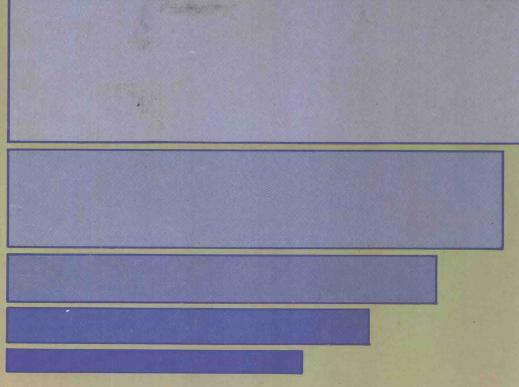
Paul H. Skinner Ralph L. Shelton

Speech, Language and Hearing

Normal Processes and Disorders



Second Edition

SPEECH, LANGUAGE, AND HEARING: Normal Processes and Disorders

Second Edition

Edited by

Paul H. Skinner University of Arizona

Raiph L. Sheiton University of Arizona

JOHN WILEY & SONS
New York Chichester

Copyright © 1978, 1985, by John Wiley & Sons, Inc.

All rights reserved. Published simultaneously in Canada.

Reproduction or translation of any part of this work beyond that permitted by Sections 107 and 108 of the 1976 United States Copyright Act without the permission of the copyright owner is unlawful. Requests for permission or further information should be addressed to the Permissions Department, John Wiley & Sons.

Library of Congress Cataloging in Publication Data:

Main entry under title: Speech, language, and hearing.

Includes bibliographies and indexes.

1. Communicative disorders. 2. Speech—Physiological aspects. 3. Hearing. 4. Language and languages—Physiological aspects. I. Skinner, Paul H. II. Shelton, Ralph L.

RC423.S6393 1985 616.8'55 84-12030 ISBN 0-471-80739-7

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

SPEECH, LANGUAGE, AND HEARING: Normal Processes and Disorders

To Lisa, Nathan, and Julie

此为试读,需要完整PDF请访问: www.ertongbook.com

Preface

The purpose of this text is to provide an introductory survey of normal processes and disorders in speech, language, and hearing for beginning students in speech and hearing and in related professions, such as education, special education, nursing, dentistry, medicine, psychology, rehabilitation, social work, counseling, and speech communication or arts. The text is intended to provide a general understanding and perspective of normal communication processes and disorders, but not to provide the student with research competencies or clinical skills. The development of scientific or clinical competence requires the accumulation of extensive information and use of that information in problem-solving situations. Clinical training involves a variety of practicum experiences.

Speech and hearing evolved in this country as a behavioral discipline essentially out of interest and concern for speech and hearing disorders. Scholars interested in the etiology, diagnosis, and treatment of disorders learned that the study of anatomy and physiology, acoustics, psychology, and linguistics provided a framework for interpretation of scientifically founded applied information about the disorders themselves. Moreover, it became apparent that study of normal processes in speech, language, and hearing should precede the study of disorders or at least should be presented concurrently. One must have a fundamental understanding of "normal" in order to understand, describe, and treat that which is abnormal. Study of normal processes enhances the study of disorders, and vice versa. In this regard, it should be understood that the value of the clinician in the marketplace is based on the scientific principles which underlie diagnosis and treatment. It should be understood also that interest and concern for disorders have given the scientific study of speech and hearing its greatest impetus and resource.

Persons studying both normal and disordered aspects of human communication have formed an integrated discipline which encompasses speech, language, and hearing. This discipline is known as speech and hearing science or speech—language pathology and audiology. This discipline, however, is not the only field concerned with human communication. Scientists, artists, and professional workers from many fields are intently and uniquely involved in human communication. This text endeavors to place speech and hearing in perspective as a unique and vital process in communication, to describe the normal processes in speech and hearing, and to discuss the disorders of speech and hearing and their evaluation and treatment.

Chapters One to Eight deal with normal processes; Chapters Nine to Fifteen, with disorders. Persons using the text may choose to cover the material as presented or focus on either part of the book, normal processes or disorders. One also may use the text in other organizational formats. This can be done by covering speech, language, and hearing as separate areas of study. Different subject areas are covered in the book as follows: *general and professional* (Chapters One and Eight); *speech* (Chapters Four, Five, Nine, Ten, and

Eleven); *language* (Chapters Two, Three, Twelve, and Thirteen); and *hearing* (Chapters Six, Seven, Fourteen, and Fifteen).

The editors and authors acknowledge and thank the many people who have contributed to this book. Special thanks to Daniel R. Boone and Frank B. Wilson for sharing their expertise with the author of the voice disorders chapter. The following must also be thanked for reviewing the manuscript: Martin Fujiki, University of Nevada-School of Medicine; Candace K. Ganz, Western Washington University; Walter B. Green, Ithaca College; and Vicki Reed, University of Northern Colorado.

