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*section I*

**General Considerations**



# one

## chapter one

# An Introduction to the Discipline of Communication Sciences and Disorders

RONALD B. GILLAM AND SANDRA LAING GILLAM

### LEARNING OBJECTIVES

1. To understand the discipline of communication sciences and disorders.
2. To understand how disorders of hearing, speech, and language adversely affect communication.
3. To compare and contrast the meaning of the following terms: *impairment, disability, handicap, disorder, and difference.*
4. To learn about the major types of speech, language, and hearing disorders.
5. To learn about the educational background and professional activities of speech, language, and hearing scientists, audiologists, and speech-language pathologists.
6. To understand the regulation of the professions of audiology and speech-language pathology by state agencies and professional organizations.

## THE DISCIPLINE

Many children and adults have difficulties speaking and hearing. In fact, in the United States today, there are approximately 46 million people who have some type of a communication disorder (National Institute on Deafness and Other Communication Disorders, 1995). Some of these individuals were born with conditions such as deafness (an inability to hear sounds) or cleft palate (a large opening in the roof of the mouth). Others acquired their difficulties as a result of diseases (such as meningitis) or accidents (traumatic brain injury). Fortunately, specialists can offer help to people with communication disorders and their families. These specialists are called speech, language, and hearing scientists, audiologists, and speech-language pathologists (SLPs). These are *professions* within the *discipline* of **communication sciences and disorders (CSD)**.

A **discipline** is a unique area of study, but a **profession** is an area of practice. The discipline of CSD encompasses the study of human communication processes, breakdowns in those processes (referred to as communication disorders), and the **efficacy** of practices involved in assessing and assisting individuals with communication differences and disorders. The major components of the discipline are speech, language, and hearing sciences, audiology, and speech-language pathology. **Deaf education** (education and rehabilitation of individuals with severe to profound hearing impairments) is a related profession. Speech, language, and hearing science, audiology, speech-language pathology, and deaf education are not mutually exclusive professions because some professionals may be engaged in activities related to one, two, or even all four of these areas of practice.

There are many factors that justify the need for CSD, and there are many beneficiaries of the research and practices that occur within the discipline. Research in human communication processes can add greatly to our understanding of how people interact with one another, solve problems, and process information. Individuals with impairments in speech, language, or hearing and their families can benefit substantially from the research and clinical services provided by speech, language, and hearing scientists, audiologists, SLPs, and deaf educators.

CSD is a relatively new discipline. The term *communication sciences and disorders* has been used for only the last 15 or 20 years. The terms *speech pathology* and *audiology* have longer histories. For example, Lee Edward Travis first used the term *speech pathology* in 1924 in a course description for clinical psychology of speech (Moeller, 1976). The word *language* was added to form the term *speech-language pathology* when it became obvious that professionals were dealing with much more than just the process of speech production. Drs. Ray Carhart and Norton Canfield coined the term *audiology* during World War II to describe a new science that focused on the aural (hearing) rehabilitation of individuals who suffered war-related hearing loss (Newby, 1958). World War II was a catalyst for the advancement of the field of audiology and fostered a union among the fields of audiology and speech pathology.

Early leaders in CSD stressed the importance of basing treatment on sound research. The emphasis on scientific problem solving in the laboratory, the clinical setting (hospitals and private practices), and the classroom (schools) is a hallmark of the discipline of CSD. We believe it is critical that all assessment and treatment decisions be based on sound scientific principles and research findings. Today, we use the term

**evidence-based practice** to describe how decisions that professionals make about clinical service delivery are guided by high-quality clinical research. In fact, federal guidelines related to Medicare, No Child Left Behind, and the Individuals with Disabilities Education Act mandate that SLPs and audiologists provide treatment that is based on sound scientific evidence.

The next sections of this chapter focus on the nature of communication, types of communication disorders and the roles that speech, language, and hearing scientists, SLPs, audiologists, and deaf educators play in studying, assessing, and treating individuals with communication disorders.

## INDIVIDUALS WITH COMMUNICATION DISORDERS

Communication involves an exchange of meaning between a sender and a receiver. Most of the time, meanings are exchanged via a code, called language, that can be written or signed, but that is most often spoken. A simple way to differentiate between language and speech is to remember that language is what you say (i.e., the meanings of words and sentences) and speech is how you say it (i.e., the sounds that make up the words and sentences).

Speakers articulate a series of programmed movements to form sequences of sounds that represent words, phrases, and sentences. Then, listeners interpret the message by converting the acoustic (sound) energy that reaches their ears into mental representations of words and sentences. Through communication, the individual can influence society at large. At the same time, social and cultural experiences play an important role in shaping the way individuals think and communicate.

Most people communicate pretty effectively by the time they are 3 or 4 years old, and most children are relatively expert at this process by the time they are 9 years old. Unfortunately, there are many ways that the processes involved in communication can break down. When they do, people routinely turn to SLPs and audiologists for help.

This chapter presents a systematic classification of communication differences and disorders and the kinds of communicative disruptions that individuals experience when they have difficulties with one or more of the processes that contribute to speech, language, and hearing. It is important to realize that communication is a system with many reciprocal relationships. A problem with one aspect of the communication process often affects many of the other processes that are related to it. For example, children who have a hearing loss receive limited acoustic input, which adversely affects the development of their language and speech. The language and speech problems experienced by children who have a hearing loss often have an adverse impact on their social and academic development.

### Communication Disorders

There are appropriate and inappropriate ways to refer to people who have unusual difficulties with communication. According to the World Health Organization (Wood, 1980), the word **impairment** should be used to refer to any loss or abnormality of

psychological, physiological, or anatomic structure or function. This is a relatively neutral term with respect to a person's ability to function in society. For example, a hearing impairment means only that someone has unusually poor hearing. It doesn't mean that the individual cannot function well in daily living and working situations. With hearing aids, the person with a hearing impairment might live life as completely and fully as people who hear well. The concept of impairment leads us to ask questions such as, "What is wrong with the person, and can it be fixed? What does this person do well? What skills and abilities can be used to compensate for this person's impairment?"

