

Introduction to Communicative Disorders

**SECOND
EDITION**



M. N. Hegde

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CALIFORNIA STATE UNIVERSITY-FRESNO



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Preface to the First Edition

Our social behavior is essentially communicative behavior. To communicate is to care, share, and connect with each other. Human life is as rich and varied as it is because of our ability to communicate with our fellow human beings. An individual whose communicative ability is hampered is socially and emotionally isolated. Communicative handicaps in modern societies create serious personal, social, educational, and occupational difficulties for an individual. Therefore, human communication and its disorders form an important discipline that touches all of us.

This book is an introduction to both the science of communication and the profession of communicative disorders. It is written for students who wish to discover if the science and disorders of communication is their field as well as for students who have decided that it is. The profession of communicative disorders is based on the science of hearing, speech, language, and other forms of communication and is a field that has evolved into a major scientific discipline and health care profession.

Communicative disorders is a rapidly growing science and profession, exciting in part because it is an interdisciplinary field that draws from such diverse areas as physics, biology, psychology, linguistics, medicine, sociology, and philosophy. The field is exciting also because it involves the speech-language pathologist or the audiologist in helping to restore a vital link of existence that may have been broken in some individuals: the ability to communicate. Communicative disorders is a profession that is both challenging and rewarding. If this book is able to give the beginning student a flavor for this engrossing science and helping profession, it will have served its purpose. I will be especially pleased if the book also prompts the student to seriously consider majoring in communicative disorders.

Several experts have helped me shape this book. At the outset I would like to thank Dr. Sadanand Singh, who spurred me to write this book. I am indebted to Dr. Raymond Kent, professor of communicative disorders at the University of Wisconsin–Madison, who has served as my editorial consultant. He has offered his thoughtful suggestions at every stage of planning and writing this book. I am thankful to various scholars in speech-language pathology and audiology who have anonymously reviewed chapters in their specialty and have offered constructive criticism. In addition I am grateful to two of my colleagues at the California State University–Fresno for their significant contribution. Dr. Steven Wadsworth, professor of speech-language pathology, has been kind

enough to read the entire book and offer many suggestions to make the material more relevant to the beginning student. Dr. Ben Kelly, professor of audiology, reviewed the chapter on hearing and its disorders (Chapter 10) and gave me many suggestions to improve it; his expert help in giving the chapter its finishing touches has been invaluable.

My special thanks are due to Dr. Stephen McFarlane, professor of speech-language pathology and associate dean of the Medical School, University of Nevada-Reno. He not only reviewed the chapter on voice and its disorders (Chapter 7), but also graciously provided several pictures used in that chapter.

Several other pictures of various clinical activities reproduced throughout the book would not have been available without the kind help of Deborah Davis, director of the Speech, Language, and Hearing Clinic at the California State University-Fresno, and Susan Pinckerton, audiologist, Northwest Speech and Hearing Center in Fresno. I am grateful for their help.

Finally, my son Manu's computer expertise has been valuable in producing several figures included in the book. But it is the support, understanding, and patience shown by him and my wife, Prema, that carried me to the finish line.

Preface to the Second Edition

Over the past 3 years since the first edition of this book, many instructors have offered extensive comments about its coverage and writing style. The feedback has been overwhelmingly positive and has come from numerous instructors across the country. Instructors have repeatedly stated that the book reflects the current knowledge and that its coverage is both extensive and uniform across issues and topics. They have found the book to be an effective teaching tool because of its organization and simple writing style that avoids jargon. The feedback suggests that these characteristics have prompted the instructors to use the book as the primary text in their courses. This second edition retains and enhances these characteristics.

This second edition has two new companion volumes that enhance teaching and learning. The first is the *Instructor's Coursebook* and the second is the *Student's Coursebook*. Both contain essentially the same information: an outline of the course units, definitions of basic terms, summaries of important information, clinical procedures, and so forth. The instructor's coursebook contains complete examinations and answer keys while the student's coursebook contains only typical questions and their answers. Both coursebooks leave the right-half of each page blank. On this blank space, instructors can make their own notes and students can take class notes. This makes it possible for students to integrate information from the text, instructor's lectures, and outside reading materials into a single, coherent source.

Many undergraduate and graduate students also have offered positive comments. Undergraduate students have found the book highly readable and easy to understand. Even graduate students have found the book useful for making a quick review of communicative disorders. Again, these characteristics have been strengthened for this second edition. I am grateful to all those instructors and students who have offered both verbal and written comments and have made my task of revising this book an enjoyable experience.

