INTRODUCTION TO AURAL REHABILITATION

Serving Children and Adults with Hearing Loss

THIRD EDITION

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Preface

The book that you are reading introduces you to the nature and process of aural rehabilitation. As an introductory look at the processes involved in this exciting service, it covers a broad range of topics considered to be the most important in preparing future professionals to serve children and adults with impaired hearing. It is a natural outgrowth of what previously became a popular text entitled *Aural Rehabilitation*, written and edited by this author, that resulted in four successful editions over a span of more than 20 years. One reason those previous books were so popular among professors and students was not only the logical sequence in which the information was presented, but also the ease with which the book could be read. In other words, the book that you are reading, *Introduction to Aural Rehabilitation*, retains the same readability and ease of understanding that previous books by this author have maintained over the years, and also provides comprehensive information on the nature and process of aural habilitation and rehabilitation on behalf of children and younger and older adults who have impaired hearing. Therefore, the information has immediate theoretical and practical application.

The first page of each chapter provides a *brief outline of the chapter* for a quick content overview. Further, the *examinations and answer sheets* found at the conclusion of each chapter provide a ready-made opportunity for professors to quiz their students on a periodic basis, or to simply allow students to determine on their own whether they understood important points within each chapter.

The book is divided into *four* parts:

Part I: The Nature of Aural Rehabilitation presents information fundamental to provision of services for all persons who have impaired hearing, including an introduction to aural rehabilitation; an introduction to the nature and potential impact of hearing impairment and related terminology; an introduction to hearing aids and their components; and a thorough description of cochlear implantation, a history of electrical stimulation of the cochlea, candidacy for cochlear implantation, the benefits of implantation, and the surgical procedures utilized for cochlear implantation.

Part II: Introduction to Aural Rehabilitation—Children Who Have Impaired Hearing concentrates on habilitative/rehabilitative services for children who have impaired hearing. The information centers on the importance of family and its involvement in serving children who are hearing impaired; considerations regarding amplification for children; the development of auditory skills as well as language and speech development in children with impaired hearing; the educational management of children with impaired hearing; and the issue of cochlear implantation for children.

Part III: Aural Rehabilitation—Adults Who Have Impaired Hearing presents important information on matters related to services on behalf of adults with impaired hearing. Chapters in this section address the history, theory, and application of aural

rehabilitation for adults; techniques for providing aural rehabilitation services to adults; procedures for counseling; hearing aid orientation; and assistive listening devices for adults with impaired hearing.

Part IV: Considerations for Older Adults Who Have Impaired Hearing addresses special considerations for services for older adults who have impaired hearing. The chapters in this section present information on the psychosocial and physical factors of aging; the special nature of hearing loss in older adulthood; the impact of hearing loss on older adults; counseling the older adult who is hearing impaired; considerations for hearing aid orientation and use for older adults; and aural rehabilitation programs for the hearing impaired elderly in health care facility environments.

Appendices: The appendices of this book contain sixteen assessments of communicative function, the most comprehensive compilation of assessments for adults who possess impaired hearing found in any text on the topic of aural rehabilitation.

Lecture slides: PowerPoint lecture slides for each chapter are provided on a companion website to assist instructors in their teaching of the material. See the instructions on the inside front cover of the textbook to gain access to the website.

The topics for this book were by no means arbitrary. University professors and practitioners of audiology, speech-language pathologists, deaf educators, rehabilitation counselors, psychologists, otologists and otolaryngologists, along with upper-level undergraduate and graduate students across the United States, Canada, Europe, and other countries were consulted about the topics they felt were important in preparing audiologists and speech-language pathologists to work with children and adults with impaired hearing, and, further, consulted about whether they would prefer a term other than "aural rehabilitation" in this book. When a general consensus was reached, this book was designed, written, and prepared for you.

Preparing this text has been a tough but rewarding experience. It will prove to be a valuable source of information for serving children and adults with impaired hearing.

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PART I

The Nature of Aural Rehabilitation

1

The Nature of Aural Rehabilitation

RAYMOND H. HULL

Chapter Outline

Introduction

The aim of aural habilitative/rehabilitative efforts on behalf of children and adults who possess impaired hearing is to overcome the potential handicapping effect. After the discovery of a hearing impairment, with assessment of its type and degree, a medical referral is made by an audiologist, anticipating perhaps that the physician can correct the problem. The referral is made on the premise that the hearing impairment, per se, may be overcome.