The word **disability** refers to a reduced competence in meeting daily living needs. The person with a disability might not be able to perform a particular life activity in a particular context. For example, a person with hearing impairment might not be able to communicate well on the telephone, even when he or she is wearing a hearing aid. In this case, the hearing impairment led to a disability. The concept of a disability leads us to ask, "What are the communication requirements of the environments that the individual functions in every day, and to what extent can the person access important daily living activities if some sort of compensation (such as a hearing aid) is provided?"

The word **handicap** refers to a social, educational, or occupational disadvantage that results from an impairment or disability. This disadvantage is often affected by the nature of the person's impairment and by the attitudes and biases that may be present in the person's environment. For example, a child with a hearing loss may have a hearing aid that allows him or her to hear most speech sounds without difficulties. However, he or she might not be able to hear very well in a noisy classroom. Unless the classroom teacher undertakes measures to lessen the extent of classroom noise, the child might not hear important classroom instructions, resulting in an educational handicap. The concept of a handicap leads us to ask, "Does this person experience social, educational, and vocational penalties? To what extent can we lessen these penalties by compensating for the person's impairment and by educating important people in the environment about ways that they can modify the environment?" The term *handicap* is considered to be pejorative by many people and is not used often.

The term **communication disorder** is sometimes used as a synonym for impairment and other times as a synonym for disability. In this book, we use the term *communication disorder* to refer to any communication structure or function that is diminished to a significant degree. In essence, a communication disorder interferes with the exchange of meaning and is apparent to the communication partners. Unless specifically stated, we do not imply any cultural, educational, or vocational disadvantage. Unfortunately, many people with communication disorders experience communication disabilities and handicaps, although this is not necessarily so.

### Communication Differences

Some people communicate in ways that differ from that of the mainstream culture. We use the term **communication difference** to mean communication abilities that differ from those usually encountered in the mainstream culture even though there is no evidence of impairment. For example, when they begin school, children who have spoken Spanish for most of their lives will not communicate like their monolingual

English-speaking classmates. Children who learn Spanish without any difficulty do not have a communication disorder. Unfortunately, these children's communication differences may contribute to periodic social and educational disadvantages within the school environment. These children may need extra assistance in learning English as a second language. However, unless children present communication impairments (characterized by loss or decline in communicative structures or functions that adversely affects their communication in all the languages they speak), they should not be diagnosed with a communication disorder, and should not be treated by SLPs or audiologists. There is much more information about communication differences in Chapter 3.

### Person-First Language

It is important to recognize that the problems that individuals experience do not define who they are. For example, a person who stutters is not just a stutterer. That person may be a caring parent, a good friend, a successful business owner, or even a good communicator. For this reason, most researchers and clinicians use **person-first language** to refer to individuals with communication disorders. By "person-first," we mean that the communication disorder is a descriptor of the individual and not a person's primary attribute. We follow that convention as much as possible in this book by using such phrases as "children with language disorders" instead of "language-disordered children." When we refer to groups of individuals who present a particular disorder, we might sometimes use the name of the disorder alone (i.e., "aphasics"). When we use the name of a communication disorder to refer to the group of individuals who present that disorder, readers should know that we do not mean to imply that the disorder is the sole defining characteristic of individuals who happen to present that kind of problem. As a matter of fact, many of the people we work with tell us that they do not like to be defined by their disabilities.

## TYPES OF COMMUNICATION DISORDERS

Communication disorders typically are categorized into speech disorders, language disorders, and hearing disorders. Additional parameters of classification include the etiological basis (cause) of the disorder and the point during the maturation of the individual that the disorder occurred. **Organic** disorders have a physical cause. For example, an adult with difficulty retrieving words after a stroke and a child who has problems producing speech sounds as a result of inadequate closure between the nose and mouth after the repair of a cleft palate have a physical problem that can account for the communication problem. In contrast, there are communication disorders termed **functional** for which a physical cause cannot be found. For example, a man may continue to speak at the same pitch as a child even though the vocal folds are normal. In this case, there is no physical basis for the problem. For some communication disorders, it is difficult to determine whether the cause of the disorder would best be described as organic or functional. A young child may have difficulty producing speech sounds in comparison to peers, but it is not known with surety whether the disorder is organic in nature

(e.g., a result of delayed maturation of the nervous system) or functional (e.g., a result of poor speech models or lack of environmental opportunity for speaking).

When the disorder occurs is also an important consideration. **Developmental disorders**, such as delays in speech and language development, occur early in the maturation of the individual but may continue into adulthood. **Acquired disorders**, such as speech and language disorders resulting from brain trauma following an accident, occur after communication skills have been fully developed.

With these distinctions in mind we provide a brief overview of hearing, speech, and language disorders. We make some reference to the **incidence** (percentage of the population that experienced a disorder during their lifetime) and **prevalence** (number of individuals with a disorder at some point in time). More detailed information about each disorder is provided in later chapters.

### Speech Disorders

Speech disorders (Table 1-1) result from an interruption in the process of speech production. This process starts with the programming of motor movements and ends with the acoustic signal that carries the sound to the listener. By historical convention, speech disorders are categorized on the basis of the aspect of speech production (articulation, fluency, voice, etc.) that is affected.

#### *Articulation and Phonological Disorders*

Individuals with **articulation and phonological disorders** have problems with the production of speech sounds. Such problems result from deviations in anatomic structures, physiological functions, and learning. When the problem is thought to be related to the way sounds are represented in the brain, it is commonly referred to as a phonological disorder. The problem may be minimal at one extreme (interfering with the way that one or two speech sounds, like /s/ or /r/ are produced) or severe, rendering speech unintelligible. Included in this category are developmental speech disorders,

**Table 1-1** Speech Disorders

<b>Disorder</b>	<b>Characteristics</b>
Articulation and phonological disorders	Problems producing speech sounds correctly as a result of differences in anatomic structures, physiological functions, or learning.
Cleft palate	Nasal loss of air during consonant production; abnormal resonance, speech sound production errors
Cerebral palsy	Articulation and voice disorders associated with abnormal muscle function in children.
Fluency disorder	Unusual disruptions in the rhythm and rate of speech. These disruptions are often characterized by repetitions or prolongations of sounds or syllables plus excessive tension.

neuromuscular speech disorders in adults and children, and articulation disorders resulting from orofacial anomalies such as cleft palate. Approximately 10% of preschool and school-age children present articulatory or phonological disorders (National Institute on Deafness and Other Communication Disorders, 2007).