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1

Communication and Its Disorders

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Communication is vital to both biological and social existence. **Communication** is exchange of information. Information may be exchanged between cells, body parts, individuals, and groups of persons. Nerve impulses travel across cell bodies. As body parts, the eye and the ear inform the brain about the environmental events that stimulate them. The brain in turn communicates with the peripheral organs of the body by issuing commands to move and act in various ways. Communication at these biological levels is mostly an electrochemical event. It is the communication between individuals and groups that is of special interest to us.

Human and Animal Communication

Human communication is social interaction among people. In this sense, communication is a social event; it is action that often affects other persons. Therefore, **communication** may be simply defined as a form of social behavior.

Most if not all organisms have some form of social communication. Animals at all levels communicate with each other. However, the animal communication is primarily instinctive because it serves the need for survival. The bees, with their various patterns of movement, communicate to their fellow bees the distance to, direction to, amount of, and quality of pollen they have found. Wild animals sense and communicate an imminent danger to the other members of the herd by movement, vocalization, and gesture. Lower organisms communicate information regarding the location of food, as ants do. Cats and dogs tell us that they are hungry or thirsty.

Although natural animal communication is instinctive, researchers have shown that it is possible to teach limited social communication to some animals. For instance, chimpanzees have been taught words expressed in the form of manual signs (as in American Sign Language). Chimpanzees also have learned to use plastic tokens that stand for words. However, the research so far falls short of showing that animals can learn to recombine what they have learned to form a variety of messages. This is what humans do when they combine words to form new sentences. Besides, nonhuman organisms are obviously not capable of spoken language.

Human beings have the most elaborate, sophisticated, versatile, and creative means of communication. The more complex neurophysiological mechanism present in humans makes this unequalled level and type of communication possible. This highly flexible mechanism, which includes the breathing and the voicing mechanisms, the brain, and the peripheral nerves, has made the emergence of language possible.

Language and Communication

It is *language* that makes people so much more efficient at communication. A **language** may be defined either as a system of symbols and codes used in communication or as a form of social behavior shaped and maintained by a verbal community. In later sections, we will try to understand these definitions fully; for the present, we may think of language as a means of communication and as a form of social behavior.

People generally think of language as a form of spoken or written communication. A spoken language also is called an oral language. But note that, as defined earlier, language need not be spoken or oral, in which case it is non-oral. Oral language is spoken with words, whereas non-oral language is expressed through gestures, symbols, or both. Whereas any spoken language is an example of an oral language, American Sign Language is an example of a non-oral language. There are other forms of non-oral language, which may include gestural and symbolic communication. The complexity and diversity of human languages are responsible for much of human social interaction, culture, arts, and sciences that are typically equated with human accomplishments.

Human languages also are remarkably free from the needs of survival. That an opera singer sings to survive is only a metaphoric expression. People need not sing or even talk to survive biologically. However, the sophisticated neurophysiological mechanisms that are used in oral language are linked to biological survival. For example, the primary functions of the lungs are biological. Talking is most efficient only when the biological functions are satisfied or not severely interrupted. When breathing is interrupted, one does not think of speech.

Once freed from the restraints of biological survival, communication through language became a powerful tool for social, cultural, artistic, and scientific accomplishments. Language is creative mostly because it is not exclusively tied to instinctual and biological needs. Humans have created special forms of culture by unique use of language as in poetry, plays, and other forms of literature. Because most of what is considered uniquely human is in some way related to language, language and communication are considered the essence of human existence.

Communication and Social Survival

Language and communication have assumed such great importance in modern societies that, ironically, communication is essential for **social survival**. Without communication or language a human may survive as an organism but will have difficulty thriving as a social person. Such a person may be deprived of success and satisfaction that come from many forms of human accomplishments that are rooted in language and communication.

As societies have become more complex, organized, and inter-related both within and among themselves, effective communication has gained increasingly greater importance. Language and communication are now crucial for even mundane occupational success or survival as vocations have become more sophisticated, complex, and interrelated.

The advanced technology of modern societies has given a new meaning to communication. Constant and rapid exchange of information has become a new cornerstone of modern societies. Mechanical means of information storage, retrieval, and transfer with the help of computers have created a new age of communication. This new age is making even greater demands on individuals to communicate more frequently, faster, and more efficiently. A by-product of this technology is a new kind of help that is now available for persons with communicative handicaps. Computerized means of communication can now help persons with severe physical handicaps communicate more efficiently and more fully than before.

