audiologists are independent professionals who practice without a prescription from any other health care provider (ASHA, 2001b). Box 1.1 contains an audiologist's comments on some of the challenges and rewards of the profession. As you will note, being a good detective, or problem solver, is one of the skills that is needed. Websites of interest are found at the end of the chapter.

**Credentials for Audiologists**

At the present time, the educational requirement for an audiologist is 3 to 5 years of professional education beyond the bachelor’s degree. An audiologist's studies will culminate in a doctoral degree that may be an audiology doctorate (AuD) or a doctor of philosophy degree (PhD) or doctor of education degree (EdD) in audiology.

After a person has earned a doctorate, obtained the required preprofessional as well as paid clinical experience, and passed a national examination, she or he is eligible for the Certificate of Clinical Competence in Audiology (CCC-A) awarded by ASHA. ASHA CCC-A (sometimes referred to as ASHA “Cs”) is the generally accepted standard for most employment opportunities for audiologists in the United States. In addition, states require audiologists to obtain a state license. The requirements for state licensure tend to be the same as or similar to the ASHA standards (ASHA, 2001b, 2001c).

You can further explore a career in audiology at three websites. The Acoustical Society of America (http://asa.aip.org) has material of special interest to hearing scientists and audiologists. The American Academy of Audiology (www.audiology.org) provides consumer and professional information regarding hearing and balance disorders as well as audiological services. Finally, ASHA (www.asha.org) provides information for professionals, students, and others who are interested in careers in audiology or hearing science. Simply click on “Careers” in the upper-left corner.

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**BOX 1.1** | An Audiologist Reflects

I chose to become an audiologist because I enjoyed the challenge. Most clients come in and are frightened or apprehensive. I try to set them at ease while I explain each test I will perform. At each step, I try to bring the client along and make sure that he or she understands what I will be doing and why. Children are often the biggest challenge and sometimes refuse to cooperate. This is when I have to be at my best. If I confirm the presence of a hearing loss, then my task becomes one of counseling and referral. It takes time to walk a client through the results and the possibilities. Older clients are often not willing initially to accept a diagnosis of hearing loss. Counseling is very important, especially for family members. It is all too easy for family members to adopt an “I told you so” attitude, but we must be sensitive to the needs of the client with the loss who will need time to adjust to his or her now-diagnosed disorder. It is this detective work and the counseling that give me satisfaction and motivate me to come to work every day.
Speech-Language Pathologists

Speech-language pathologists (SLPs) are professionals who provide an assortment of services related to communicative disorders. The distinguishing role of an SLP is to identify, assess, treat, and prevent communication disorders in all modalities (including spoken, written, pictorial, and manual), both receptively and expressively. This includes attention to physiological, cognitive, and social aspects of communication. SLPs also provide services for disorders of swallowing and may work with individuals who choose to modify a regional or foreign dialect. Like audiologists, licensed SLPs are independent professionals who practice without a prescription from any other health care provider (ASHA, 2000a, 2000b, 2000c). Box 1.2 contains reflections by two SLPs; the first one has been in private practice as a clinician for about 25 years. Although sometimes frustrated by the lack of support in his work setting, he believes in setting his imagination free and not giving up in the challenge to help others.

Credentials for Speech-Language Pathologists

With technology, the task of an SLP is changing. Technologies for digital speech recording and analysis are now readily available, as are new and exciting assistive technologies for those with great difficulty communicating via speech (Ingram et al., 2004). SLPs have a master’s or doctoral degree and have studied typical communication and swallowing development; anatomy and physiology of the speech, swallowing, and hearing mechanisms; phonetics; speech and hearing science; and disorders of speech, language, and swallowing.

Three types of credentials are available for SLPs:

1. Public school certification normally stipulates basic and advanced coursework, clinical practice within a school setting, and a satisfactory score on a state or national examination. At the least, prospective school SLPs need a bachelor’s degree, although in most states, a master’s degree either is the entry-level requirement or is mandated after a certain number of years of

BOX 1.2 | A Speech-Language Pathologist Reflects

For me, the exciting part of my job is the problem solving and the satisfaction of helping others. Similar to a fictional detective who collects all the clues, synthesizes the information, and deduces the guilty party, I evaluate each client and determine the best course of intervention. The more severe the impairment, the greater the challenge, and I love a challenge. How can I help a young man who attempted suicide and is now brain injured to access the language within him? How can a young child with autism begin the road through communication to language? How can I help parents communicate with their infant who has deafness, blindness, and cerebral palsy? When is the best time to introduce signing with a nonspeaking client? These are all challenges for me and the children and adults I serve. We work together as I try to solve each communication puzzle and propose and implement possible intervention strategies. Sometimes I’m very successful and sometimes I have to reevaluate my methods, but as I said, I love a challenge.
employment. The exact requirements to become a school SLP vary from state to state. ASHA encourages the same standards for SLPs in all employment settings, as described in the following paragraph.

2. ASHA issues a Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) to an individual who has obtained a master’s degree or doctorate in the field. Ongoing professional development must be demonstrated through a variety of continuing education options. Since 2004, the United States, United Kingdom, Australia, and Canada have allowed mutual recognition of certification in speech-language pathology (Boswell, 2004).

3. Individual states have licensure laws for SLPs that are usually independent of the state’s department of education school certification requirements. A license is needed if you plan to engage in private practice or work in a hospital, clinic, or other setting apart from a public school. Most states accept a person with ASHA CCC-SLP as having met licensure requirements, although you will need to check with your state licensing board on the specifics.

Table 1.1 shows the credentials that are needed in the professions of audiology and speech-language pathology. These are also found on the ASHA website.

If you want to further explore a career in speech-language pathology, check out the ASHA website (www.asha.org). You’ll find a wealth of information, as well as discussion of various disorders that affect children and adults who may benefit from the help of a SLP. Type in the disorder you wish to explore in the search box in the upper right. If you wish to read about a career as a SLP, click on “Careers” at the top left.

Speech, Language, and Hearing Scientists

Individuals who are employed as speech, language, or hearing scientists typically have earned a doctorate degree, either a PhD or an EdD. They are employed by universities, government agencies, industry, and research centers to extend our knowledge of human communication processes and disorders. Some may also serve as clinical SLPs or audiologists.

Table 1.1

<table>
<thead>
<tr>
<th>Credentialing Organization</th>
<th>Speech-Language Pathologist</th>
<th>Audiologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>State department of education</td>
<td>Certification as teacher of students with speech and language disabilities*</td>
<td>—</td>
</tr>
<tr>
<td>State professional licensing board</td>
<td>License as speech-language pathologist</td>
<td>License as audiologist</td>
</tr>
</tbody>
</table>

*The title for the school-based speech-language pathologist varies from state to state.
What Speech, Language, and Hearing Scientists Do

Speech scientists may be involved in basic research exploring the anatomy, physiology, and physics of speech-sound production. Using various technologies, these researchers strive to learn more about typical and pathological communication. Their findings help clinicians improve service to clients with speech disorders. Recent advances in knowledge of human genetics provide fertile soil for continuing investigation into the causes, prevention, and treatment of various speech impairments. Some speech scientists are involved in the development of computer-generated speech that may be used in telephone answering systems, substitute voices for individuals who are unable to speak, and many new purposes. Box 1.3 contains some observations by a speech-language scientist who enjoys the interdisciplinary nature of his work.

Language scientists may investigate the ways in which children learn their native tongue. They may study the differences and similarities of different languages. Over the past half a century or so, the United States has become increasingly linguistically and culturally diverse; this provides an excellent opportunity for cross-cultural study of language and communication. Some language scientists explore the variations of modern-day English (dialects) and how the language is changing. Others are concerned with language disabilities and study the nature of language disorders in children and adults. An in-depth knowledge of typical language is critical to understanding language problems.

Hearing scientists investigate the nature of sound, noise, and hearing. They may work with other scientists in the development of equipment to be used in the assessment of hearing. They are also involved in the development of techniques for testing the hard-to-test, such as infants and those with severe physical or psychological impairments. Hearing scientists develop and improve assistive listening devices such as hearing aids and telephone amplifiers to help people who have limited hearing. In addition, hearing scientists are concerned with conservation of hearing and are engaged in research to measure and limit the impact of environmental noise.

It’s never too early to think about graduate school. Whether you eventually choose to become an audiologist, an SLP, or a speech, language, or hearing scientist, you will need advanced training. Consider cost, location, faculty, and practicum opportunities. Two websites can be helpful. The ASHA site (www.asha.org)
lists graduate program. Click on “Careers” to explore further. The Peterson’s Guide site (www.petersons.com) can assist you with helpful advice about graduate school and a student planner. Type “speech-language pathology,” “audiology,” or “speech, language or hearing science” in the Find the School That’s Right for You box at the upper right.

Professional Aides

Professional aides, sometimes referred to as paraprofessionals or speech-language pathology or audiology assistants, are individuals who work closely with SLPs or audiologists. In states in which professional aides are permitted, the title, educational requirements, and responsibilities of these individuals vary.

Speech-language pathology assistants (SLPAs) typically participate in routine therapy tasks, under the direction of an SLP. They may engage in clerical tasks and assist an SLP in the preparation of assessment and treatment materials. SLPAs may work alongside SLPs in many of the settings in which a fully credentialed SLP is found. Audiology assistants may conduct screenings, participate in calibration of audiological instrumentation, and engage in a variety of clerical tasks under the direction of an audiologist.

Support personnel may work only with supervision and are not permitted to perform such tasks as interpretation of test results, service plan development, family/client counseling, or determination of when to discharge a client from treatment (ASHA, 1995; Paul-Brown & Goldberg, 2001).