If a hearing impairment cannot be medically treated, the audiologist then works with the patient to remediate the potential handicapping effects of the hearing loss and to help the child or adult overcome the communicative, social, and psychological effects of impaired hearing. A team of professionals may also become involved, perhaps including the patient's physician, vocational rehabilitation counselors, educators, psychologists, sociologists, and speech pathologists, with the audiologist coordinating the team. The patient's family will also be involved in the aural rehabilitation treatment process. In its totality, this task holds tremendous responsibility for all who are involved.

Why, then, is this area that is important in so many instances presented as a single chapter in books that deal with the subject of hearing impairment? Furthermore, why are there so few books and papers published that deal specifically with the effects of impaired hearing on children, adults, and aging persons? Importantly, those would include approaches to counseling, the psychosocial and vocational impact of hearing impairment, and approaches for remediation, particularly when assisting patients beyond the assessment of hearing is among the most important service that audiologists can provide on behalf of their patients.

The three parts of this book provide theoretical and practical information on serving children, adults, and older adults with impaired hearing. This book addresses the issues and needs unique to each age group.

What Is Aural Rehabilitation?

Over the years, aural rehabilitation has been discussed so frequently from within the framework of speechreading, lip reading, visual communication, auditory training, and other subcategories that we have occasionally strayed from the totality of the habilitative and rehabilitative process involved in this important service. In fact, in our profession of audiology, aural rehabilitation should be a natural part of the services that we provide on behalf of children and adults who possess any degree of impaired hearing.

The first sentence of this chapter stated that "the aim of aural habilitative/rehabilitative efforts on behalf of children and adults who possess impaired hearing is to overcome the potential handicapping effect" What is the handicap? Impaired hearing may have a great impact on one person, but may not be as great a handicap to another. One person may remain despondent over his or her partial loss of hearing, but another may rebound and work with vigor to overcome the communication difficulties caused by the impairment. One person may encounter great social handicap from a relatively mild high-frequency hearing loss, whereas another who has a more severe hearing loss may have only a mild occupational or social impairment. A child with a mild hearing loss that was not detected until school age may suffer as great a handicap as one with a greater hearing loss that was discovered

earlier. Two children with equal hearing ***loss*** may experience different degrees of ***impairment*** because of the psychosocial and interactive/communicative environment in which they have been raised from infancy.

The Catalyst

If the catalyst for a psychosocial, educational, and/or occupational handicap resulting from either acquired or congenital hearing impairment could be pinpointed, it would probably revolve around its impact on "communication" and the interference—either receptively, expressively, or both—caused by impaired hearing. Whether remediation is begun early or late, a child with a severe congenital hearing loss will have a language deficit to some degree that may impact educational and occupational successes, with language delay as the primary basis for the communication deficit. Adults who acquire a hearing impairment that interferes with hearing the speech of others may become despondent over difficulties maintaining an occupation or functioning socially. Again, the problem centers on interference with communication as the result of the auditory deficit.

Adults

Aural rehabilitation and the strategies used in the process of aural rehabilitation center on the impact of impaired hearing on communication as experienced by adults with impaired hearing. Most of these adults have probably had normal hearing at some time in their lives and will probably have normal, or near-normal, language function. In that regard, the impact of a hearing impairment on communicative function reveals itself from innumerable dimensions and avenues.

Children

Children with impaired hearing may not have experienced normal language and will respond to their hearing loss, their environment, and communication in differing ways. Furthermore, they also have parents, siblings, and other relatives who respond to them and to their hearing loss in complex and varying ways.

Children with impaired hearing are born into a variety of families and environments. A child with profound hearing loss who is born into a family in which deafness has not previously occurred and whose parents become immobilized and noncommunicating out of self-pity and anger will not fare nearly as well as a child who is born deaf to parents who accept their child in a loving, nurturing, communicating environment.

Acquired Hearing Loss

In relation to acquired hearing loss, each adult, of no matter what age, responds differently to hearing impairment. Each has different demands, either self-imposed or externally imposed. Many have families or significant others who are also affected by the hearing deficit. For some individuals, their occupations may require precise and in-depth communication with other professionals or patients, while for other persons, their occupations may require little communication with others. Prior to the onset of their hearing loss, some persons may have been actively involved on a social basis, while for others, their social lives may have simply revolved around home and family. A college graduate whose spouse and parents have had great expectations of him or her for success in the business world may feel a greater impact from an acquired

hearing impairment than someone who desires to be a good rancher and who is not required to communicate a great deal on his or her ranch in northern Montana.