### **Fluency Disorders**

A **fluency disorder** is an unusual interruption in the flow of speaking. Individuals with fluency disorders have an atypical rhythm and rate and an unusual number of sound and syllable repetitions. Their disruptions in fluency are often accompanied by excessive tension, and they may struggle visibly to produce the words they want to say. The most common fluency disorder is stuttering. Approximately 1% of the general population stutters, but as many as 5% of all adults report they stuttered at some point in their lives.

### **Voice Disorders**

The category of voice disorders is usually divided into two parts: phonation and resonance. **Phonatory disorders** result from abnormalities in vocal fold vibration that yield changes in loudness, pitch, or quality (e.g., breathiness, harshness, or hoarseness). Problems closing the opening between the nose and the mouth during production of speech sounds are termed **resonance disorders**. It has been estimated that between 3% and 9% of the total population of the United States has some type of a voice disorder (National Institute on Deafness and Other Communication Disorders, 2007).

### **Language Disorders**

*Language* refers to the words and sentences that are used to represent objects, thoughts, and feelings. A language disorder is a significant deficiency in understanding or in creating messages. There are three main types of language disorders: developmental (or functional) language disorders that occur during childhood, acquired language disorders that can occur during childhood but most often occur in older adults, and dementia, which nearly always occurs in older adults. It has been estimated that between 6 million and 8 million individuals in the United States have some form of language disorder (National Institute on Deafness and Other Communication Disorders, 2007).

### **Language Delay**

During the preschool years, some children have delayed language development that is not associated with a known etiology. That is, children have difficulties using and understanding language for no apparent reason. These children have smaller vocabularies, shorter sentences, and they may not say as much as most other children their age. Approximately half of the children who have significant early language delays (i.e., vocabularies less than 50 words) at 2 years of age will have language growth spurts that enable them to catch up to their same-age peers by the time they are 5 years old (Paul, Hernandez, Taylor, & Johnson, 1996). Unfortunately, we do not yet know how to predict which children with early language delays will outgrow them and which children will not.

### *Developmental Language Disorder*

Some children have impaired language comprehension and/or production problems that significantly interfere with socialization and educational success. These children might have a variety of problems including difficulty formulating sentences that express what they want to say, an unusual number of grammatical errors, difficulties thinking of words they know at the moment they need them, and/or difficulties with the social use of language (they tend to say the wrong thing at the wrong time). As with language delay, language disorder is not associated with a specific cause. Until children are in the late preschool and early school-age years, it is difficult to distinguish a language delay from a language disorder. A language disorder may be differentiated from language delay when the impairment persists beyond age 5 and children do not catch up with their peers. Between 6% and 8% of all children have language disorders. The primary types of childhood language disorders are presented in Table 1-2.

### *Acquired Language Disorders*

Acquired language disorders are caused by brain lesions, which are specific areas of damage to the brain. The most common type of an acquired language disorder is aphasia, which typically occurs in older adults after they have suffered a cerebrovascular accident or stroke. Individuals with aphasia frequently have trouble remembering words they once knew or using sentence structures they once used without any problems. It has been estimated that about 1 million Americans have aphasia, and

**Table 1-2** Common Developmental Language Disorders

<b>Disorder</b>	<b>Characteristics</b>
Intellectual disability	Significantly subaverage mental function with associated difficulties in communication, self-help skills, independence, and motor development.
Specific language impairment	Significant deficits in language abilities that cannot be attributed to deficits in hearing, intelligence, or motor functioning.
Autism spectrum disorders	Unusual disturbances in social interaction, communication, behaviors, interests, and activities that affect the capacity to relate appropriately to people, events, and objects.
Central auditory processing disorder	Difficulty identifying, interpreting, or organizing auditory information despite normal auditory acuity.
Learning disability	Difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities.
Dyslexia	A specific reading disorder that results from difficulties with phonological representation and phonological analysis.

approximately 80,000 individuals acquire aphasia each year (American Speech-Language-Hearing Association [ASHA], 2000).

Traumatic injury to the brain results in a syndrome of cognitive and language disturbances. The communication deficits associated with the injury are primarily a consequence of impaired cognitive processes related to memory, orientation, and organization and include problems more apparent in communication than in speech and language functioning. Most cases of brain trauma are caused by motor vehicle accidents with an incidence of approximately 7 million new cases each year.

### *Dementia*

Dementia is a general mental deterioration resulting from a pathological deterioration of the brain. Dementia is characterized by disorientation; impaired memory, judgment, and intellect; and shallow affect. It is most often seen in individuals who have Alzheimer's disease. Many of the estimated 2 million Americans with dementing diseases such as Alzheimer's disease and Parkinson's disease also have significant language impairments.

### **Hearing Disorders**

People with hearing disorders have a deficiency in their ability to detect sounds. This deficiency can vary in terms of how loud sounds need to be presented before they can be heard. Hearing can also vary with respect to the pitch level of the sounds that are heard. Some individuals can hear low-frequency sounds such as the notes from a bass guitar better than they can hear high-frequency sounds such as a small bell. Other individuals do not hear sounds at any frequency very well. According to the ASHA (ASHA, 2000), of the estimated 46 million citizens with a communication disorder, more than 28 million have some kind of hearing disorder.

Hearing loss can have a large or small effect on communication depending on the degree of loss and the type of sounds that are affected (see Table 1-3).

People with mild degrees of hearing loss that affect only their ability to hear high-pitched sounds will miss out on final sounds of words like *bath*, but they will hear most other sounds reasonably well enough so that they can usually fill in the missing pieces. For example, you can probably read the following sentence even though the letters representing the final sounds are missing, "Joh\_ wen\_ upstairs\_ to ta\_ a ba\_ ." However, people with a hearing loss that affects their ability to hear high- and low-pitched sounds produced at conversational speech levels will be at a significant disadvantage in communication. Imagine what you might think this sentence means if you could hear only the following sounds, "\_o\_ we\_ u\_ air\_ \_o\_ a\_ a\_ a\_ ."