Paul H. Skinner

Ralph L. Shelton

Contents

CHAPTER 1	Speech and Hearing in Communication	1
	Paul H. Skinner University of Arizona	
	OVERVIEW	1
	INTRODUCTION	2
	COMMUNICATION	2
	SPEECH, LANGUAGE, AND HEARING	4
	SPEECH-LANGUAGE AND HEARING AS A PROFESSION	13
	CONCLUSION	16
	GLOSSARY	17
	STUDY QUESTIONS	18
	BIBLIOGRAPHY	18
CHAPTER 2	Language and Linguistics	20
	Robert D. Hubbell California State University, Sacramento	
	OVERVIEW	21
	INTRODUCTION AND DEFINITIONS	22
	PRAGMATICS	46
	CONCLUSION	49
	GLOSSARY	49
	STUDY QUESTIONS	52
	BIBLIOGRAPHY	53
CHAPTER 3	Language Acquisition	56
	Linda Swisher University of Arizona	
	OVERVIEW	57
	HISTORICAL PERSPECTIVE	58
	NATURE-NURTURE	59
	LANGUAGE INTERACTION BETWEEN CAREGIVER	
	AND CHILD	60
	SEMANTICS	63
	PRAGMATICS	65

x	Contents	
	LANGUAGE EXPRESSION	69
	MODULATIONS OF MEANING	72
	LANGUAGE COMPREHENSION	73
	CONCLUSION	76
	GLOSSARY	77
	STUDY QUESTIONS	78
	BIBLIOGRAPHY	78
CHAPTER 4	Speech Production: Anatomy and Physiology	82
	Anne H. B. Putnam University of Alberta	
	Ralph L. Shelton University of Arizona	
	OVERVIEW	83
	RESPIRATION	84
	PHONATION	88
	ARTICULATION	96
	THE NERVOUS SYSTEM	107
	CONCLUSION	113
	GLOSSARY	114
	STUDY QUESTIONS	120
	BIBLIOGRAPHY	121
CHAPTER 5	Speech Acoustics and Perception	122
	Paul H. Skinner University of Arizona	
	OVERVIEW	123
	INTRODUCTION	124
	SPEECH ACOUSTICS	124
	SPEECH PERCEPTION	133
	CONCLUSION	140
	GLOSSARY	141
	STUDY QUESTIONS	142
	BIBLIOGRAPHY	143

Contents	xi

CHAPTER 6	Hearing Mechanism	144
	Keener D. McClelland University of Southern Mississippi	
	OVERVIEW	145
	INTRODUCTION	146
	OUTER EAR	147
	MIDDLE EAR	148
	INNER EAR	153
	AUDITORY NERVOUS SYSTEM	160
	HEARING MECHANISM	161
	CONCLUSION	163
	GLOSSARY	163
	STUDY QUESTIONS	166
	BIBLIOGRAPHY	167
CHAPTER 7	Hearing	170
	Paul H. Skinner University of Arizona	
	OVERVIEW	171
	INTRODUCTION	172
	THE DECIBEL	172
	HEARING SENSITIVITY	175
	THE AUDIOGRAM	178
	PSYCHOACOUSTICS	180
	CONCLUSION	189
	GLOSSARY	189
	STUDY QUESTIONS	190
	BIBLIOGRAPHY	191
CHAPTER 8	Disordered Processes and Clinical Intervention	192
	Richard F. Curlee University of Arizona	
	OVERVIEW	193
	INTRODUCTION	194
	CLINICAL INTERVENTION	195
	TYPES OF CLINICAL SERVICE	200

xii	Contents
XII	Contents

	CLINICAL MANAGEMENT STRATEGIES	203
	CLINICAL INTERVENTION PROCEDURES	205
	PREVIEW OF REMAINING CHAPTERS	213
	STUDY QUESTIONS	214
	BIBLIOGRAPHY	214
CHAPTER 9	Disorders of Articulation	216
	Ralph L. Shelton University of Arizona	
	OVERVIEW	217
	INTRODUCTION	219
	DESCRIPTION OF DISORDERED ARTICULATION	220
	ETIOLOGY AND RELATED VARIABLES	223
	VARIABLES RELATED TO DEVELOPMENTAL	
	ARTICULATION DISORDERS	225
	EVALUATION	238
	REMEDIATION	246
	CONCLUSION	255
	GLOSSARY	257
	STUDY QUESTIONS	260
	BIBLIOGRAPHY	261
CHAPTER 10	Disorders of Phonation	268
	Ralph L. Shelton University of Arizona	
	OVERVIEW	269
	INTRODUCTION	270
	DESCRIPTION OF DISORDERED VOICE	270
	EVALUATION	283
	PROGNOSIS	287
	TREATMENT	289
	CONCLUSION	297
	GLOSSARY	297
	STUDY QUESTIONS	299
	BIBLIOGRAPHY	300