Serving Children Who Are Hearing Impaired

Historical Background

Aural habilitation services for children have a much longer and more diverse history than services for hearing-impaired adults. Even dating back to scholars in the 4th century BC and before, much of the history centers on education of children who are deaf, and then later, the early oralism versus manualism debates. However, a historical perspective is important in learning about the procedures used to serve children who have impaired hearing.

The recorded history of philosophical treatises on hearing impairment—children who are hearing impaired, their apparent ability to learn, and the "methods debate" on how hearing impaired children most efficiently learn language and speech—began before the development of Hebrew law, that is, prior to 500 BC (Bender, 1981).

One of the first recorded philosophical opinions on the potential of children who are deaf to learn and to speak was rendered by Aristotle (355 BC). His theories and philosophies on most topics carried so much weight in his day that others not only hesitated to question them, but to even venture into the topic areas at all. This situation was particularly disastrous for the hearing impaired, because interpreted, Aristotle's declaration regarding the "deaf" was, "Those who are born deaf all become senseless and incapable of reason. Men who are born deaf are in all cases dumb; that is to say, they can make vocal noises, but they cannot speak" (Giangreco, 1976, p. 72). Unfortunately, the Greek words *kophoi*, meaning "deaf," and *eneos,* meaning "speechless," had, at the time, taken on the additional "local" meanings of "dumb" and even "stupid" in some instances. Therefore, a misinterpretation of Aristotle's statements could have become the interpretation that cast the mold for centuries for children and adults who were deaf or hearing impaired.

By the 16th century, some prominent individuals, primarily priests and physicians, began to challenge the opinions of Aristotle. For example, Giralamo Cardano (1501–1576) of Italy braved the opinion that he could see no reason why people who are deaf could not be taught. In *De inventione dialectica*, Cardano wrote that he had observed a man who was born deaf who had learned to read and write, and in that manner could learn and could communicate with others. From that, Cordano ventured the opinion that people who are deaf were capable of reason (Farrar, 1923).

During the 17th century, rapid advancements occurred in many areas, particularly in the development of educational philosophy, intellectual growth, political theory, and scientific thought. In relation to people who were deaf, such names as Locke (1632–1704), Francis Bacon (1561–1626), Bonet (1579–1629), Bulwer (1614–1684), and others dominated the scene. The quarrel between John Wallis (1617–1703) and William Holder (1616–1698) concerning the best method for teaching people who were deaf sparked the beginning of public interest in the area of deafness (Bender, 1981; Giangreco, 1976; Hodgson, 1953).

During the 18th century, great growth occurred in services for individuals who were deaf. Jacob Pereira (1715–1780) was recognized as the first teacher of the deaf in

France who—with de l'Épée (1712–1789), also of France—was among the first to make deaf education a matter of public concern. He wrote about his work and brought positive attention to the potential for learning of children who are deaf (Bender, 1981; Giangreco, 1976), as did his contemporary Samuel Heinicke (1727–1790) of Germany (Hodgson, 1953). Jean Itard (1774–1838) of France conducted research into the hereditary nature of deafness. He concluded that, indeed, deafness can be inherited, although it can skip generations (Bender, 1981).

In the 19th century, other significant strides were made in the detection and understanding of hearing loss and in the education of people who are deaf. Some were important to the future of services for individuals in America who were deaf. The Braidwoods and the Watsons were the operators of nearly all of the schools for the deaf in England, both adhering to an oral method of teaching, emphasizing oral speech (Bender, 1981; Deland, 1931). At the same time, deaf education in France was under the direction of Roch-Amroise Cucurron Sicard who emphasized a manual approach to teaching language to deaf children (Bender, 1981).

In America, the first school for the deaf, The American Asylum, was begun by Thomas Gallaudet (1781–1851), who is considered to be the father of deaf education in America. He was a proponent of manualism (Bender, 1981; Giangreco, 1976), so the first school for the deaf in America was manual in orientation.

In an effort to begin an oral school in this country, on March 16, 1864, Gardiner Green Hubbard, a concerned and influential citizen, and Samuel Howe, superintendent of the Massachusetts School for the Blind, petitioned the Massachusetts General Court to incorporate an oral school for the deaf in that state. Governor Bullock of Massachusetts listened to them. After receiving a letter from philanthropist John Clarke offering $50,000 to establish an oral school for the deaf, Governor Bullock persuaded the state legislature to approve the establishment of a school. It was later named the Clark School for the Deaf and was established in October 1867 (Bender, 1981).