Related Professions: A Team Approach

Specialists in communication disorders do not operate in a vacuum. They work closely with family members, regular and special educators, psychologists, social workers, doctors and other medical personnel, and occupational, physical, and music therapists. They may collaborate with physicists and engineers. Box 1.4 contains a SLP’s schedule, showing a tremendous amount of teamwork.

SERVICE THROUGH THE LIFESPAN

Individuals with communication and swallowing disorders may be of any age, and professionals address their needs from birth through old age. According to U.S. Census Bureau reports, 1 in 5 people has a disability. In general, the likelihood of having a disability increases as we age. Unfortunately, the total number of individuals in the United States who have speech, voice, and swallowing and/or language disorders is difficult to determine (ASHA, 2008).

Infants may be screened for hearing loss and a host of other disabilities soon after birth. The U.S. Census Bureau reports that about 2% of all children born in the United States have some existing disabling condition and that hearing loss occurs more often than any other physical problem (Brault, 2005). Babies and toddlers may exhibit developmental delay and have physical problems including those involving movement, hearing, and vision that may impact their communication and feeding abilities. All infants in the United States must be screened
for hearing loss. An interdisciplinary approach is necessary in the assessment and treatment of young children, and an Individualized Family Service Plan (IFSP), developed for each child treated, must be directed at the entire family, with sensitivity to that family’s language and culture. Early intervention has been demonstrated to be highly valuable in facilitating optimum results and potentially preventing later difficulties.

Preschoolers with communication difficulties must also be identified and helped. For some, services begun earlier may now be handled by different agencies. The youngster may be placed in a special preschool, and professionals may continue to assist the family in addressing the child’s needs.

Almost half of all SLPs are employed by school systems. They work with youngsters in all grades, addressing a full range of communication and swallowing problems. These are described in the chapters that follow. School-age children with communication difficulties often experience academic and social

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**BOX 1.4 | A Team Approach**

Alicia is the senior speech-language pathologist in a community-based rehabilitation center in New York State. During the mornings, Alicia works with infants, preschoolers, and school-age children at the center. In the afternoons, she directs the Augmentative/Alternative Communication Program and assists severely impaired individuals of all ages to improve their communication abilities. The schedule outlined below has a bit more collaboration than is normally found in any one day, but it suggests the kinds of activities that are typical within a workweek.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 A.M.</td>
<td>Education staff meeting for preschool children: classroom teacher, psychologist, social worker, occupational therapist, physical therapist.</td>
</tr>
<tr>
<td>9:00</td>
<td>Preschool class activity: eight children ages 3–4, one classroom teacher, two aides.</td>
</tr>
<tr>
<td>10:00</td>
<td>Individual half-hour therapy sessions with children in the preschool and school programs.</td>
</tr>
<tr>
<td>11:30</td>
<td>Combined physical and speech therapy for Jeramy, age 4, diagnosed with spastic cerebral palsy; work with physical therapist.</td>
</tr>
<tr>
<td>noon</td>
<td>Lunch</td>
</tr>
<tr>
<td>12:30 P.M.</td>
<td>Prepare for the afternoon.</td>
</tr>
<tr>
<td>1:00</td>
<td>Consult with engineer on wheelchair switch for Lucretia, age 7, who is multiply disabled.</td>
</tr>
<tr>
<td>1:30</td>
<td>Outpatient, David, aged 24, had been in a motorcycle accident and experiences some speech and language difficulties.</td>
</tr>
<tr>
<td>3:00</td>
<td>Conference with Sally Brown, Bettina’s foster mother, and Barbara Sloane, the social worker for the family.</td>
</tr>
<tr>
<td>3:30</td>
<td>Communication Disorders Department meeting. Malcolm, an audiologist, reports on a 3-hour course he took on Saturday on cochlear implants.</td>
</tr>
<tr>
<td>4:30</td>
<td>The workday is officially over, but Alicia stays until 5:00 to read the professional journal <em>Language, Speech, and Hearing Services in the Schools</em>, which arrived today. Alicia is especially interested in the article about using children’s books in working with preschoolers and photocopies it to share with other staff members.</td>
</tr>
</tbody>
</table>
difficulties, which add additional urgency to the work of communication experts. Some young adults, such as those who were identified earlier as being developmentally delayed or with physical disabilities, may continue to receive certain services until they are 21 years old.

Other individuals may find themselves in need of communication services for the first time later in life. For example, between 1.5 and 2 million Americans sustain traumatic brain injury each year in the United States (see Chapters 5 and 7) stemming from bicycle, motorcycle, or car accidents; falls; or firearms. As a result, they may have cognitive and/or motor problems that interfere with their ability to communicate and/or eat. The SLP plays an important role in rehabilitative efforts.

Among those over age 65, stroke, neurological disorders, and dementia may interfere with effective communication and swallowing. Hearing loss may affect at least one-quarter of people in this age group, creating a need for assessment and treatment. SLPs and audiologists work directly with such individuals. They often also work with spouses and children, as well as staff members of nursing homes and other adult facilities in providing counseling and guidance directed toward improving quality of life in these later years (Lubinski & Masters, 2001).

Evidence-Based Practice

Throughout this text, we’ll try to report the best information we can, based on the research evidence available. As an SLP or audiologist, if that is your career choice, it will be your responsibility to provide the best, most well-grounded intervention that is humanly possible. In other words, you should do what works and is most effective.

Deciding on the most efficacious intervention is a portion of something called evidence-based practice (EBP). EBP is an essential part of effective and ethical intervention. The primary benefit is the delivery of optimally effective care to each client (Brackenbury et al., 2008). Using EBP, clinical decision making becomes a combination of scientific evidence, clinical experience, and client needs. In other words, research, specifically the small portion of research directly relevant to decisions about practice, is combined with reason when making decisions about treatment approaches (Dollaghan, 2004).

EBP is based on two assumptions (Bernstein Ratner, 2006):

- Clinical skills grow not just from experience but from the currently available data.
- An expert SLP or audiologist continually seeks new therapeutic information to improve efficacy.

Professional journals, called peer-reviewed journals, in which each manuscript is critiqued by other experts in the field and accepted or rejected on the basis of the quality of the research, are the best source of clinical evidence.

The philosophy and methods of EBP originated in medicine but have now been adopted in many other health care professions and related services. In the fields of audiology and speech-language pathology, EBP is a work in progress. Although ASHA has established the National Center for Evidence-Based Practice in Communication Disorders, it will take years to establish comprehensive
assessment and intervention guidelines. Evidence on some key issues may still be weak or unavailable. In addition, new information may come to light through research that changes previous assumptions about that evidence. None of this relieves SLPs and audiologists of the responsibility to provide the best, most efficacious assessment and intervention possible. See the ASHA online resource at the end of the chapter.

In this discussion, we’ve used two terms: *efficacy* and *effectiveness*. These are sometimes difficult to discern, given the heterogeneous nature of the existing research studies, so it’s important that you understand the generally accepted meanings of these terms from a clinical and research perspective. Technically, *efficacy* as it relates to clinical outcomes is the probability of benefit from an intervention method under ideal conditions (Office of Technology Assessment, 1978). There are three key elements to this definition:

- It refers to an identified population, such as adults with global aphasia, not to individuals.
- The treatment protocol should be focused, and the population should be clearly identified.
- The research should be conducted under optimal intervention conditions (Robey & Schultz, 1998). Of course, results in real-life clinical situations may differ somewhat.

Of interest is the therapeutic effect or the positive benefits resulting from treatment. The ideal treatment, then, would seem to be the one that results in largest changes to meaningful client outcomes, with only limited variability across clients (Johnson, 2006).

Unfortunately, in the fields of speech-language pathology and audiology, only a small percentage of the articles concern intervention efficacy. Making clinical decisions, therefore, is not particularly easy, especially given potentially competing claims, varying clinical expertise, and client values. Still, SLPs especially are tasked with determining which treatment approach is best for each client. It is also important for SLPs to recognize that efficacy is never an all-or-nothing proposition (Law et al., 2004; Rescorla, 2005).

*Effectiveness* is the probability of benefit from an intervention method under average conditions (Office of Technology Assessment, 1978). The effectiveness of treatment is the outcome of the real-world application of the treatment for individual clients or subgroups. In short, effectiveness is “what works.” Valid clinical studies must be realistically evaluated for the feasibility of applying them to intervention with specific populations and individuals (Guyatt & Rennie, 2002).

One way of determining potential effectiveness, but not the only one, may be a clinical approach’s reported *efficiency* (Kamhi, 2006a). Efficiency results from application of the quickest method involving the least effort and the greatest positive benefit, including unintended effects. For example, an unintended benefit of working to correct difficult speech sounds is that it improves the production of untreated easier sounds, although the reverse is not true (Miccio & Ingrisano, 2000). Targeting more difficult sounds would seem to be more efficient.

Other factors in decision making include the clinician’s expertise and experience, client values, and service delivery variables. In addition to clinical experience and expertise, individual SLP factors such as attitude and motivation...
are important. Clients vary widely and respond differently to intervention based on each client’s unique characteristics, such as family history and support, age, hearing ability, speech and language reception and production, cognitive abilities, and psychosocial traits, such as motivation. Finally, service delivery factors include the targets and methods selected, the treatment setting, participants, and the schedule of intervention.

An SLP or audiologist must carefully discuss possible intervention options with a client and/or family, including an explanation of the research evidence. The goal is to provide sufficient information to enable the client and/or family to make an informed choice or to collaboratively plan and refine the options to suit the client and/or family preferences.