	Contents	xiii
CHAPTER 11	Disorders of Fluency	306
	Richard F. Curlee University of Arizona	
	OVERVIEW	307
	INTRODUCTION	308
	DESCRIPTION OF DISORDERED FLUENCY	308
	ETIOLOGY AND RELATED VARIABLES	310
	EVALUATIONS OF FLUENCY PROBLEMS	314
	TREATMENT	324
	CONCLUSION	327
	GLOSSARY	327
	STUDY QUESTIONS	329
	BIBLIOGRAPHY	329
CHAPTER 12	Disorders of Language in Children	332
	Robert D. Hubbell California State University, Sacramento	
	OVERVIEW	333
	INTRODUCTION	334
	ETIOLOGY AND RELATED VARIABLES	335
	EVALUATION	342
	TREATMENT	356
	CONCLUSION	367
	GLOSSARY	367
	STUDY QUESTIONS	369
	BIBLIOGRAPHY	370
CHAPTER 13	Disorders of Language in Adults	372
	Daniel R. Boone University of Arizona	
	OVERVIEW	373
	INTRODUCTION	374
	APHASIA	374
	LANGUAGE DISTURBANCES IN SENILE DEMENTIA	388

-	30
-	

Contents

	CONCLUSION	393
	GLOSSARY	394
	STUDY QUESTIONS	394
	BIBLIOGRAPHY	395
CHAPTER 14	Disorders of Hearing	398
	William R. Hodgson University of Arizona	
	Noel D. Matkin University of Arizona	
	OVERVIEW	399
	INTRODUCTION	400
	DESCRIPTION	400
	ETIOLOGY AND RELATED VARIABLES	401
	CONDUCTIVE HEARING LOSS	401
	SENSORINEURAL IMPAIRMENTS	403
	EVALUATION OF HEARING LOSS	407
	IMPEDANCE MEASUREMENT	417
	AUDITORY EVOKED RESPONSE AUDIOMETRY	429
	SPECIAL AUDITORY TESTS	429
	MODIFYING TESTS FOR YOUNG CHILDREN	430
	CONCLUSION	433
	GLOSSARY	434
	STUDY QUESTIONS	435
	BIBLIOGRAPHY	436
CHAPTER 15	Audiologic Rehabilitation	438
	Noel D. Matkin University of Arizona	
	William R. Hodgson University of Arizona	
	OVERVIEW	439
	AUDIOLOGIC MANAGEMENT OF HEARING LOSS	440
	AUDIOLOGIC HABILITATION OF CHILDREN	452
	SELECTION OF APPROPRIATE AMPLIFICATION	455

	Contents	XV
	PARENT EDUCATION, GUIDANCE, AND COUNSELING	458
	MULTIDISCIPLINARY EVALUATION	459
	LANGUAGE REMEDIATION	460
	CONSULTATION WITH THE CLASSROOM TEACHER	461
	CONCLUSION	462
	GLOSSARY	463
	STUDY QUESTIONS	464
	BIBLIOGRAPHY	464
APPENDIX:	Guidelines for the Classroom Teacher Serving the Hearing-impaired Child	466
	AUTHOR INDEX	471
	SUBJECT INDEX	474

CHAPTER ONE

Overview

This chapter is intended to provide you with an understanding of human communication and how it is accomplished. We define the process of communication as the transmission and exchange of information and experience through the coded symbols which form languages. Modes of communication through biological processes, machines, mass media, and social and personal interaction are also discussed. The purpose of communication is not only to transmit information but, also for the creation of knowledge and understanding.

Speech, language, and hearing are viewed as a special system of communication in which spoken language is distinguished from a more general concept of language. Speech or spoken language, is described as a body of words which are combined and used according to rules. Thus, the terms *speech* and *hearing* as used in this context, include language. The essential physiological processes of speech are reviewed: respiration, phonation (voicing), resonation (vocal quality), and articulation (speech sound formation). The processes of language are discussed in terms of acquisition, structure, meaning, and use. Also, the processes in hearing are described as the conversion of sound to neural impulses which form the physiological bases of perception and comprehension of speech.

In order to provide a better understanding of hearing, speech production, and language several theories of speech and hearing as a system are presented. The first theory provides an elementary overview of the processes involved in the interaction between a speaker and a listener. A second theory emphasizes the role of the ear as a component of the speaking system. This stresses the importance of hearing one's own speech. A third theory of speech and hearing deals with speech production and perception as dyadic communication, in which the listener and speaker are components of a single system.