Alexander Graham Bell strongly influenced the future of services for children with impaired hearing in the United States. Bell's mother became deaf because of illness. In addition, Alexander married Mabel Hubbard, who was deaf from scarlet fever in early childhood. Furthermore, he was moved by the impressive way that his mother and wife were able to communicate without using manual sign. So he openly differed with Gallaudet's manual approach to teaching the deaf. When he invented the telephone, Bell also saw its potential for electronically amplifying sound for the hearing impaired. With $200,000 that he received from the Volta prize for his work with electricity, Bell initiated the Volta Bureau in Washington, DC in 1867. Out of the Volta Bureau arose the Alexander Graham Bell Association for the Deaf.

The debates of Gallaudet and Bell about manualism and oralism continue today. Despite differences, those involved in the debates do share the goal of teaching the best and most efficient method for language development and communication for children who are deaf.

Current Theory and Practice

The 20th century brought more eclectic approaches for the development of language among children who are hearing impaired. Generally, the various approaches had a common goal of utilizing the most efficient sensory avenues available to children with

impaired hearing. Although there are sometimes vast differences between the individual philosophies, they are all believed by adherents to be in the best interest of hearing impaired children. Approaches are generally structured around six primary philosophies, or methodologies (Boothroyd, 1982):

1. *Emphasis on Speech.* This philosophy centers on speech as the avenue for communication to provide a person with the requisite independence that we strive for on behalf of the deaf (Bader, 2001; Calvert & Silverman, 1975; Fry, 1978; Hochberg, Levitt, & Osberger, 1983; Kretschmer & Kretschmer, 1978; Ling, 1978, 1981, 1984a, 1984b; Ling & Milne, 1980; Osberger, Johnstone, Swarts, & Levitt, 1978; Pollack, 1970; Sanders, 1993; Vorce, 1974).
2. *Emphasis on Hearing.* This primarily unisensory approach emphasizes the earliest possible identification of hearing impairment in children and the earliest uses of amplification, so that the child's auditory system can play its natural role in the enhancement of auditory perceptual skills and, thus, the development of speech and language (Boothroyd, 1982). The goal is for hearing to play as great a role as possible in the development of speech and language (Bader, 2001; Boothroyd, 1982; Calvert & Silverman, 1975; Chase, 1968; Hirsh, 1966; Ling, 2001; Ling & Milne, 1980; Markides, 1983; Pollack, 1970, 1985; Simmons-Martin, 1977).
3. *Manual Supplements to Speech.* Cued speech is a manual supplement to lipreading. It is used as a manual supplement to an oral approach to the development of communicative competence (Berg, 2001; Cornett, 1967; Ling & Ling, 1978).
4. *Emphasis on Language and Communication.* This philosophy emphasizes that the mastery of language, no matter what the mode, is critical for the cognitive, emotional, and social growth of child. It supports total communication and the simultaneous use of hearing, speech, and manual communication. It is believed that the use of manual communication will provide a base for communication and that speech will emerge out of it as communicative competency becomes more highly developed (Boothroyd, 1978; Fry, 1977; Groht, 1958; Harris, 1963; Kretschmer & Kretschmer, 1978, 1984; Ling, 1981; Simmons-Martin, 1977).
5. *Cognitive Emphasis.* With this philosophy, a specific modality for language stimulation is deemphasized. The primary concern is placed on providing children who are hearing impaired with optimal opportunities for cognitive skills development. However, proponents generally have had their own preferences about the modality emphasized (e.g., manual, auditory, total) (Blank, Rose, & Berlin, 1978; Boothroyd, 1982; Grammatico & Miller, 1974; Moeller & McConkey, 1984; Stone, 1980; Taba, 1962).
6. *Emphasis on the Child and His or Her Parents.* Successful intervention on behalf of children who are hearing impaired depends to a more than moderate degree on the emotional well-being of the child, which, in turn, depends on the emotional well-being of the parents (Boothroyd, 1982). No matter how great the expertise of the

clinician, parents exert the greatest impact on the social, communicative, and emotional growth of their child (Bader, 2001; Boothroyd, 1982; Lillie, 1969; Luterman, 1987; Mindel & Vernon, 1987; Moses, 1985; Phillips, 1987).