Making good clinical decisions is not always easy. High-quality evidence-based research must be evaluated critically by each SLP and applied to specific clients with specific communication disorders. EBP requires the judicious integration of scientific evidence into clinical decision making (Johnson, 2006). Although EBP can improve and validate clinical services, we must acknowledge that it can be difficult to incorporate into everyday clinical settings because of the time required for SLPs to comb through relevant research. In addition, evidence may be limited, contradictory, or nonexistent (Brackenbury et al., 2008). In the last analysis, however, the necessity of providing the best intervention services possible must be the foremost professional concern.

You can explore EBP further at two websites. The ASHA site (www.asha.org) describes EBP and offers guidance for clinical practice. Click on “Practice Management” to find the “Evidence Map” for the disorder you wish to explore. The National Institute on Deafness and Other Communication Disorders (NIDCD) site (www.nidcd.nih.gov) contains relevant health and research information.

COMMUNICATION DISORDERS IN HISTORICAL PERSPECTIVE

It is believed that many early human groups shunned less able individuals. They sometimes abandoned children who were malformed or who had obvious physical disabilities. Groups also often abandoned, deprived of food, or even killed aged people who could no longer contribute. There is also archaeological data to suggest that in some early cultures, those with physical disabilities were sometimes considered to have special powers.

Over the centuries, attitudes have changed somewhat. By the late 1700s in some parts of the world, societal efforts were being made to help those who were unable to care for themselves. Individuals began to be classified and grouped according to their disorder. Special residences for individuals with deafness, blindness, mental illness, and intellectual limitations were established, although most were little more than warehouses providing no services other than what was necessary to keep the residents alive (Karagiannis et al., 1996).

The first U.S. “speech correctionists” were educators and others in the helping or medical professions who took an interest in speech problems (Duchan, 2002). These were accompanied by a few “quacks” who promised curing therapies or drugs. The more legitimate therapists came from already established professions. Among them were Alexander Melville Bell and his father, Alexander Graham Bell,
of telephone fame. Other Americans trained with famous “speech doctors” in Germany and Austria or became interested in speech correction because of their own difficulties, often with stuttering. The first professional journal, *The Voice*, which appeared in 1879, focused primarily on stuttering research and intervention.

Early interest groups were formed primarily among teachers within the National Education Association and among physicians and academics belonging to the National Association of Teachers of Speech. The latter group formed the American Academy of Speech Correction in 1925, a precursor to ASHA, and attempted to promote scientific inquiry and to set standards for training and practice. ASHA has had varying names over the years; it finally settled on American Speech-Language-Hearing Association in 1978.

The profession of audiology originated in the 1920s, when audimeters were first designed for measuring hearing. Interest surged in the 1940s when returning World War II veterans exhibited noise-induced hearing loss due to gunfire or prolonged and unprotected exposure to noise. Others had psychogenic hearing loss as a result of trauma. The Veterans Administration provided hearing testing and rehabilitation.

Gradually, ASHA was able to establish professional and educational standards and to advocate for the rights of individuals with disabilities. During the 1960s in the United States and elsewhere, intense energy was directed toward the advancement of civil rights for all people. Just as the rights of women, ethnic minorities, gays, and lesbians have been and are being recast, the status of individuals with disabilities has been reevaluated, and bold reforms have been initiated. The American Coalition of Citizens with Disabilities was created in 1974; legislative action on behalf of all Americans with disabling conditions began in earnest around the same time. In many cases, people with disabilities occupied leadership roles in the push for change. As a result of this work, providing opportunities for individuals with disabilities to develop to their full potential was no longer simply an ethical position. It became federally mandated through a series of laws.

Congress enacted the Education for All Handicapped Children Act (EAHCA) as Public Law 94–142 in 1975. It mandated that a free and appropriate public education must be provided for all children with disabilities between the ages of 5 and 21. Several years later, Public Law 99–457 extended the age of those served to cover youngsters between the ages of birth and 5 years. In 1990, Congress reauthorized the original law and renamed it the Individuals with Disabilities Education Act (IDEA). IDEA addressed the multicultural nature of U.S. society. The needs of English language learners (ELLs) and those from racial and ethnic minorities were targeted for special consideration. Reauthorized in 2004, IDEA established birth-to-6 programs as well as new early intervention services. ASHA has been a vital advocacy agency throughout this long legislative process.

**SUMMARY**

Speech-language pathologists, audiologists, and other specialists work together to assist those with communicative impairments. They work in a variety of settings and with people of all ages. They are rewarded by contributing to the well-being of others. Professionals who are engaged in clinical service for those with
communication disorders must have a master’s or doctoral degree and supervised clinical experience. They have earned the American Speech-Language-Hearing Association Certificate of Clinical Competence (ASHA-CCC) in their area of specialization.

Services are provided to individuals from birth through advanced age. The American Speech-Language-Hearing Association (ASHA) is the largest organization of professionals working with communication disorders. ASHA’s missions include the scientific study of human communication, provision of clinical service in speech-language pathology and audiology, maintenance of ethical standards, and advocacy for individuals with communication disabilities. As a result, federal legislation currently mandates services for people with disabilities.

**SUGGESTED READINGS**


When you have finished this chapter, you should be able to:

- Explain the role of culture and environment in communication
- Describe what is involved in human communication
- Demonstrate how communication disorders may be classified
- Name some types of communication disorders
- Discuss and estimate the frequency of occurrence of communication disorders
- Describe in general the assessment and intervention process
It is axiomatic to say “We cannot not communicate” (Watzlawick et al., 1967, p. 48). Even a lack of response to someone sends a message to “leave me alone.”

HUMAN COMMUNICATION

The Social Animal

Possibly the worst punishment for a prisoner is to be sentenced to isolation. Discipline for a teenager might include limitations on texting or e-mail use. These restrictions are punitive because we humans are social beings. We have powerful drives to be with and to communicate with others.

What is communication? In general, we can say that communication is an exchange of ideas between sender(s) and receiver(s). It involves message transmission and response or feedback. We communicate to make contact or to reach out to others, and to satisfy our needs, to reveal feelings, to share information, and to accomplish a host of purposes. Communication is interactive; it is a give-and-take. The importance of effective communication is highlighted when it fails or is hindered in some way. Think about how frustrated you get by a temporary lapse in Internet or cellphone service. Now imagine that as a permanent or semi-permanent state.

Several variables affect communication and its success or failure. These include cultural identity, setting, and participants to name a few. The study of these influences on communication is called sociolinguistics.

Cultural Identity

Each of us is a member of a language community. The more you understand about your own culture and that of the people with whom you communicate, the more effective your interaction will be. If this text were written in perfectly good Mandarin Chinese and you could not read that language, it would communicate nothing meaningful to you. Speakers and listeners must share competence in a common language if they are to communicate fully.

Perhaps you have traveled to a country in which a language that you did not know was spoken. You might have been able to communicate by gesture and pantomime; however, you would have to agree that while you could exchange some meaning, it fell far short of optimal communication. Even when two people come from the same language background, “perfect” communication is rare. This is because successful communication depends not just on language and speech but on related factors, such as age, socioeconomic status, geographical background, ethnicity, gender, and ability.

The location and the participants also influence the nature of communication. Where you interact affects how and what you’ll say. You communicate differently at home, in school, in a noisy restaurant, and at a ballgame. Similarly, you might speak quite differently to your best friend, your mother, your father, your boss, your grandmother, and large audiences.

Means of Communication

As noted in Chapter 1, communication takes many forms and can involve one or a combination of our senses, including sight, hearing, smell, and touch. It can include both verbal and nonverbal means, such as the spoken or written word, naturalistic gesture, or sign. The primary vehicle of human communication is language, and speech is the primary means of language expression for most individuals.
Language

Language is a socially shared code that is used to represent concepts. This code uses arbitrary symbols that are combined in rule-governed ways (Owens, 2012). Some characteristics of language are that it is:

- A socially shared tool
- A rule-governed system
- An arbitrary code
- A generative process
- A dynamic scheme

Language is a social tool for relating to others and for accomplishing a variety of objectives. As pointed out earlier, others must share the language code if communication is to occur. When an infant utters “ga da da ka,” we cannot call this language because this “code” is not shared.

Many people are so accustomed to their own language that they fail to recognize its arbitrary nature. Is there anything in the sound combination or the written letters of the word water that resembles the wet stuff? Is the French word l’eau or the Italian l’acqua any more or less moist? A comparison of different languages rapidly confirms this very arbitrary nature. The equivalent of the English word butterfly is farfalla in Italian, mariposa in Spanish, and Schmetterling in German—four very different renditions of that graceful creature. Some words have no equivalent in other languages. For example, the Spanish word salsa has no one-word English equivalent.

Each language, in addition to being composed of arbitrary but agreed upon words, consists of rules that dictate how these words are arranged in sentences. In English, an adjective precedes a noun; for example, we say, “brown cow.” In French, as in many other languages, this sequence is reversed, and they say, “le vache brun” (“the cow brown”). The rules of a language make up its grammar. Interestingly, you do not have to be able to explain the rules to recognize when they have been broken. Take, for example the sentence “The leaves of the maple green tree in the breeze swayed.” You know that the sentence is wrong and that it doesn’t sound right. This recognition of “wrong” and “right” grammar is called linguistic intuition, and native speakers of a language possess this intuition.

Language is generative; this means that each utterance is freshly created. As a speaker, you don’t just quote or repeat what you heard before. Instead, you present your own ideas in an individual way. Imagine a conversation if all you could do was imitate your conversation partner.