If you could not hear conversations, it would be difficult for you to interact with your friends, to take notes in your classes, or to perform the duties associated with most jobs. Thus, there can be serious social, educational, and vocational consequences of moderate to severe hearing losses. Other important factors that influence the degree of the impact that a hearing loss has on communication include whether the hearing loss is **unilateral** (one ear) or **bilateral** (two ears), the kind of amplification that is

**Table 1-3** The Impact of Hearing Loss on Communication

<b>Degree of Loss</b>	<b>Severity</b>	<b>Impact on Communication</b>
15–30 dB	Mild	Can hear all vowels and most consonants spoken at conversational loudness levels. Children with this degree of loss typically experience some difficulties with communication development until they receive appropriate amplification. Adults with this degree of loss have some difficulty understanding women and children with high-pitched voices, and they may struggle with conversation in noisy environments such as restaurants.
30–50 dB	Moderate	Can hear most vowels and some consonants spoken at conversational loudness levels. People with this degree of hearing loss find it difficult to hear unstressed words and word endings. Children with this degree of loss experience significant delays in communication development. Adults with this degree of loss have some difficulty understanding others during conversations.
50–70 dB	Severe	Can hear most loud noises in the environment (car horns) but not speech unless it is spoken very loudly. Children usually have marked communication difficulties and delays. Adults miss a significant amount of information spoken in conversations.
70+ dB	Profound	Can hear extremely loud noises (jet planes landing) but cannot hear language spoken at conversational levels. Without suitable amplification, individuals with this degree of hearing loss are not able to communicate through speech.

provided, the length of time the individual has had amplification, and the attitudes of the individual and his or her family members.

The age of the person with a hearing loss also plays an important role in the degree of impact that a hearing loss has on communication. A moderate hearing loss that is present from birth is much more problematic than a moderate hearing loss that is contracted when an individual is 40 years old. That is because good hearing is critical for communicative development. Children who do not hear well have considerable difficulties understanding language that is spoken to them, learning to produce speech sounds clearly, and developing the words and sentence structures necessary for expressing complex ideas. Early detection of hearing loss is absolutely critical so that children can receive intervention as soon as possible. Some children can profit a great deal from being fitted with a hearing aid. The sooner they receive appropriate amplification, the better it is for speech and language development. Other children are able to not hear much even with amplification. These children need to be exposed to sign language or specialized speech training to develop language.

Many people believe that people who have a hearing loss simply cannot hear sounds as loud as others hear them. If this were the case, the obvious solution to any hearing

loss would be to simply make sounds louder to make them audible. Although this conception of hearing loss is sometimes accurate, more often the ability to hear speech is more complicated. Not only do people with hearing impairments perceive sounds as being less loud, but they also perceive sounds as less clear. So, even when speech is amplified so that it is louder, individuals with some kinds of hearing losses may still have difficulty with **discrimination** (hearing differences between sounds) as a result of a loss of the clarity of sounds. For example, they may confuse the word *ball* for the word *doll*. In effect, they hear but do not understand because the auditory information is distorted. The degree of deterioration of the auditory image is often directly related to the degree of the hearing loss. The result is that it can be difficult to find the kind of hearing aid that will assist some people with hearing loss. Fortunately, in its short life (about 50 years), audiology has advanced to the point where diagnosis and rehabilitation measures can assist the majority of children and adults.

## THE PROFESSIONS

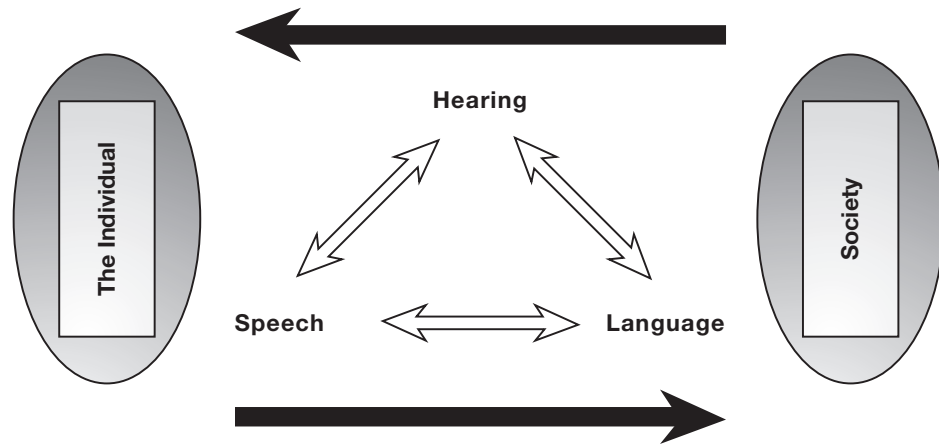
The remainder of this chapter provides a brief overview of the professionals who serve individuals with speech, language, or hearing disorders. More information about the specific disorders is also provided.

### Speech, Language, and Hearing Scientists

For our purposes, we consider speech, language, and hearing sciences as the investigation of anatomic, physiological, and perceptual factors that form the bases of and contribute to the production and comprehension of speech and language. Some of the research conducted in this area is directed toward the exploration of other human processes (e.g., visual processes) that may help us understand how we communicate.

Speech, language, and hearing scientists come from a variety of educational backgrounds. These professionals often hold advanced degrees, most often a Doctor of Philosophy. Their degrees may be awarded in areas such as engineering, anatomy and physiology, biological sciences, CSD, education, linguistics, physics, psychology, or speech communication.

Speech, language, and hearing scientists most often engage in research and teaching in university settings. However, some work for governmental agencies such as the Veterans Administration or for independent operations such as Bell Telephone and Haskins Laboratories. The primary goal of the speech, language, and/or hearing scientist is to discover and better understand human communication processes. Some scientists are engaged in research that deals exclusively with the normal processes of communication. We need information on normal communication to determine whether a patient's performance on measures of speech and language functioning is within the normal range or not. Other scientists focus on the processes that are different in disordered communication. Regardless of the underlying objectives, however, basic research about communication will undoubtedly be of value to professionals in speech-language pathology and audiology and individuals with communication differences and disorders.