These philosophies are individual approaches that are found to one degree or another throughout the last century. However, one seldom observes a professional who employs a *single* approach to the exclusion of others. It is, thankfully, most common to observe a wise clinician using the best of several approaches to the benefit of a child and his or her family.

The Potential Impact of Impaired Hearing

In discussing aural habilitation services for children, we are in most instances referring to children who have prelingual hearing losses. These children generally have a primary impairment of hearing that will, if left untreated, result in other impairments secondary to the hearing loss. An insightful treatise by Boothroyd (1982) describes the potential impact of a severe congenital hearing loss on a child if the hearing loss is left unattended. The result may include any or all of the following:

1. *A Perceptual Problem.* A child may have difficulty identifying objects and events by their sounds.
2. *A Speech Problem.* A child does not learn the connection between the movements of his or her speech mechanism and the resulting sounds. Consequently, the child has difficulty acquiring control of speech.
3. *A Communication Problem.* A child may not learn his or her native language. The child has difficulty understanding what people say and cannot participate in conversational exchange.
4. *A Cognitive Problem.* A child has difficulty acquiring auditory/oral language. Children without language must learn about their world only from concrete aspects, not the elements that normally hearing children use; for example, the abstract elements of language.
5. *A Social Problem.* A child who has a hearing impairment as a toddler does not hear the verbal signals communicating that he or she is about to transgress parental limits. At a later age, this child cannot have social rules explained to him or her, unless alternative avenues for communication have been established.
6. *An Emotional Problem.* If a child is unable to satisfy his or her evolving needs through spoken language, unable to make sense of the seemingly precipitous and capricious reactions of parents and peers, and is constantly feeling acted upon rather than feeling in charge, the child may become confused and angry, and may develop a poor self-image.
7. *An Educational Problem.* A child with limited language derives minimal benefit from formal education.
8. *An Intellectual Problem.* A child will be deficient in general knowledge and language competence—both of which are included in a broad definition of intelligence.
9. *A Vocational Problem.* Lacking in verbal skills, general knowledge, academic training, and social skills, the hearing impaired child will reach

adulthood with limited possibilities for gainful employment.

10. *Parental Problems.* The instinctive reactions of parents to a baby's failure to develop language are to withdraw language input and to reduce interaction. When parents discover the true nature of the deficit, they may well enter a state of denial and confusion, which reduces their general effectiveness as parents and further undermines the social and emotional development of their child.
11. *A Societal Problem.* The withdrawal of interaction by the parents will be repeated later by society.

Aural Habilitation for Children Who Are Hearing Impaired

A comprehensive program of aural habilitation will need to be introduced to reduce the potential negative outcomes of a prelingual hearing loss to the greatest extent possible. In fact, all children with impaired hearing require habilitative intervention in some form. The differences lie in the degree of hearing loss, time of onset of the hearing loss, and the impact of the hearing loss and the child's environment on language development. The components will include some or all of the following:

1. *Parental Guidance.* It is critical that the child with hearing impairment have well-adjusted parents, in other words, parents who have overcome the anger, anxiety, and apprehension that they may have felt on diagnosis of their child's hearing loss; who have accepted their child as a child, not as a burden; and who have accepted their role in the development of their child. This requires continuity of support from the day of diagnosis and every step along the way (Sanders, 1993, pp. 228–259).
2. *Audiology Services.* Early audiologic management is extremely important for both the hearing-impaired child and his or her parents. For the child, it is critical that amplification be offered as early as possible. Each day that amplification is not provided is a day lost in the child's auditory development. A hearing aid or hearing aids should be fit and hearing aid performance must be evaluated by the audiologist who will be involved in services for the child on a long-term basis. The clinician should do all that can be done to make the fitting of the hearing aid(s) a happy occasion. The joy is in observing a child respond and attend to sound, perhaps for the first time, and to celebrate this first day in the hearing life of the child. On the other hand, a solemn and ceremonious atmosphere surely will be reflected in both the child's and the parents' acceptance of the hearing aid(s).
3. *Auditory Development.* This aspect of service involves providing the child with the opportunity to develop awareness of sounds in the environment and to develop the ability to recognize people and objects by the sounds they make; to make judgments about what is heard and about where sounds come from; and to use hearing not only for recognizing speech, but for understanding and producing speech.
4. *Cognitive/Language Development.* Even though auditory development cannot be separated from cognitive