Languages are also dynamic; they change over time. The famous Académie Française has tried to keep French “pure” and true to its origins. The Académie still attempts to keep “foreign” words from infiltrating French. For example, it has tried to ban the English words “jet” and “drugstore.” But “le jet” is apparently easier to use than the French “l’avion à réaction,” and so it stays. No academy, no school, no law, and no army can keep languages from being modified. American English adds five or six new words each day, many from other languages. Pronunciation, grammar, and ways of communicating also change.
All human languages consist of similar basic ingredients. The primary components have been labeled form, content, and use. See Figure 2.1.

**Form** Form consists of phonology, morphology, and syntax. **Phonology**, or the sound system of English, consists of about 43 phonemes (unique speech sounds). Although different languages use many of the same phonemes, variations exist. Spanish and German, to name only two, do not use the English “th.” As a consequence, because this sound is not learned as a child, it is difficult for some non-native English speakers to produce.

Speech sounds are not combined arbitrarily. **Phonotactic** rules specify how sounds may be arranged in words. Like rules of grammar, phonotactic rules are not universal. For example “k” and “n” cannot be blended in spoken English, although this combination is acceptable in German. For this reason the “k” in “knife” and “Knoxville” is silent for native English speakers but might be pronounced by Germans speaking English as a second language.

**Morphology**, the second aspect of form, involves the structure of words. A **morpheme** is the smallest grammatical unit within a language. Words contain both free morphemes and bound morphemes. A free morpheme may stand alone as a word. For example, cat, go, spite, like, and magnificent are all free morphemes. If you attempt to break them into smaller units, you lose the meaning of the word. In contrast, cats, going, spiteful, dislike, and magnificently each contain one free morpheme and one bound morpheme. The bound morphemes -s, -ing, -ful, dis-, and -ly change the meanings of the original words by adding their own meanings but cannot be used alone and must be attached to free morphemes.

**Syntax** pertains to how words are arranged in a sentence and to the ways in which one word may affect another. In an English declarative sentence, the subject comes before the verb: “John is going to the opera.” When we reverse the order of the subject and the auxiliary or helping verb, we change the meaning of the sentence and end up with a question: “Is John going to the opera?” One word can also change another. We say “I walk” but “She walks.” The s on the verb occurs because of the pronoun she. This also occurs with he, it, and singular nouns, such as puppy.
Content  Because language is used to communicate, it must be about something, and that is its content, meaning, or semantics. Semantic features are the pieces of meaning that come together to define a particular word. For example, girl and woman share the semantic features of feminine and human, but child is generally considered a feature in girl and not in woman. You’ll notice that we said “generally” because, although most of us think of a girl as being young, it is common among some groups of people to refer to any woman as a “girl.” Each word has multiple meanings, as you can quickly verify by looking in the dictionary. It is the other aspects of language, such as use and form, that determine which of these definitions is appropriate in context.

Use  If you are beginning to think that this is complicated, you’re right. As we said earlier, social and cultural factors influence the way language is used. Use, or pragmatics, is the driving force behind all aspects of language. We speak for a reason. It is the purpose of our utterance that primarily determines its form and content. For example, if you are with a friend and are hungry, you might say, “Let’s get something to eat.” If the purpose were a simple biological drive, then “eat” grunted out might suffice. But who and where you are, whom you are with, and the time of day also influence what you say. If you are at your home, and you have invited a friend to dinner, you might say, “Dinner is ready.” If you are working with someone as noon approaches, you might suggest, “Let’s break for lunch.”

Pragmatic rules vary with culture. For example, in the United States, business meetings tend to be very task oriented. Very little time is spent on social exchanges; the work to be done has center stage. In Saudi Arabia, however, when two people meet for the first time for business purposes, they might spend the entire session talking about family and friends and not get to the meat of the business until the second meeting. The rules for business conversations in each of these societies are different. A few general rules for speakers of American English are presented in Figure 2.2.

Speech  

Speech is the process of producing the acoustic representations of language. Features such as articulation, fluency, and voice interact to influence speech production. The final product reflects the rapid coordination of movements associated with each of these features.

Figure 2.2 A sampling of pragmatic rules for speakers of American English.

1. Only one person speaks at a time. Each person should contribute to the conversation.
2. Speakers should not be interrupted.
3. Each utterance should be relevant.
4. Each speech act should provide new information.
5. Politeness forms reflect the relationship of the speakers.
6. Topics of conversation must be established, maintained, and terminated.
7. The speaker should be sensitive to successfully communicating the message, avoiding vagueness and ambiguity.
8. The listener should provide feedback that reflects comprehension of the message.
Articulation Articulation refers to the way in which speech sounds are formed. How do we move our tongue, teeth, and lips to produce the specific phonemes of a language? How do we combine these individual sounds to form words? After all, we don’t speak in a series of isolated sounds such as “h-e-l-l-o,” or we’d sound like robots. Chapter 8 explains the nature of speech sound production and describes the problems that may occur.

Fluency Fluency is the smooth, forward flow of communication. It is influenced by the rhythm and rate of speech. Every language has its own rhythmic pattern, or timing. Do we pause after each word that we speak? Do we pause after each sentence? If we do, how long do the pauses last? What is our phrasing? You’ll note that timing is not an isolated feature of speech. A word or syllable that is held tends to be emphasized and said more loudly. A skilled storyteller uses pauses and rhythmic variations for dramatic effect.

The speed at which we talk is our rate. Overall rate can reveal things about us. It may provide clues about where we come from. For example, people from New York usually speak more rapidly than those from Georgia. However, if you habitually speak very quickly, it may suggest that you are in a hurry, are impatient, or have a great deal to say. By contrast, slow speech may connote a relaxed or casual personality.

The component of speech that includes rate and rhythm is referred to as prosody. Prosodic features are known as suprasegmentals. Supra- means “above” or “beyond,” so suprasegmental features go beyond individual speech sounds (or segmental units) and are applied to whole phrases or sentences. Stress and intonation are also suprasegmental features of speech production that are discussed later in this chapter.

Although most of the time we attempt to use a clear, sufficiently loud voice, sometimes our meaning may be more effectively communicated by a whisper, a whine, or a throaty rasp. When you are upset, your voice might sound angry to the point where someone says, “Don’t use that tone of voice with me.” Clearly, tone communicates information.

Voice Voice can reveal things about the speaker as well as about the message. A woman with a hoarse voice might (correctly or not) communicate to others that she smokes. A person with a soft, high-pitched voice might be communicating youth or immaturity. A deep, throaty voice might connote masculinity or authority.

Both the overall level of loudness and the loudness pattern within sentences and words are important. A generally loud voice may communicate strength; a soft one may suggest timidity. By stressing different words within a sentence, you are also conveying different meanings. Say the following sentence in each of the ways listed here, with the emphasis or increased loudness on the underlined word. Notice how the meaning changes:

I got an “A” on my Physics final.
I got an “A” on my Physics final.
I got an “A” on my Physics final.
I got an “A” on my Physics final.
Placing the stress on different syllables within certain words also changes the meaning. Stressed syllables often have long vowels, as in the first word in each of the following pairs:

- record/recording
- recess/recess
- present/present

You might have noticed that as you vary the stress, the pitch, duration, and pronunciation of different speech sounds may also change. The pitch tends to go up as the loudness is increased. Similarly, you are likely to prolong the syllable that receives stress.

**Pitch** is a listener’s perception of how high or low a sound is; it can be physically measured as frequency or cycles per second, called hertz. **Habitual pitch** is the basic tone that an individual uses most of the time. Women usually have higher-pitched voices than men, and children have higher voices than adults of both sexes. So our habitual pitch tells something about who we are.

Pitch movement within an utterance is called **intonation**. A rising intonation turns a statement into a question. First say the following sentence by bringing your pitch down for the last word and then say it by raising your pitch at the end:

> She wants to do the dishes.

You’ll notice that intonation influences meaning. You should also observe that as you alter intonation, your rhythm and loudness patterns also change.

**Nonverbal Communication**

Although most humans rely heavily on spoken communication, some researchers report that about two thirds of human exchanges of meaning take place nonverbally. The term **nonverbal** encompasses both the suprasegmental aspects of speech that we described in the previous section and the **nonvocal** (without voice) and nonlinguistic (nonlanguage) aspects of communication.

**Artifacts** The way you look and the way you have decorated your personal environment communicate something about you. Even the car you drive can deliver a message. One young man we know impressed a woman on their first date by correctly selecting her car out of 30 in a parking lot. He did this by evaluating the make and year as well as the items on the seat and dashboard. If you walk into the best hotel in your area dressed in a business suit and ask for the rest room, you will be treated better than if you are wearing shabby jeans and look unkempt. People make assumptions about our personalities and trustworthiness on the basis of our possessions, clothing, and general appearance.

Music, art, architecture, and furniture are also artifacts that communicate. They communicate messages from the artists who designed and produced them and also from the people who purchase, patronize, or in some way support them.

**Kinesics** Kinesics refers to the way we move our bodies, or *body language*. This includes overall body movement and position as well as gestures and facial expression. Although there is some overlap with signing, gesturing typically lacks explicit (clearly defined) movements. In signing, the meanings of particular
movements are well specified. For example, in American Sign Language (ASL), a thumb stroke down the cheek means “girl.” Kinesics tend to be more general, subtle, or implicit. Gestures such as a “brush-off” have explicit meanings, and they support and contribute to the larger speech system. By contrast, signing is a primary means of communication used by many people who have deafness. ASL is described in greater detail in Chapter 12 and Chapter 13.

**Space and Time** The study of the physical distance between people as it affects communication is called proxemics. Proxemics not only reflects the relationship between people but is also influenced by age and culture. Infants, children, people from Middle Eastern and Latin cultures, and those with strong emotional attachments, such as lovers, tend to interact in intimate or close proximity, very near one another. One young U.S. student we know reported feeling “backed into a corner” by a female exchange student from Spain whom he had just met at a social gathering. It is possible that the Spanish woman felt that the American was “too distant.”