**Figure 1-1** Hearing, speech, and language as links between the individual and society.

Some speech scientists contribute to criminal investigations. For example, speech scientists have the ability to identify characteristics in the voice that can be used to identify specific speakers. These acoustic characteristics can be as distinctive as the human fingerprint. Speech scientists can assist law enforcement personnel in identifying speakers whose voices have been recorded as part of an investigation of a crime.



**Figure 1-2** Two hearing scientists preparing stimuli for a study of speech perception. Courtesy of Ronald Gillam, Utah State University

It is vital that the practicing professional stay abreast of current research results to provide the best possible services. Some of the measurements we can obtain through speech, language, and hearing science are useful in measuring the effectiveness of treatment programs that we implement with our patients. For example, certain measures that we can obtain from the human voice can help us to determine whether a particular approach for treating cancer of the larynx is effective.

A firm grounding in normal communication processes is necessary to pursue any of the professions in our discipline. As a result, a course of study emphasizing science is an integral part of the curriculum in CSD. Course work with titles such as hearing science, speech science, language science, language acquisition, neurolinguistics, psychoacoustics, and psycholinguistics are regular offerings in CSD departments and programs. Many of these courses occur early in the academic program so that students will have the prerequisite knowledge they need to understand breakdowns in communication, ways to analyze those breakdowns, and ways to help individuals with communication breakdowns.

### Speech-Language Pathologists

Approximately 200,000 professional SLPs work in various settings today. It is amazing that there were fewer than 5,000 such practitioners 50 years ago. These professionals assess and treat a variety of individuals with speech and/or language disorders.

Speech-language pathology developed from interests in disorders of speech, particularly stuttering. Much of the early research was aimed at discovering the causes of stuttering, but soon attention was directed to providing remedial services to individuals with various types of speech problems. As early as the 1920s, academic courses in “speech correction” were offered at some universities. Clinical sites for providing services to individuals with problems in speech and language, however, were limited. Initially, the vast majority of such services were provided at college and university clinics that were developed primarily as training facilities. Increasingly, however, service programs were developed in medical settings and the public schools.

Speech-language pathology professionals who practiced in the medical environment were usually called speech therapists; those who practiced in the public school setting were often called speech correctionists or speech teachers. Although the term *speech pathologist* was introduced early in the development of the field and was widely used by those in the profession for many years, the term *speech therapist* is probably the title that is most often used by the general public. The ASHA adopted the title *speech-language pathologist* in 1976. The term *language* was added to the official title because much of the work being done by CSD professionals concerned both speech production (how words and sentences are spoken) and symbolic language (the form and content of what is said and understood). The term *pathologist* was selected to emphasize that CSD professionals prescribe and deliver their own treatment. They do not work under doctor’s orders. Thus, although it is rather cumbersome, the designator of choice for the profession has become the speech-language pathologist, which is often shortened to SLP.



**Figure 1-3** Two speech-language pathologists collecting a language sample from a child. Courtesy of Ronald Gillam, Utah State University

Speech-language pathology services are provided in schools, hospitals, rehabilitation centers, nursing homes, and private clinical practices. Increasingly, speech-language pathology services are also being provided in infant and early childhood programs housed in state agencies and private schools. Thus, the SLP provides assessment and rehabilitation services to patients from birth to old age. The kinds of activities that SLPs are engaged in depends largely on the setting in which they work.

It is ASHA's official policy that a master's degree should be the minimum qualification for working as an SLP. Many states have licensure laws that make it illegal for individuals who do not have a master's degree to provide services as an SLP.

## Audiologists

Audiology is a widely recognized profession that is practiced in many different work environments. Audiologists are professionals who study, assess, and treat individuals who have hearing impairments. Some audiologists are engaged in the evaluation and diagnosis of hearing loss; others provide educational and/or rehabilitative services. The number of professional audiologists has increased significantly in the past 50 years, but there are far fewer audiologists than there are SLPs. It has been estimated that between 20,000 and 25,000 audiologists practice in the United States today.

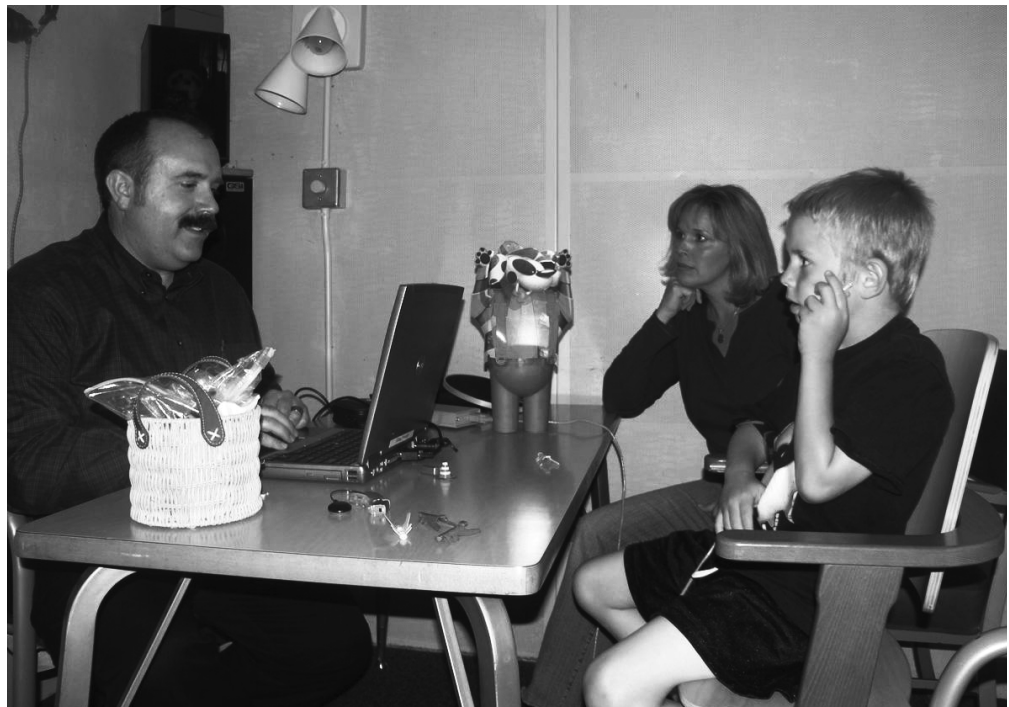
Audiology was first identified as an area of scientific study and professional practice during World War II. This area of study grew out of a merger between audiology and *otology* services provided to soldiers and veterans in aural rehabilitation centers (Newby, 1958). **Otology** is the medical specialty that deals with ear disease and the

peripheral hearing mechanism. Although professionals worked with persons who were hearing impaired prior to the 1940s, the professional field of audiology was not in existence before that time.