The Study of Human Communication

The scientific study of human communication is somewhat recent. In fact, the interest in the disorders of communication has played a major role in promoting a more intensive study of communicative behaviors, systems, and processes.

Because of its complexity, scientists have analyzed communication by breaking it into different aspects or components. Unfortunately, the same complexity also has led to theoretical differences. Scientists have not always agreed on how to analyze language and what components to emphasize. Another reason for theoretical differences is that many disciplines involve the study of language. For example, philosophers, linguists, psychologists, biologists, engineers, sociologists, anthropologists, literary people, speech-language pathologists, and various other professionals are interested in the study of communication. Inevitably, these diverse backgrounds have produced contrasting viewpoints.

Human communication is a complex subject that is often divided into subparts that are analyzed separately. Although animals communicate to a limited extent, they do not have an oral language. Humans, too, can communicate without oral (spoken) language and with the help of signs and symbols. However, for a majority of people oral language is the primary means of communication. The components of communication are shown in Figure 1.1.

To facilitate our later understanding of the disorders of communication, I shall describe the five basic aspects of communication. These five aspects have their corresponding disorders of communication: voice, articulation (phonology), language, fluency, and hearing.

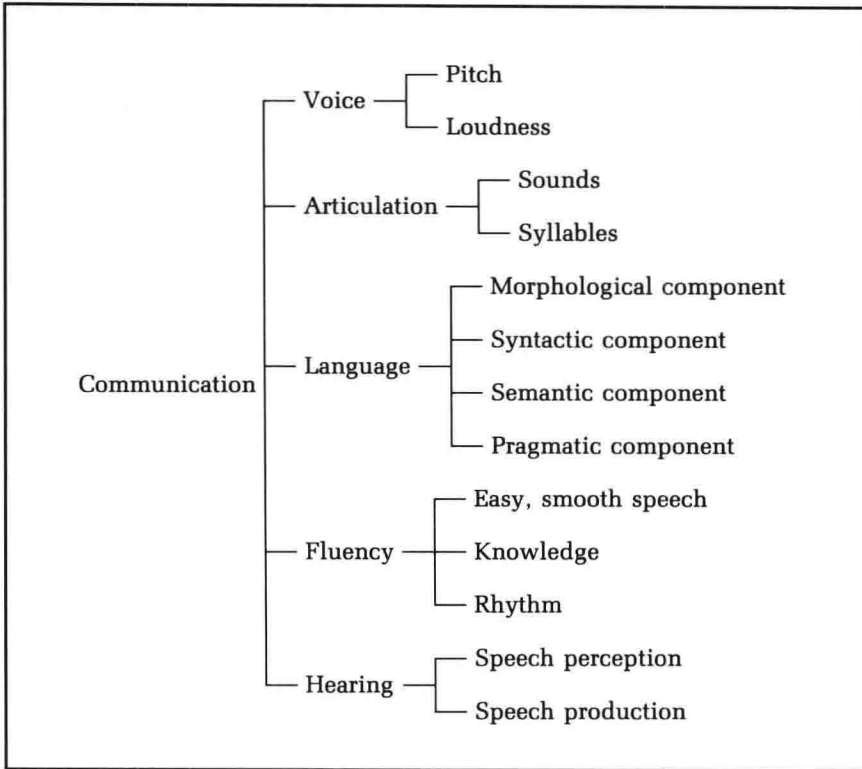


FIGURE 1.1. Components of human communication.

..... Voice

Voice is an essential element of *oral* communication. Without voice, there is no vocal communication except for whispered speech, which does not require voice. Although many species of animals can make vocal sounds (sounds of voice), only humans are capable of making a wide range of vocal sounds that are used in oral communication. Humans have achieved this because of their dynamic vocal mechanism. Without voice, communication is *nonvocal* and takes the form of signs and symbols.

The most important structure that lays the foundation for oral communication is the **larynx**, a structure in the neck. The larynx contains **vocal folds**, which are a pair of thin folds of muscle and associated tissue that vibrate when air from the lungs passes over them.

The vibrations of the vocal folds are the source of human voice. The lungs supply the necessary power to set the folds into vibration. The vibrating vocal folds also open and close. When the folds open and close regularly, they produce pleasant and normal voice. Irregular openings and closings cause unpleasant and disordered voice.