**Tactiles** are touching behaviors. Who touches whom and how and where on the body the touch occurs can reveal a great deal. For example, some friends hug and kiss, others shake hands, and still others simply greet with a smile and a nod. A touch may convey “I understand,” “I’m sorry,” or “Good luck.” Children in our society learn that touching others is usually not appropriate and are told early on to “keep your hands to yourself.” In contrast, infants’ earliest interactions normally include considerable parental and caretaker touch.

**Chronemics** is the effect of time on communication. Again, cultural and age factors influence this nonvocal aspect of communication. People from German and Scandinavian backgrounds tend to be exactlying prompt, while those from Latin and African cultures may permit greater time flexibility. When two individuals come from cultures with different time rules, conflicts can easily arise. Status and context also affect chronemics. You might be kept waiting at the doctor’s office, but your doctor does not expect to have to wait for you. Promptness is part of the U.S. work ethic. If you are routinely late to class or to a job, you’ve violated a chronemic norm and might have to pay a price in terms of a lowered grade or lost employment.

Age, sex, education, and cultural background influence every aspect of communication. These variations in communication are not impairments. Differences reflect regional, social, cultural, or ethnic identity and are not a disorder of speech or language. Table 2.1 offers a sampling of typical communication features at different life stages. We describe communication impairments in the next section.

**COMMUNICATION THROUGH THE LIFESPAN**

The most complex and challenging task newborns face is learning the abstract code called language that those around them use to communicate. To do this, infants must first learn the rudiments of communication and begin to master the primary means of language transmission, called speech. The early establishment of communication between children and their caregivers fosters the development of speech and language, which in turn influences the quality of communication. This intricate pattern is further complicated by physical, cognitive, and social
### TABLE 2.1
A lifespan view of typical communication

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Reception Communication</th>
<th>Expressive Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Language</td>
<td>Speech</td>
</tr>
<tr>
<td></td>
<td>Form</td>
<td>Content</td>
</tr>
<tr>
<td>Infancy</td>
<td>Quiets/turns to human voice; Distinguishes speech sounds</td>
<td>Prelinguistic sound-making</td>
</tr>
<tr>
<td>Toddler</td>
<td>Responds to some verbal commands</td>
<td>Vocabulary growth from 4 to 300 words; moves from single word to short utterances</td>
</tr>
<tr>
<td>Preschool</td>
<td>Comprehension far exceeds expression; enjoys stories, books; follows increasingly complex commands; comprehends simple humor</td>
<td>Vocabulary grows from 1,000 to more than 2,000 words; uses complete sentences</td>
</tr>
</tbody>
</table>
TABLE 2.1
(Continued)

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Receptive Communication</th>
<th>Expressive Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Language</td>
<td>Speech</td>
</tr>
<tr>
<td></td>
<td>Form</td>
<td>Use</td>
</tr>
<tr>
<td>School-age</td>
<td>Reading skills improve; receptive language grows to 50,000 words by sixth grade, 80,000 words end of high school; comprehension becomes adult-like</td>
<td>Many enjoy talking, sharing thoughts, raising and answering personal as well as abstract questions; narrative skills expand</td>
</tr>
<tr>
<td>Early and middle adulthood</td>
<td>Comprehension increases</td>
<td>Education and occupation may be reflected in vocabulary</td>
</tr>
<tr>
<td>Advanced age</td>
<td>Comprehension may decrease</td>
<td>Vocabulary may reflect “older” generation</td>
</tr>
</tbody>
</table>

Sources: Information from Owens (2012) and Shadden & Toner (1997).

Note: This is a sampling of communication behaviors. Variability within each age group is the norm.
development as children mature. We can go even further and suggest studies in several languages which reveal that language proficiency is critical to development of higher cognitive skills, even nonverbal ones (Oller et al., 2001).

The key to becoming a communicator is being treated as one. Although both speech and language depend on physical and cognitive maturation, neither is sufficient to account for the rapid developments in children’s communication. Most linguists would also agree that language has strong biological underpinnings, although this too is an insufficient explanation in itself of the language learning process.

The process of learning speech and language is a social one that occurs through interactions of children and the people in their environment. Speech and language are learned within routines and familiar activities that shape children’s days and within conversations about food, toys, and pets and later about school, social life, and the like. As listeners, we use a variety of lexical, syntactic, and stress-pattern cues flexibly to break continuous speech into more readily interpretable chunks (Sanders & Neville, 2000).

In different cultures, the type of child–caregiver interaction, the model of language presented to the child, and the expectations for the child differ, but each is sufficient for the learning of language. Learning to become an effective communicator is a dynamic and active process in which children in our culture become involved in the give-and-take of conversations. Even the more formal educational processes of learning to read and write are initially social and occur within book-reading activities in the home involving children and caregivers.

Every person’s speech and language continue to change until the end of life. Communication reflects the changes occurring in us and around us. Even the means of communication can change. Your great-grandparents might have begun life without a telephone and had to learn this new means of communication. Your grandparents probably began life without television. We, the authors, had to learn to use computers to communicate when we were well into our adult lives. You, in contrast, grew up with the Internet and cellphones. Many preschoolers now have tablets and Kindles.

Languages change, too. New words and phrases have entered American English within your lifetime, such as Internet, Blu-ray disc, iPod, smartphone, texting, hip-hop, and hybrid vehicle. Other cultures and languages have contributed mullah, sushi, bodega, and tsunami. A competent communicator continues to adapt to changes in the language and in the communication process.

COMMUNICATION IMPAIRMENTS

Now that you have an idea of the complexity and varied nature of communication, it should be easy to see that much can go wrong. Let’s expand on what we discussed in Chapter 1. We can further define communication disorders as consisting of disorders of speech (articulation, voice, resonance, fluency), oral neuromotor patterns of control and movement, language impairment, feeding and swallowing disorders, cognitive and social communication deficits, and hearing and processing difficulties. Notice that this definition does not confine itself to speech and hearing but also includes reading and writing, as well as manual (or sign and gestures) and other communication systems, in addition to processes such as swallowing and balance that share anatomy and physiology
with parts of the communication mechanism. That’s a lot! Communication disorders may be categorized on the basis of whether reception, processing, and/or expression is affected. Is the problem primarily one of hearing, comprehending and manipulating language, or speaking? In fact, the three dimensions may be intertwined, reflecting the integration of the processes of speech, language, and hearing. Figure 2.3 presents various systems for categorizing communication disorders. The American Speech-Language-Hearing Association (ASHA) website (www.asha.org) discusses various disorders that affect children and adults who may benefit from the help of a speech-language pathologist (SLP). Type in the disorder you wish to explore in the search box in the upper right.

**Etiology**, the cause or origin of a problem, may be used to classify a communication problem. Disorders may be due to faulty learning, neurological impairments, anatomical or physiological abnormalities, cognitive deficits, hearing impairment, or damage to any part of the speech system. Sometimes a dichotomy is made between **congenital** and **acquired** problems. Congenital disorders are present at birth; acquired ones result from illness, accident, or environmental circumstances anytime later in life. Finally, disorders may range from borderline or mild to profoundly severe.

As mentioned in Chapter 1, variations in communication are not impairments. Communication **dialects** are differences that reflect a particular regional, social, cultural, or ethnic identity and are not disorders of speech or language. Likewise, differences found in the speech and language of English language learners (ELLs) are not disorders.

In this text, we provide a **holistic** approach to diagnosis and treatment of people with communicative impairments. We have separate chapters that discuss speech characteristics such as voice, fluency, and phonology, and we also provide chapters that are organized on the basis of etiology such as neurogenic and craniofacial disorders. Within each chapter, we examine the interconnectedness of age, time of onset, social and cultural factors, and cause of the presenting disorder, and we describe evidence-based assessment and treatment practices. We observe that it is common for an individual who demonstrates difficulties with
one aspect of communication to be affected in other areas as well. We demonstrate that differences and dialects do not constitute disorders, and we examine the sometimes perplexing contrast between “typical” and “impaired.”

Language Disorders

Disorders of Form
As explained earlier, language form includes phonology, morphology, and syntax. We speak in sounds (phonemes) that are combined into words (morphemes), which in turn are combined into phrases and sentences (based on syntactical rules). Errors in sound use, such as not producing the ends of words (“hi shi i too sma” for “his shirt is too small”), constitutes a disorder of phonology. Incorrect use of past tense or plural markers (“the girl went home” for “the girls went home”) is an example of a disorder of morphology. Syntactical errors include incorrect word order and run-on sentences (for example, “I want to go mall and go skate and buy peanuts and you come with me ‘cause I want you to but not Jimmy ’cause he’s not big enough to go skate”). These errors in school-age children may affect academic achievement and social well-being.

Disorders of form may be due to many factors, including sensory limitations such as hearing problems or perceptual difficulties such as learning disabilities. Limited exposure to correct models may also hinder a child’s language development. For many children who are delayed in their production of mature language forms, the cause is not apparent. Patterns that seem like errors at first are sometimes a reflection of a particular speech dialect. An SLP must distinguish between dialectal variations, which do not signify impairment, and disorders.

Disorders of Content
Children and adults with limited vocabularies, those who misuse words, and those with word-finding difficulties may have disorders of content or semantics. Similarly, limited ability to understand and use abstract language, as in metaphors, proverbs, sarcasm, and some humor, suggests semantic difficulties. A persistent pattern of avoiding naming objects and referring instead to “the thing” is another indication of a disorder of content. Although limited experience or a concrete learning style may contribute to this problem in youngsters, among older people, cerebrovascular accidents (strokes), head trauma due to accidents, and certain illnesses may result in word-retrieval problems and other content-related difficulties.