These theories introduce you to the study of normal processes in speech and hearing to enhance your understanding of how these aspects of communication are accomplished. Reference is made also to disorders that occur in speech, language, and hearing and to their evaluation and treatment. Thus, speech and hearing are introduced as a professional area of interest which involves both scientific and clinical pursuits. The role of the scientist is discussed in terms of questions and developments in basic and applied research. The role of the clinician is discussed in terms of human communication problems and their treatment, including interaction with related professions.

Paul H. Skinner University of Arizona

Introduction

The term **communication**¹ is often used to include only the spoken word and its perception; however, **speech** and **hearing** comprise only one of the many forms of communication. Communication, or communication theory, involves numerous fields, not only the speech and hearing process. Students interested in speech and hearing or related areas should gain an awareness of the broad realm of communication in order to place speech and hearing in perspective. This chapter is intended to provide that perspective. In addition, we will try to provide an understanding and appreciation of speech and hearing as a unique and dynamic form of communication. This chapter is also intended to introduce you to the normal processes and disorders of speech and hearing and to related scientific and clinical endeavors.

Communication

Let us proceed, then, to see what is meant by the term communication and to see how speech and hearing emerge as a communicative process. Communication involves the transmission and exchange of information relating to thoughts, feelings and experiences. It is accomplished through an astounding variety of media which pervade all aspects of life. Communication is the cohesive, compelling force in biological survival of all species as well as in our social, cultural and personal lives. To ensure that the obvious does not elude us, it is important to note also that the ultimate purpose of communication is the pursuit of understanding and knowledge.

Communication requires the use of signs or symbols, which may be coded to form languages in a progression or hierarchy of communication. It is clear that the communication can be accomplished simply by isolated signs or symbols: a car horn or flashing light may be a sign of warning; a hen's clucking is a symbol that sets her brood scurrying to her. The human expressions also surely are revealing: a sign, a yawn, a tear. Clearly, we humans, as well as animals, have learned sets of signs or symbols to express hunger, fear, love, and they are important in communication. We would not equate these expressions with language, however; certainly "human language is vastly more than a complicated system of clucking" (Cherry 1957).

Communication can be enhanced or refined by **codification** of symbols. A code is an organized set of symbols arbitrarily used to represent percepts or concepts to convey meaning. Codes may vary in complexity from a set of hand singals used by automobile drivers to mathematical symbols used to express concepts in a very rigorous form of logic. In fact, speech may be thought of as a coded set or system of sounds, undoubtedly a definition which lacks the

¹ Terms in boldface type are defined in the glossary at the end of the chapter.

eloquence that some of us may prefer to associate with our speech. Coded symbols may be integrated and transmitted through various media: sound waves carry the sound patterns of speech; electrical pulses (dots and dashes) are used to represent letters in telegraphy known as Morse code; letters form words, and numbers form equations to provide written codification of information. In a general sense, each of these sets of coded symbols may be considered a form of language.

Biological Communication

Genetic communication and sensory communication are some interesting examples of biocommunication; later, we shall consider speech and hearing as bioacoustical communication. Genetic communication is fundamental to basic life processes. The nucleic acids DNA and RNA transmit information from generation to generation by a genetic code "encapsulated" in the chains of molecules which form the microstructure of genes. They form the molecular basis of heredity and have determined specific characteristics within each species since the earliest development of life on this planet. Genetic communication is a focal point of the research being undertaken by molecular biologists, and many are employed by large communication industries and laboratories.

The surrounding world and immediate environment become reality through sensory communication, or input to the brain by hearing, seeing, or feeling. Humans depend essentially on vision for orientation; but, hearing is important for the localization of various sounds, for example, it may be critical for the pedestrian in traffic to avoid an approaching car or for animals to avoid predators. Some bats rely entirely on sonar (echo location) for orientation to their environment and to seek out their prey (insects) for food. A species of moth, in turn, is able to produce "jamming" signals to interfere with the bat's "sonar system," thereby avoiding their predator. More primitive life forms, such as certain fishes, rely primarily on a sensation analogous to touch or feeling. In deed, sensory communication is the fundamental medium for survival in the animal kingdom and in our complex, mechanized society as well.

You will discover later in the text that persons with communication disorders in speech, hearing, or language rely on sensory or biofeedback and bioacoustical feedback, communication technology in the treatment of these disorders.

Machine Communication

Physicists, historically, have been concerned with communication through the transmission of sound, light, and radio waves. These properties of nature have been sufficiently well understood and described by scientists that engineers have been able to develop the technology for useful communication systems: sonar (sound waves), laser (light waves), and radar (radio waves). These systems have been developed to transmit information with or without a human intermediary. Sonar is a valuable technique for underwater navigation and radar for aeronautical navigation. Sound and radio waves are generated, re-