The human voice is capable of variations that create diversity in communication as well as many aesthetic effects. The pitch and loudness of voice vary across individuals and speaking situations within the same

individual. The human voice can give information over and beyond the words spoken. The voice itself carries some message value. The *tone* with which someone says something is often as important, if not more important than what is said. The voice can express anger, disappointment, joy, or love without using words that express such emotions.

The structures of the throat, the mouth, and nose modify the sound the larynx produces. This modification is known as **resonance**. Various structures, including the tongue and the lips, **articulate** the modified laryngeal sound into speech sounds. Without articulation, we do not have speech; we have only the undifferentiated sound of the vibrating vocal folds.

Articulation

Articulation means movement. In the context of speech, articulation is the movement of the speech mechanism to produce the sounds of speech. The various structures of the speech mechanism, including the soft palate, the tongue, and the lips, come together, move apart, and change their shapes to create the sounds of speech.

The study of speech sounds and sound patterns used to create words is called **phonology**. Phonology is the domain of both linguists and speech-language pathologists. Phonology is a relatively new term. In the past much of the information about speech sounds, their classification, production, and perception was included under **phonetics** and **articulation**. Currently, phonetics and phonology are closely related. Generally speaking, **phonetics** describes the production, perception, and classification of speech sounds. *Phonology* is primarily concerned with the broader rules and processes that govern the patterns of sound, their acquisition and use, and the knowledge that underlies the use of sound systems. Because of its broader concern with how sounds are organized into patterns that underlie language, phonology is considered a part of the study of language. The earlier study of articulation of individual speech sounds did not bear a direct relation to the study of language.

Specialists prefer to use the term *phoneme* to describe various sounds of speech. A **phoneme** is a group of speech sounds. Phonemes are important for meaning; when you change a phoneme in a word, often the meaning changes. For example, the two words *kit* and *bit* mean different things precisely because of the different initial phonemes the letters *k* and *b* represent; the other phonemes of the two words are the same.

The phonemes are combined to form syllables and words. Each language has certain permissible combinations of phonemes that form words. Other combinations may be uncommon or nonexistent. By observing the ways in which phonemes are normally combined in a language, phonologists derive rules of phoneme combinations.

Because phonemes help form syllables and words, they are the building blocks of speech. In a narrower sense, **speech** is the production of phonemes; articulated sounds and syllables are considered speech.

Earlier in this chapter, language was defined as either a system of codes and symbols or as a form of social behavior. Such a definition applies equally well to oral and non-oral means of communication. When the production of speech sounds is organized into a higher level of words and sentences that generates meaning, we call it **oral language**. In a well-known form of non-oral language, American Sign Language, manual signs are organized into a higher system of communication just as the oral language is organized. In any case, language is a larger, more abstract system than speech. One can articulate speech sounds without producing oral language, but one cannot produce oral language without articulating speech sounds. Therefore, speech is the essential component of oral language.

Unless otherwise specified, in this and most other sections, our main emphasis will be on oral language. As noted before, many specialists in many disciplines have studied oral language. Speech-language pathologists have joined the team in recent years. There are many approaches to the study of language, but my description will be limited to the linguistic and the behavioral approaches because of their direct influence on speech-language pathology.

Specialists have described various approaches to the study of human communication. The two major approaches, the behavioral and the linguistic, are shown in Figure 1.2. The linguists identify the structural components of language, whereas the behaviorists identify the functional units. Grammar is primary in the linguistic analysis but secondary in the behavioral analysis.

The Linguistic Study of Language. **Linguistics** is the study of language, its structure, and the rules that govern that structure. **Linguists** are specialists in linguistics.

There is no universally accepted linguistic definition of language. A definition offered earlier in this chapter, that language is a code or a system used to communicate, is a linguistic definition. According to linguists, the system of codes or symbols helps represent objects, events, and relationships. A verbal community arbitrarily selects the codes or symbols. There is no inherent reason why the word *apple* should stand for what it does in the English language. Linguists also tend to describe language as a mental or cognitive system of rules. It is generally believed that the rules help formulate acceptable sentences of language and their social use.

Linguists have traditionally described several components of language. Apart from the phonological component, they have described morphologic, syntactic, and semantic components. In recent years, a pragmatic component has been added to this list. We shall take a brief look at each of these components.

Morphology of Language. Morphology means the study of structures. Biologists and anatomists use the term in describing how the body parts