Disorders of Use
Pragmatic language problems may stem from limited or unacceptable conversational, social, and narrative skills; deficits in spoken vocabulary; and/or immature or disordered phonology, morphology, and syntax. Examples of impaired pragmatic language skills might include difficulty staying on topic, providing inappropriate or incongruent responses to questions, and constantly interrupting the conversational partner. Culture, group affiliations, setting, and participants described earlier in this chapter play a major role in judgments regarding pragmatic competence.

It is not uncommon for an individual to have an impairment in more than one aspect of communication.
Speech Disorders

Disorders of speech may involve articulation (the production of speech sounds), fluency (rhythm and rate), or voice (pitch, loudness, and quality). They may affect people of all ages, be congenital or acquired, be due to numerous causes, and reflect any degree of severity.

Disorders of Articulation

Production of speech requires perception and conceptualization of the speech sounds in a language as well as motor movements to form these sounds in isolation and in context. You must have both a mental/auditory image of the sound you are going to say and the neuromuscular skills to produce the sound. The cognitive and theoretical concepts of the nature, production, and rules for producing and combining speech sounds in language is known as phonology. The actual production of these sounds is called articulation.

It is not always easy to determine whether an individual’s speech-sound errors indicate an impairment of phonology, which is a language problem, or articulation, which is a speech disorder. To sort this out, SLPs identify the phonemes that are incorrectly produced and look for error patterns that may point to phonological disturbances. The sound system of a language is usually fully in place by age 7 or 8. Children with multiple speech-sound errors past age 4 may have phonological difficulties. The causes are often not known but may result from faulty learning due to illness, such as ear infections, hearing or perceptual impairments, or other problems in the early years.

An SLP is interested in a client’s ability to move the structures needed in speech, such as the jaw, lips, and tongue. The causes of articulation disorders include neuromotor problems such as cerebral palsy, physical anomalies such as cleft palate, and faulty learning. When paralysis, weakness, or poor coordination of the muscles for speech result in poor speech articulation, the disorder is called dysarthria. Apraxia of speech also results in poor articulation due to neuromotor difficulties; however, the difficulty appears to be in programming the speech mechanism, while muscle strength is normal. Dysarthria and apraxia can affect both children and adults. Assessment and treatment of phonological and articulatory disorders are described in Chapter 10.

Disorders of Fluency

As we described earlier, fluency is the smooth, uninterrupted flow of communication. Certain types of fluency disruptions are fairly common at different ages. For example, many 2-year-olds repeat words: “I want-want-want a cookie.” Around age 3, youngsters often make false starts and revise their utterances: “Ben took . . . he broked my crayon.” Because these speech patterns are so common, they are sometimes referred to as developmental disfluency. Typically fluent adults occasionally use fillers (“er,” “um,” “ya know,” and so on), hesitations (unexpected pauses), repetitions (“g-go-go”), and prolongations (“www-well”). However, when these speech behaviors exceed or are qualitatively different from the norm or are accompanied by excessive tension, struggle, and fear, they may be identified as stuttering. Appropriate diagnosis and intervention when warranted are the task of an SLP (Yairi et al., 2001).

Fluency disorders are generally first noticed before 6 years of age. If remediation efforts are not made or are unsuccessful, this condition might continue
and even worsen by adulthood. Adult onset of disfluency also occurs. Advancing age, accidents, and disease can all disrupt the normal ease, speed, and rhythm of speech. The causes of nonfluent speech are typically unclear; this is explored further in Chapter 7.

**Voice Disorders**

As in other areas of speech, voice matures as a child gets older. From uncontrolled cries to carefully modulated whispers, shouts, and variations in pitch, the development of voice follows a predictable pattern. Although occasionally children are born with physiological problems that interfere with normal voice, more common is the pattern of **vocal abuse**. It is characterized by excessive yelling, screaming, or even occasional loud singing that results in **hoarseness** or another voice disorder. Habits such as physical tension, yelling, coughing, throat clearing, smoking, and alcohol consumption can disrupt normal voice production. These behaviors may result in pathology to the vocal folds such as polyps, nodules, or ulcers. Disease, trauma, allergies, and neuromuscular and endocrine disorders may also affect voice quality. For example, individuals with Parkinson’s disease, a progressive neurological disorder, may have a soft voice with limited pitch and loudness variation.

**Hearing Disorders**

A hearing disorder results from impaired auditory sensitivity in the auditory or hearing system. It may affect the ability to detect sound, to recognize voices or other auditory stimuli, to discriminate between different sounds, such as mistaking the phoneme /s/ for /f/, and to understand speech.

**Deafness**

When a person’s ability to perceive sound is limited to such an extent that the auditory channel is not the primary sensory input for communication, the individual is considered to have deafness. Deafness may be congenital or acquired.

Total communication, including sign, speech, and speechreading, is often considered the most effective intervention for deafness. **Assistive listening devices (ALD)**, **cochlear implants**, and **auditory training** may be helpful. These are explained in Chapter 12.

**Hard of Hearing**

A person who is hard of hearing, in contrast to one who is deaf, depends primarily on audition for communication. Hearing loss may be temporary due to an illness, such as an ear infection, or permanent, caused by disease, injury, or advancing age. Hearing loss is usually categorized in terms of severity, laterality, and type. The severity of a hearing loss may range from mild to severe. It may be **bilateral**, involving both ears, or **unilateral**, affecting primarily one ear. Finally, the loss may be **conductive**, **sensorineural**, or **mixed**. A conductive loss is caused by damage to the outer or middle ear; people with this type of loss usually report that sounds are generally too soft. A sensorineural loss involves problems with the inner ear and/or auditory nerve; this type of damage is likely to affect a person’s ability to discriminate and consequently understand speech sounds, although they may “hear” them. A typical pattern is older people reporting that they hear just fine but wish others would not mumble. Mixed hearing loss, as the
name implies, is a combination of both conductive and sensorineural loss (see Chapter 12 for further discussion).

Auditory Processing Disorders
An individual with an auditory processing disorder (APD) may have normal hearing but still have difficulty understanding speech. Individuals with APDs struggle to keep up with conversation, understand speech in less-than-optimal listening conditions (i.e., degraded speech signal, presence of background noise), discriminate and identify speech sounds, and integrate what they hear with non-verbal aspects of communication (DeBonis & Moncrieff, 2008). These difficulties are sometimes traced to tumors, disease, or brain injury, but often the cause is unknown. APD can occur in both children and adults. A special battery of auditory diagnostic tests is used to determine or rule out APD; however, there is currently no “gold standard” to ensure correct identification of the disorder (Mcfarland & Cacase, 2006). APD may coexist with other disorders, including attention-deficit/hyperactivity disorder (ADHD) and speech-language and learning disabilities (ASHA, 2005c).

How Common Are Communication Disorders?
Before we attempt to estimate the numbers of people who have disorders of communication, we examine the concepts of normalcy and patterns of disability.

What Is “Normal”?
A recent cartoon showed an empty room and a sign reading “Meeting of Members of Functional Families.” The implication was that there are no functional, or “normal,” families. Likewise, we could ask, “Is anybody normal?” If anything, variability is the norm. We humans are remarkable in our diversity. Just as no two snowflakes are identical, no two individuals, even twins, are exactly alike. Our faces, fingerprints, and manner of communication are unique.

The bell-shaped normal curve graphs measurements that are used to distinguish those who are average from those who perform above and below others of the same population (see Figure 2.4). Many language tests use a scoring system comparable to IQ scores, called standard scores. Most people (a little over 68% of those tested) will have scores that cluster around the mean or average score and would be considered “normal” or “average.” Higher or lower scores are above or below average. An individual performing in the lowest 5% to 10% would have a score considered to be significantly below average.

Because the word normal suggests “without problems,” we prefer to use the term typical when we mean “like most others of the same age and group.” Classifying people on the basis of statistical percentage is little more than a numbers game. A more valid approach requires clear definitions of speech and language disorders.

Communication Disorders as Secondary to Other Disabilities
Most communication disorders are secondary to other disabilities. For example, children with a cleft palate have physical health problems as well as voice and articulation disorders. People with cerebral palsy have motor deficits beyond speech. Children with learning disabilities are especially likely to have language
difficulties but may also have articulation, voice, fluency, and/or hearing deficits. In addition, they experience academic and social difficulties.

**Estimates of Prevalence**

**Prevalence** refers to the number or percentage of people within a specified population who have a particular disorder or condition at a given point in time. If you determined the prevalence of stuttering in the entire U.S. population, among first-grade children, among college seniors, among U.S. males, or among U.S. females, you would get different prevalence figures in each case. For this reason, prevalence statistics must specify the population on which they are based.

Current estimates suggest that about 17% of the total U.S. population have some communicative disorder. About 11% have a hearing loss, and approximately 6% have a speech, voice, or language disorder. Many of those with hearing losses also have speech, voice, or language disorders. Six to 10 million Americans (about 3% of the population) have a disorder of swallowing, and many of these individuals also have a communicative impairment. Although these figures are relatively low, it is likely that more, generally mild, cases are not reported (Tierney et al., 2000).

The percentage of people with hearing loss increases with age. Between 1% and 2% of people under 18 years of age have a chronic hearing loss, compared with approximately 32% of those over age 75. Exposure to noise has contributed to the hearing loss in about a third of those affected.

Impairments of speech-sound production and fluency are more common in children than adults and more common among males than females. Speech disorders due to neurological disorders or brain and spinal cord injury occur more often among adults. It has been estimated that anywhere between 3% and 10% of Americans have voice disorders; the percentage is greater among school-age children and among people over age 65.
Language disorders occur in 8% to 12% of the preschool population; the prevalence decreases through the school years. Language deficits in older adults may be associated with stroke or dementia. It is likely that 5% to 10% of people over age 65 experience language disabilities related to these disorders. Table 2.2 highlights some communication disorders that may appear through the lifespan.