Since the beginning of the profession, many audiologists have been employed in medical environments such as physicians' offices, hospitals, and rehabilitation centers. Other audiologists, sometimes referred to as educational or habilitative audiologists, are employed in educational facilities such as public schools or schools for the deaf or hearing impaired. Increasing numbers of audiologists own private practices where they dispense hearing aids and other devices.

Audiologists have traditionally been engaged in the evaluation of the extent and type of hearing loss, assessment of the benefits of amplification, and habilitation and rehabilitation of those who exhibit hearing impairments. Primarily, their employment setting influences the kinds of activities they are engaged in. For example, audiologists employed by physicians spend most of their time evaluating patients to determine the nature and extent of a hearing loss and the potential benefits of amplification (hearing aids). Audiologists employed in educational or rehabilitation centers are more likely to provide both assessment and rehabilitative services.

Audiologists may work with newborn children providing hearing screenings in the neonatal intensive care unit or the newborn nursery. They also work with children in schools, patients in hospitals and doctors' offices, and with older adults in nursing



**Figure 1-4** An audiologist administers a hearing test. Courtesy of Ronald Gillam, Utah State University

homes. Audiologists assess how well individuals hear tones, words, and sentences. Based on these assessments, audiologists make recommendations to parents, patients, physicians, and school personnel about how a hearing loss should be managed and what the ramifications of the loss will be. Most children are screened for hearing problems early in their school years. You have probably received a hearing test at some point in your life, and the examiner may well have been an audiologist. Some audiologists also provide assessments for balance disorders caused by inner ear problems or program cochlear implants. The scope of practice for audiologists is always changing and expanding, making it a very exciting profession to be a part of.

The current policy of the ASHA is that a doctorate of audiology (commonly referred to as an AuD) is the minimal level of education for an individual to practice as an independent professional. Satisfactory completion of specified course work and clinical practice as part of the degree is also necessary. Other requirements to qualify for professional credentials exist, and we consider them in later chapters.

## PROFESSIONAL AND SCHOLARLY ASSOCIATIONS

There are a number of associations that speech, language, and hearing scientists, SLPs, and audiologists can join. Some of these associations are discussed in this section.

### American Speech-Language-Hearing Association

ASHA serves as the primary professional and scholarly home for speech, language, and hearing scientists, SLPs, and audiologists. ASHA is a large organization (approximately 120,000 members and growing) with headquarters in Rockville, Maryland, near the nation's capital. ASHA engages in numerous activities designed to serve the needs of its members as well as individuals with communication disorders. Some of these activities include research dissemination, public relations, and lobbying for CSD professionals and the public they serve.

Another useful function of ASHA is making information available to its members and other interested individuals, including students. There is a toll-free number, 1-888-321-2724, for all kinds of information about the organization, the discipline, and the professions. ASHA also maintains a Web site, [www.asha.org](http://www.asha.org), with a vast amount of data that are continually updated. ASHA also sponsors an annual convention and many local workshops that provide members and students with important information about new research results and clinical procedures.

### Publications

One of the important functions of ASHA is to provide information to its members through research and professional publications. ASHA publishes several scholarly and professional journals on a regular basis. These include the *Journal of Speech, Language, and Hearing Research*, the *American Journal of Audiology*, the *American Journal of Speech-Language Pathology*, and *Language, Speech, and Hearing Services in Schools*. In addition, ASHA regularly publishes a number of newsletters that address many important issues, such as the *ASHA Leader*.

## American Academy of Audiology

Several associations comprise almost exclusively audiologists, whereas other organizations include subgroups of audiologists. Examples of those organizations are the Academy of Dispensing Audiologists, the Academy of Rehabilitative Audiologists, and the Educational Audiology Association. The American Academy of Audiology (AAA) was created to address the needs of all audiologists. The academy has grown rapidly to 5,000 members since it was founded in 1994. The goal of the academy is to provide an organization specifically for audiologists (Hood, 1994). Some of the activities in place or planned by AAA are also carried out by ASHA. Examples include approving and monitoring continuing education experiences for members and certifying audiologists. AAA also sponsors annual conventions and various publications.

## REGULATION

Consumers want to know that persons who present themselves as physicians, lawyers, SLPs, or audiologists (to name just a few service-oriented professions) have received an appropriate level of training in their area. Just as you would not want to be operated on by a physician who failed medical school, you would not want to be fitted for a hearing aid by someone whose education and training consisted of a 10-page correspondence course on hearing aids from the Quickie School of Easy Degrees. Poor services by SLPs and audiologists can cause real harm. To protect the public interest, audiology and speech-language pathology must be regulated.

There are basically two ways in which individual professionals are regulated: **licensure** and **certification**. For the purposes of this discussion, *licensure* refers to fully credentialed SLPs and audiologists as defined by an individual state. In the case of licensure, a state government passes an act (a law) that creates a set of minimum criteria for practicing as a professional in that state. Most licensure acts also create state-funded licensure boards of examiners who manage the law through writing implementation rules and monitoring the process and the licensees.

State licensure of speech-language pathology and audiology is relatively new. Florida adopted the first licensure act for speech-language pathology and audiology in 1969. Since that time the number of states that regulate speech-language pathology and audiology has steadily increased. Presently, 46 states license both SLPs and audiologists. The other four states regulate speech-language pathology or audiology, but not both.

*Certification* is somewhat different from licensure in that the standards are developed and administered by professional organizations or state agencies. In the case of speech-language pathology and audiology, this function is assumed by standards boards that are affiliated with ASHA. These boards also set criteria and monitor **accreditation** of academic programs and facilities providing clinical services in CSD.

### Licensure and Certification Standards

ASHA developed a standards program to certify individuals in speech-language pathology and audiology at a time when there were no state regulations and no licensure laws related to these professions. A person may be certified by ASHA and licensed in a state (or multiple states) in either speech-language pathology or audiology or both.

SLPs can obtain the **Certificate of Clinical Competence (CCC)** in either profession from ASHA. To obtain the CCC, the applicant must have earned a master's degree or a higher degree with a major emphasis in speech-language pathology or a professional AuD degree. The academic content areas that the course work must include are specified, and it is further required that students satisfactorily complete supervised clinical practice during their education. During their graduate education, students in speech-language pathology and audiology must have met the academic and clinical competencies specified on the Knowledge and Skills Acquisition summary form. Finally, applicants must obtain a passing score on a national, standardized examination and complete an internship known as a clinical fellowship year (CFY).

It is important for practicing SLPs and audiologists to have the CCC as well as a state license. These credentials assure the consumer that the professional has met minimum educational and practical prerequisites. In addition, professionals who provide speech-language pathology or audiology services often need to have the CCC to be reimbursed for their services. Federal laws and regulations have been adopted that require that all Medicare or Medicaid speech-language pathology or audiology services must be provided or supervised by a person holding the CCC. A number of insurance carriers who reimburse for speech-language pathology or audiology services have adopted similar requirements. Agencies, including public school programs that receive reimbursement for these services, must ensure that qualified personnel as defined by the regulations provide them. These regulations have a major impact on funding and are a strong incentive for agencies to hire qualified personnel.

Professional education doesn't end after completing a graduate degree and qualifying for the CCC. ASHA now requires that professionals complete 30 hours of continuing education, or 3.0 **continuing education units (CEUs)** in a 36-month cycle to maintain the CCC. Similarly, 41 states require continuing education for license renewal. Most state licenses are issued on an annual basis and thus must be renewed each year. In those states that require continuing education, the renewal application must include evidence of the satisfactory completion of CEUs.

## ETHICS

The principles of conduct governing an individual or a group are called **ethics**. Generally, we think of ethics as a measure of what is the moral or "right thing to do" whether or not it is legal. One overriding consideration for professionals (providers) who serve the public is that their activities be in the best interest of the consumer and not themselves. For example, an audiologist may recommend a hearing aid that he or she thinks is the most appropriate for the type and degree of hearing loss the patient is experiencing. An audiologist may not recommend a particular hearing aid for a patient based on the knowledge that one more sale of a certain brand of hearing aid will result in a free trip to Aruba for the audiologist. Although this is an obvious breach of ethical principles, it is often the case that professionals disagree about what constitutes ethical behavior. Therefore, most professional groups, including ASHA, have developed official codes of ethics (ASHA, 2007). Table 1-4 summarizes the principles of ethics that have been adopted by ASHA.

**Table 1-4** Principles of Ethics and Representative Rules of Ethics from the Code of Ethics of the American Speech-Language-Hearing Association

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**PRINCIPLE I** Individuals shall honor their responsibility to hold paramount the welfare of persons they serve professionally.

- Individuals shall provide all services competently.
- Individuals shall use every resource, including referral, to ensure that high-quality services are provided.
- Individuals shall not discriminate in the delivery of professional services on the basis of race, sex, age, religion, national origin, sexual orientation, or handicapping condition.
- Individuals shall not reveal, without authorization, any professional or personal information about the person served professionally, unless required by law to do so or unless doing so is necessary to protect the welfare of the person or of the community.

**PRINCIPLE II** Individuals shall honor their responsibility to achieve and maintain the highest level of professional competence.

- Individuals shall engage in only those aspects of the professions that are within the scope of their competence considering their level of education, training, and experience.
- Individuals shall continue their professional development throughout their careers.

**PRINCIPLE III** Individuals shall honor their responsibility to the public by promoting public understanding of the professions, by supporting the development of services designed to fulfill the unmet needs of the public, and by providing accurate information in all communications involving any aspect of the professions.

- Individuals shall not misrepresent their credentials, competence, education, training, or experience.
- Individuals shall not misrepresent diagnostic information, services rendered, or products dispensed or engage in any scheme or artifice to defraud in connection with obtaining payment or reimbursement for such services or products.

**PRINCIPLE IV** Individuals shall honor their responsibilities to the professions and their relationships with colleagues, students, and members of allied professions. Individuals shall uphold the dignity and autonomy of the profession, maintain harmonious interprofessional and intraprofessional relationships, and accept the professions' self-imposed standards.

- Individuals shall not engage in dishonesty, fraud, deceit, misrepresentation, or any form of conduct that adversely reflects on the professions or on the individual's fitness to serve persons professionally.
- Individuals' statements to colleagues about professional services, research results, and products shall adhere to prevailing professional standards and shall contain no misrepresentations.
- Individuals who have reason to believe that the Code of Ethics has been violated shall inform the Ethical Practice Board.

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Codes of ethics are subject to change as new issues arise or as views as to what constitutes ethical behavior are modified. For example, at one time it was considered unethical for speech and language therapy to be provided solely by correspondence (over the phone, with written documents only). Today, speech language pathology services are frequently provided via telecommunication (computer/Internet based) in areas of the country where SLPs are in short supply. Ethical considerations regarding the extent to which services may be provided over the Internet are still being developed. For example, is it ethical to provide all assessment and intervention services to patients who demonstrate significant swallowing difficulties (dysphagia) over the Internet? Some would argue that there is a safety issue with regard to choking (aspiration) that precludes SLPs from providing dysphagia services except in face-to-face contexts. Others would disagree.

Because people have different beliefs as to what constitutes ethical and unethical behavior, enforcement of ethical practices may be problematic. Among professional organizations, including ASHA, once a code of ethics has been adopted by the membership, the organization must assume the responsibility of enforcing the code. The Ethical Practices Board (EPB) of ASHA is charged with enforcing the ASHA code of ethics. If an individual member has been judged to be in violation of the code, a number of disciplinary actions are available to the EPB. These include reprimands, censures, or revocation of licenses (Irwin, Pannbacker, Powell, & Vekovius, 2007).

Most states that have adopted licensure laws have also drafted codes of ethics and have the authority to enforce them legally. Sharing of information among the states and with ASHA is critical to protect the public from unethical practitioners.