**TABLE 2.2**

Communication disorders that may manifest themselves through the lifespan

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Disorders</th>
<th>Receptive Communication</th>
<th>Expressive Communication</th>
<th>Swallowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infancy</td>
<td>Hearing impairment</td>
<td>Limited response to sound/speech</td>
<td>Atypical birth and other early cries</td>
<td>May have difficulties with breast or bottle; later problems with solid foods</td>
</tr>
<tr>
<td></td>
<td>Fetal alcohol or drug-exposure syndrome</td>
<td>Limited response to others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parental neglect/abuse</td>
<td>Atypical physical postures and movement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cerebral palsy</td>
<td>Deaf infants vocalize normally for first 6 mos. Others may have little vocalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Passivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toddler</td>
<td>Autism/pervasive developmental disorder may be identified (hypersensitive to stimuli)</td>
<td>Comprehension of spoken language limited</td>
<td>Delay in first spoken word Utterances limited May use objects ritualistically</td>
<td>Rigid food preferences/dislikes Caution needs to be taken to prevent putting small objects in mouth that may be swallowed/choked on</td>
</tr>
<tr>
<td></td>
<td>Mental retardation not suspected earlier may now become apparent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brain injury due to falls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool</td>
<td>Delays that were suspected earlier may become more pronounced</td>
<td>Interactions with peers and others may be difficult</td>
<td>Inappropriate use of toys/objects Vocabulary may be limited, utterances short</td>
<td>Food preferences may be more entrenched</td>
</tr>
<tr>
<td></td>
<td>Fluency difficulties may emerge</td>
<td></td>
<td>Alternative/ augmentative communication may be recommended</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specific language disabilities</td>
<td></td>
<td>Excessive disfluency; delayed phonology and grammatical development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Middle ear problems common</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 2.2
(Continued)

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Disorders</th>
<th>Receptive Communication</th>
<th>Expressive Communication</th>
<th>Swallowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>School-age</td>
<td>Language learning problems</td>
<td>Difficulties in attending, following directions, speech and reading comprehension</td>
<td>Narrative and other pragmatic skills may be affected</td>
<td>Inappropriate eating habits may become established</td>
</tr>
<tr>
<td></td>
<td>Attention-deficit/hyperactivity disorder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brain injury due to falls and other accidents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young adulthood</td>
<td>Brain injury due to bike, motorcycle, car, and other accidents most prevalent in these years</td>
<td>Comprehension affected, generalized confusion, abstract thinking impaired</td>
<td>Pragmatic skills affected</td>
<td>Neuromotor injury may impact on swallowing</td>
</tr>
<tr>
<td>Middle adulthood</td>
<td>Hearing often starts to decline</td>
<td>Speech in noise may be difficult to comprehend</td>
<td>Illness-related depression may affect expressive communication</td>
<td>Eating/swallowing may be impaired initially</td>
</tr>
<tr>
<td></td>
<td>Life-threatening illnesses such as cancer may be diagnosed</td>
<td>Aphasia and Alzheimer’s may result in comprehension difficulties</td>
<td>Dysarthria and apraxia may affect speech intelligibility</td>
<td>following stroke; swallowing difficulties</td>
</tr>
<tr>
<td></td>
<td>Neurogenic problems may appear; multiple sclerosis, ALS</td>
<td></td>
<td>Alzheimer’s and aphasias cause language difficulties</td>
<td>often present in degenerative neuromotor</td>
</tr>
<tr>
<td></td>
<td>Parkinson’s, and Alzheimer’s diseases; stroke (aphasia)</td>
<td></td>
<td></td>
<td>diseases (e.g., multiple sclerosis, ALS)</td>
</tr>
<tr>
<td>Advanced age</td>
<td>Hearing deficits common</td>
<td>Difficulty understanding speech may cause “tuning out”</td>
<td>Voice may be weak</td>
<td>Disinterest in food, swallowing impairments may</td>
</tr>
<tr>
<td></td>
<td>Neurogenic problems become progressively worse</td>
<td></td>
<td>Word-finding problems</td>
<td>lead to aspiration pneumonia</td>
</tr>
</tbody>
</table>

Sources: Information from Owens (2014) and Shadden & Toner (1997).

Note: This is a sampling of problems that may be seen. Variability within each age group is the norm.

DECIDING WHETHER THERE IS A PROBLEM

Not everyone is assessed for communication disorders. Formal assessment occurs only after someone recognizes the possibility of a problem. Selection for assessment may come from referral by another professional or concerned adult, such as a pediatrician or parent, or from screening. Adults may refer themselves if they feel they have a communication disorder.

Children between the ages of birth and 36 months may be brought to special centers for screening for speech, language, hearing, motor, and other functions. Older children are screened in preschools and schools. In addition, every state in
the United States requires that hearing screening tests be given to infants at their birthing facility or as soon after birth as possible. The purpose of screening is to determine whether a problem exists.

Defining the Problem

Assessment of communication disorders is the systematic process of obtaining information from many sources, through various means, and in different settings to verify and specify communication strengths and weaknesses, identify possible causes of problems, and make plans to address them. If a problem is identified, an SLP may make a diagnosis, which distinguishes an individual’s difficulties from the broad range of possible problems. Although a diagnostic report might include a label such as dysphonia, it should also contain a more complete description of this disorder that reflects the person’s ability to communicate, variability of symptoms, severity, and possible causes.

Assessment Goals

The goals of assessment are listed in Figure 2.5. The primary goal of diagnosis is determining exactly what is wrong. Sometimes diagnostic therapy is suggested. In this case, the SLP will work with the client for a time and will obtain a clearer picture of the person’s communication abilities and limitations in the process.

As mentioned earlier, communication impairments may involve hearing, speech, language, and/or processing or, more likely, some combination of these. During assessment, specifics of all of these are probed. Both the client’s communicative strengths and limitations are noted. An SLP provides data reporting the consistency of behaviors and, where appropriate, indicates how the client compares with more typical communicators.

If a problem exists, an SLP will want to describe its severity. Exactly what determines a particular severity rating is related to several factors. Although published tests often suggest severity ratings depending on a client’s performance scores, these must be used with caution. There is a broad range of typical communication behavior, and an SLP should not rely overly on any single test.

Clinicians may differ in their judgments of the severity of a disorder. Use of objective criteria ensures more consistency in this determination.

Figure 2.5 Goals of assessment.

A communication disorders specialist is charged with answering the following questions when assessing an individual:
1. Does a communication problem exist?
2. What is the diagnosis?
3. What are the deficit areas? How consistent are they?
4. What are the individual’s strengths?
5. How severe is the problem?
6. What are the probable causes of the problem?
7. What recommendations should be made?
8. What is the prognosis (likely outcome) without and with intervention?

Whenever possible, an SLP should try to ascertain the reason(s) for the communication deficit, especially if the cause persists. The cause is referred to as the **etiology**. There may be **predisposing causes** that underlie the problem, such as genetic factors, **precipitating causes** that triggered the disorder, such as a stroke, and **maintaining** or **perpetuating causes** that continue or add to the problem. Whether the etiology is known or not, an SLP must thoroughly describe the client’s communication behavior.

Recommendations for addressing the client’s communicative deficiencies are often the most read portion of an assessment report. In making a plan, the first decision is whether intervention is warranted. If it is, then its nature must be described. Treatment recommendations can be thought of as a “working hypothesis” that may need to be altered as intervention proceeds. Assessment continues throughout treatment, in the forms of data collection and probes of behavior.

In communication disorders, an SLP makes a **prognosis** regarding whether the problem will persist if no intervention occurs and what the likely outcome is if a course of therapy or other treatment plan is followed. A prognosis is an informed prediction of the outcome of a disorder, both with and without intervention, and is based, in part, on the nature and severity of the disorder; the client’s responsiveness to trial therapy during assessment; and the client’s overall communicative, intellectual, and personal strengths and weaknesses. The client’s home and school environments are also important factors that can affect the outcome.

**Assessment Procedures**

Assessment may take many forms. Ideally, a clinician should sample a broad variety of communication skills through multiple procedures in several settings. The focus should be on the collection of **authentic data**—that is, actual real-life information, in sufficient quantity to be able to make meaningful and accurate decisions. The need for the use of a variety of procedures should be readily apparent. How often as a student have you said that a test did not accurately measure what you know or what you can do? The same is true for individuals with communication impairments. By using multiple measures and reports, an SLP or audiologist tries to obtain the most accurate description of a child’s communication possible. These methods may include:

- A case history filled out by a parent, family member, professional, or the client
- A questionnaire completed by a parent, family member, professional, or the client
- An interview with a parent, family member, and/or the client
- A systematic observation of the client’s communication skills
- Testing with more than one assessment tool and including a hearing screening and an **examination of the peripheral speech mechanism**
- **Dynamic assessment**
- Communication sampling and analysis

Most tests are **norm referenced**, meaning they yield scores that are used to compare a client with a sample of similar individuals. Norm-referenced instruments should be chosen carefully to fit the characteristics of each individual child. In contrast, a **criterion-referenced** test evaluates a client’s strengths and weaknesses with regard to particular skills and does not make comparisons to other
children. This more descriptive method is usually reserved for dynamic assessment and sampling.

Dynamic assessment includes probing to explore a client’s ability to modify behavior by producing previously misarticulated sounds, learning a language rule, reducing disfluencies, and the like. The goal is to mesh more flexible non-standardized approaches with more formal, structured methods found in most tests. Dynamic assessment often takes the form of a test-teach-test paradigm to examine the “teachability” of a communication feature. The child’s potential for learning is assessed by giving small amounts of assistance and determining the difficulty for the child of performing the newly learned behavior.

Most clinicians also use a speech and/or language sampling technique when assessing the communication of both children and adults. Guidelines for sample collection and analysis are described in Chapter 4 and Chapter 8. With adult clients, sampling can be accomplished while reviewing the case history with clients or asking them to explain how they spent their day or tell about their last vacation (Duffy, 2005).

Evidence-Based Practice

Most ASHA assessment guidelines relate to specific disorders and are described in the following chapters. Still, some general guidelines can be deduced from these evidence-based analyses. These are included in Box 2.1.

BOX 2.1 | Evidence-Based Practice in Assessment of Individuals with Communication Impairments

Developmental Level

- Early identification may be especially important for young children with significant communication disorders.
- The form of communication varies with a child’s age and developmental status and should be reflected in the communication features assessed.

Difference vs. Disorder

- Multilingualism and dialectal variations in the home and other care environments affect the way in which language is learned and used and should be considered in an assessment.
- Bilingual clients should be assessed in both languages in order to provide an accurate picture of speech and language strengths and weaknesses.

Format

- Significant others who interact with the client in an ongoing daily basis should be included in the assessment process.
- Assessment and analysis should be multifaceted and in depth because the dividing line between typical and disordered speech and language is not always clear.
- Assessment materials and strategies should be appropriate to the culture and language of the client and family.
- The setting of the assessment should be appropriate to the developmental stage and/or overall health of the client and be comfortable for both the client and significant others.
- Assessment materials and strategies should reflect the developmental level or condition of the client.

Each child brings his or her sense of self to the therapeutic situation. Most of this self-concept has grown out of interactions with family members and individuals in the immediate community. An SLP’s failure to recognize and include these dimensions of an individual’s social identity can negatively impact intervention (Demmert, McCardle, and Leos, 2006).

Providing culturally responsive intervention is extremely important for children from culturally linguistically diverse (CLD) backgrounds. SLPs can integrate culturally based materials into intervention.

Intervention for individuals with communication disorders is influenced by the nature and severity of the disorder, the age and status of the client, and environmental considerations, as well as personal and cultural characteristics of both client and clinician. Despite this, some general principles and procedures can be identified.

As mentioned in Chapter 1, ASHA has taken a proactive position stressing the need to integrate research and clinical practice (Kamhi, 2006a; Katz, 2003; Ramig, 2002; Wambaugh & Bain, 2002). ASHA’s Code of Ethics requires clinicians to “provide services that are based on careful, professional reasoning” (Apel & Self, 2003, p. 6). Evidence-based practices ensure that “clinicians abide by these ethical codes while best serving their clients” (Apel & Self, 2003, p. 6). ASHA has established the National Center for Treatment Effectiveness in Communicative Disorders and is currently coordinating a National Institutes of Health–funded effort to promote clinical research that will support EBP.

Objectives of Intervention

Regardless of the specific nature of a problem, intervention in speech-language pathology has as its overriding goal the improvement of the client’s communication skills:

1. The client should show improvement not just in a clinical setting; progress should generalize to his or her real-world environments, such as home, school, and work.
2. The client should not have to think about what has been learned; in large part, it should be automatic.
3. The client must be able to self-monitor. Although modifications should be automatic, they will still require monitoring. The client should be able to listen to and observe himself or herself and make corrections as needed, without the therapist’s being present.
4. The client should make optimum progress in the minimum amount of time.
5. Intervention should be sensitive to the personal and cultural characteristics of the client.

Target Selection

The assessment report should provide recommendations for long-term goals and short-term objectives for communication intervention. The clinician, however, will have to decide which specific targets should be addressed and in what
sequence. The client's personal needs and the potential for intervention to generalization to everyday use are most relevant in making meaningful choices. Likelihood of success and typical behavior of others of the client's age and gender might provide additional insights.

**Baseline Data**

Before beginning a program of intervention, an SLP obtains baseline data; that is, the SLP tries to elicit the target behavior(s) multiple times, under multiple conditions, and record the accuracy of the client's responses. This gives the SLP information about the client's starting point. Baselines are essential in determining a client's progress and the success of a treatment program.

**Behavioral Objectives**

Once a clinician has obtained baseline data, he or she develops short-term objectives. These are the targets for each treatment session or for several sessions. A behavioral objective is a statement that specifies the target behavior in an observable and measurable way. To do this requires that the clinician identify what the client is expected to do, under what conditions, and with what degree of success. The letters ABCD might help you to remember the format for writing behavioral objectives:

- **A. Actor.** Who is expected to do the behavior?
- **B. Behavior.** What is the observable and measurable behavior?
- **C. Condition.** What is the context or condition of the behavior?
- **D. Degree.** What is the targeted degree of success?

For example, *John [Actor] will describe pictures [Behavior] using both the correct noun and verb [Condition] with 90% accuracy [Degree].*

**Clinical Elements**

Successful intervention is multifaceted and includes a variety of elements. This may include, but is not limited to, direct and incidental teaching, counseling, and inclusion of the family and family environment.

**Direct Teaching**

Part of the role of an SLP is teacher. Traditional clinical methods include explaining or reviewing the target and guided practice. **Behavior modification** training approaches have been shown to be successful for a broad variety of communication disorders. Behavior modification is a systematic method of changing behavior. During training, the SLP attempts to elicit the desired response from the client by providing a **stimulus**. The client is expected to **respond**, and the clinician **reinforces** this response if correct or provides corrective feedback if it is not.

**Incidental Teaching**

Behavior modification follows a highly structured format that an SLP directs. A low-structured or more client-led approach may also be used. In this method, the SLP follows the client's lead but teaches along the way. This is referred to as
**incidental teaching.** The SLP manipulates the environment so that communication occurs more naturally. For example, imaginary play with a young child or a cooking or art project with one who is older may serve as situations in which therapy occurs.

**Counseling**
In addition to direct work with the client on a communication problem, an SLP can provide a supportive environment for the client and other key people in the client’s life. A person with a communication disorder may experience a host of feelings, including embarrassment, anger, depression, and inadequacy. Family members may have similar emotions regarding the client’s communication and may also feel pity or guilt, perhaps blaming themselves for the problem.

**Family and Environmental Involvement**
An individual might spend 2 hours a week with an SLP and 110 awake hours alone and with other people, often family. Depending on the family circumstances, family members may be asked to help the client with specific activities at home to foster carryover to everyday situations. A spouse may be critical in assisting therapy for an adult who had a stroke or has a voice problem due to recent accident or illness. An SLP must recognize the significant others in the client’s life, from infancy through advanced age, and engage them in productive ways.

**Support groups** consisting of individuals who have similar difficulties often provide an avenue to practice what has been learned in therapy, to share feelings related to the disability, and to maintain communication skills once formal treatment has been terminated.

**Measuring Effectiveness**
An SLP determines readiness for dismissal from therapy largely by assessing its effectiveness. Did the client meet the long-term goals and short-term objectives? SLP-designed **post-therapy tests** similar to those used to determine baselines are normally used to answer this question. In addition, it is essential that the client has gained a degree of automaticity in the use of the communication target. Errors will occur, however, and the client should be able to self-monitor and self-correct when needed. If therapy has been effective, the client has been successful in generalizing learned skills to the out-of-clinic world.

**Follow-up and Maintenance**
After a client has been dismissed from therapy, an SLP must take steps to ensure that the progress that was achieved is not lost. This is done in two ways: Upon dismissal, the client or family should be encouraged to return when anyone feels a need. More reliable is the establishment of a regular follow-up schedule. The client may be contacted by telephone or e-mail every 6 months for a period of 2 years or so after the termination of therapy. At this time, retesting may be suggested, and **booster treatment** may be provided, if needed.
SUMMARY

Communication is an exchange of ideas; it involves message transmission and response. Human communication is remarkable and may take many forms. It is strongly influenced by culture and environment. Not only do people speak different languages, but within language groups, age, gender, socioeconomic status, geographical background, ethnicity, and other factors influence our communication.

The primary vehicle of human communication is language. It may be spoken, written, or signed and has been described in terms of form, content, and use. Form refers to the sound system, or phonology; word structure, or morphology; and syntax, or how the words are arranged in sentences. Content is semantics or meaning, and use is the purpose or pragmatics of the communication. Communication is also transmitted by nonverbal behaviors and characteristics.

A breakdown can occur in any aspect of communication. When communication is unimpaired, we tend to take it for granted, but when it fails, we may feel frustrated and isolated. About 17% of the U.S. population currently experience some limitation of hearing, speech, and/or language. See the ASHA website at the end of the chapter to learn more about various disorders.

Assessment of communication disorders requires an understanding of communication in context. Communication behaviors can be viewed as occurring on a continuum from typical to disordered. With each case, an SLP must decide where the demarcation is.

Referrals and screenings are the primary ways in which individuals are selected for assessment. During assessment, an SLP verifies and defines the client’s problem, identifies deficits and strengths, probes causality, makes a treatment plan, and provides a prognosis for improvement. This is achieved through multiple techniques, including sampling of communicative behaviors in several settings.

Assessment and treatment function in a cyclical fashion, with one influencing the other. In many ways, an SLP is assessing the client each time the client is seen in therapy. Successful intervention often uses a team approach that involves family members as well as professionals. Provisions for follow-up ensure that the gains made in therapy are maintained. In the chapters that follow, techniques for assessment and treatment of specific communication disorders are described.

SUGGESTED READINGS