## SUMMARY

CSD is a discipline that consists of three professions: speech, language, and hearing sciences, speech-language pathology, and audiology. Professionals in this discipline study and treat individuals with a variety of disorders that affect speech, language, and hearing abilities.

This chapter provides information about the professions in terms of scopes of practice, academic preparation, work settings, and populations served. Speech, language, and hearing scientists study basic communication processes and the nature of speech, language, and/or hearing disorders. Most scientists work in university settings, although some work in hospitals as well. SLPs assess and treat speech and language disorders in infants, toddlers, preschoolers, school-age children, and adults. They may work in medical or educational settings. Audiologists primarily test hearing and prescribe and fit hearing aids. Most audiologists work in medical settings, although many have established their own private practices.

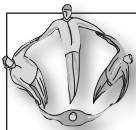
This chapter introduces some of the differences and disorders encountered by individuals that interfere with their abilities to communicate. These disorders are discussed in greater detail in the sections that follow this chapter. We want readers to have a general sense of the breadth of the field of CSD before we review specific types of disorders in greater detail. Some communication disorders relate to the way individuals receive information. These disorders involve various degrees and kinds of

hearing abnormalities. Other communication disorders involve the way information is processed after it is received. These disorders involve various degrees and kinds of language difficulties. Finally, some communication disorders affect output, including difficulties related to speech articulation, voice, and fluency. As with any difficulty, speech, language, and hearing impairments exist on a continuum.

ASHA is the primary scholarly and professional home for the discipline. It publishes journals that disseminate research findings, promotes the professions in the media, and lobbies for CSD professionals and the public they serve. The association also operates a standards program that certifies individuals within the professions, accredits academic programs and clinical facilities, and maintains a code of ethics. Students can also join other professional organizations such as the AAA and the National Student Speech Language Hearing Association.

SLPs and audiologists are regulated through certification by ASHA and by state agencies. Professionals who obtain a master's degree (SLPs) and/or AuD (audiologists), pass a national examination, and complete a CFY are eligible for the CCC from ASHA. These same kinds of experiences are often required for obtaining a state license.

As you read the rest of this book, we hope you will remember that there are reciprocal relationships between input, processing, and output systems. A disorder in hearing, speech, or language will have negative consequences for the other two. The specific consequences vary somewhat from person to person. This is why SLPs and audiologists need to work closely with individuals with communication disorders, their families, and with other professionals. This is also why any type of a communication disorder requires careful analysis and description before therapy begins.



#### **BOX 1-1 Personal Story by Ron Gillam**

I am a person who stutters. Fortunately, with the help of a number of influential speech-language pathologists, I have learned how to control my fluency and to minimize my speaking fears and my feelings of shame about stuttering to the point that stuttering plays a relatively minor role in my life. I give speeches to large audiences several times each year; I serve on or chair a number of professional committees; I teach university classes; and I spend too much time talking on the phone each day—all with relatively little concern about my speech. It's not that I never stutter, it's that my stuttering rarely interferes with my ability to communicate effectively. It wasn't always that way.

I struggled with and against stuttering during my childhood. Throughout my elementary school and middle school years, my parents took me to many speech-language pathologists, but I didn't seem to improve much. When I was a junior in high school, I started to worry about how I could possibly get along in college if I continued to stutter badly. We lived in the Denver area, and my parents suggested that I might like to see someone they had heard about at the University of Denver. I agreed, reluctantly, and we scheduled an evaluation. Dr. Jim Aten and some of his students observed me as I conversed with my parents, had me read aloud, had me tell them about some of my favorite activities, and had me make a couple of phone calls to

local businesses. I remember stuttering very badly. I also remember a feeling of relief immediately after the evaluation when Dr. Aten met with me and laid out a therapy plan. Near the end of our meeting, Dr. Aten told me that he was a stutterer, that he had learned how to manage his stuttering to the point that it didn't interfere with his life in any way, and that one of the graduate students who assisted him with the evaluation was also a stutterer. I enrolled in therapy that semester and spent the next 2 years working on my feelings about my stuttering and ways to stutter more easily. Dr. Aten didn't "cure" my stuttering. I continued to receive stuttering therapy from other outstanding clinicians for another 5 years. However, Dr. Aten was an inspiration to me, and his therapy laid a firm foundation for successes that would follow. I felt better about myself as a person and as a speaker after working with him. As a result, I left for college with a positive outlook on life, and I changed my major from engineering to speech-language pathology.

During the past 30 years, I have worked as a public school speech-language clinician, a researcher, and a university professor. I look ahead with anticipation to teaching the next generation of speech-language pathologists and conducting research that could have a positive impact on the lives of children with communication disorders. Thank you, Dr. Aten, for giving me hope at a time that I was really struggling with my speech, for empathizing with me, and for being a great role model of a productive, happy, and influential person who just happened to stutter a little.

## STUDY QUESTIONS

1. How does a discipline differ from a profession?
2. A hallmark of the discipline of communication sciences and disorders is that it is based on sound scientific principles and research findings. What term do we use today to describe how decisions professionals make about clinical service delivery are guided?
3. How did World War II affect communication sciences and disorders?
4. How can you differentiate between a communication disorder and a communication difference?
5. What are some common speech disorders in children and/or adults?
6. How can you differentiate between language delay, developmental language disorder, and acquired language disorder?
7. What are the different ways of regulating the professions of speech-language pathology and audiology?
8. What are the differences between certification and licensure?
9. What are the important functions of the American Speech-Language-Hearing Association?

**KEY TERMS**

Accreditation	Deaf education	Incidence
Acquired disorders	Developmental disorders	Licensure
Articulation and phonological disorders	Disability	Organic
Bilateral hearing loss	Discipline	Otology
Certificate of Clinical Competence (CCC)	Discrimination	Person-first language
Certification	Efficacy	Phonatory disorders
Communication difference	Ethics	Prevalence
Communication disorder	Evidence-based practice	Profession
Communication sciences and disorders (CSD)	Fluency disorder	Resonance disorders
Continuing education units (CEUs)	Functional	Unilateral hearing loss
	Handicap	
	Impairment	

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