

AUDITORY DISORDERS
IN CHILDREN

a manual for differential diagnosis



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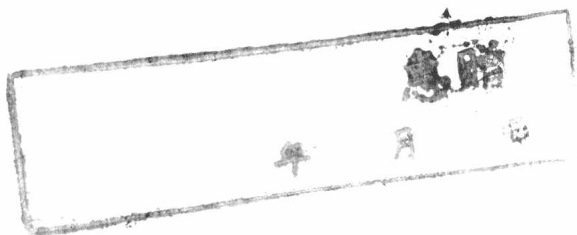
AUDITORY DISORDERS IN CHILDREN

a manual for differential diagnosis

HELMER R. MYKLEBUST

*Professor of Audiology, School of Speech
Professor of Otolaryngology, School of Medicine
and*

*Director, Children's Hearing and Aphasia Clinic
Northwestern University*



GRUNE & STRATTON

NEW YORK

1954

Library of Congress Catalog No. 54-7372

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GRUNE & STRATTON, INC.
381 Fourth Avenue
New York City 16

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Printed and bound in U.S.A.

AUDITORY DISORDERS
IN CHILDREN

a manual for differential diagnosis

TO THE JUNIOR LEAGUE OF EVANSTON

*for its vision and support
in behalf of children with
auditory disorders*

Preface

THIS MANUAL IS FOR THE PEDIATRICIAN AND audiologist, for the psychologist and otolaryngologist and others who are concerned with the complex problem of auditory disorders in infants and young children. Its purpose is to suggest and describe clinical procedures and techniques which have been found useful in making a differential diagnosis. The method described is intended primarily for children between the ages of one and six years. It has been used with children not more than six months of age and at times it has been necessary to employ these procedures with children between six and fourteen years of age. This method, however, is suggested chiefly for those occasions when formal hearing tests, such as audiometric and tuning fork tests, are not applicable. Usually this is with children below six years of age. Even when formal tests of hearing can be used, it has often been advisable to use the techniques suggested in this manual to secure corroborative information.

The plan of the book derives logically from the clinical procedures required for making diagnoses of auditory disorders in children. These procedures consist of three basic steps which constitute the major divisions of the book. Part One includes the introduction, a discussion of the problem and a consideration of auditory disorders and language development. Part Two is a discussion of differential history taking and interpretation of the history, which is the first step toward making a diagnosis. Part Three is a discussion of the second step, the evaluation of behavioral symptomatology. Part Four is a presentation of the method, procedures and techniques for making the examination. Part Five is a summary with suggestions for recommendations and training.

Throughout the book it is assumed that the child has no speech and that he has inadequate ability to communicate to the extent that

verbal procedures are not applicable. Furthermore, auditory disorders are considered broadly. Children with psychic deafness, aphasic children and the mentally deficient who are presumed to have hearing impairment are included in the problem of auditory disorders. This seemed essential because if the evaluation of auditory capacity reveals that the lack of response to sound and the lack of speech are not due to deafness, it is necessary for the specialists to pursue the problem further and to make an appropriate diagnosis. It is the purpose of this manual, as stated, to suggest clinical methods which have been found useful to this end. Therefore, this book is not mainly an attempt to present conclusive experimental evidence. It is a manual for differential diagnosis intended for practitioners and students in training. The summaries at the end of each chapter have been included especially for those clinicians who are interested primarily in a brief description of how these clinical procedures can be used. It is possible to use these summaries as a guide without going through the more inclusive discussions throughout the manual. The author is hopeful that it will stimulate research in this challenging area of human behavior.

Many colleagues, students and friends have assisted me with the preparation of this book. Sincere appreciation is expressed to the Junior League of Evanston, Inc. for the part it has played in sponsoring the Children's Center for Hearing and Aphasia. Special recognition is due Mrs. George B. Milnor, Mrs. F. Edward Watermulder, Mrs. Raymond M. Galt, Mrs. Edward Wheeler, Mrs. Robert C. Barr and Mrs. H. Robert Harper for their untiring efforts in support of the Children's Center where most of the work has been in progress.

My graduate students have assisted with the development of the concepts and have made noteworthy criticisms. I am especially indebted to Robert Frisina, Graduate Clinical Assistant, who has supervised tabulation of the data and the statistical treatment. I also acknowledge my obligation to my former graduate assistants.

My colleagues, Dr. Harold Westlake, Chairman of the Department of Speech Correction and Audiology and Dr. Raymond Carhart, Professor of Audiology, read the manuscript and made many helpful

criticisms. I am happy to acknowledge my indebtedness for this assistance and for their help in many other ways.

Appreciation is due Dr. George E. Shambaugh, Jr., Chairman of the Department of Otolaryngology, School of Medicine, Northwestern University for his suggestion to include summaries at the end of each chapter and for his assistance in preparing them. I am indebted to him also for opportunities for collaboration in the study of children with auditory disorders. Dr. William Nolan, Psychiatrist, has read parts of the manuscript and has made many other contributions to our work with children and their parents.

To Dr. Edgar A. Doll, formerly Director of the Psychological Laboratory, The Training School, Vineland, New Jersey I express appreciation for his criticisms of the manuscript and also for his stimulation and encouragement. It was from my association with him that I developed special interest in the problems of auditory behavior, language and brain injury. James H. McBurney, Dean, School of Speech, Northwestern University has provided me an unusual opportunity for working with children having auditory disorders. For this I am grateful. It is a pleasure to acknowledge my obligation to my secretary, Louise Bruns, for her diligent and painstaking typing of the manuscript and to Richard League for his generous assistance with the index. Finally, I wish to express gratitude to my wife for her patience and understanding.

HELMER R. MYKLEBUST

Northwestern University
Evanston, Illinois
November, 1953

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PART ONE: INTRODUCTION

Chapter I

The Problem

THE IMPORTANCE OF THE CHILD'S EARLY LIFE to his later adjustment has been acknowledged in recent years. One of the outgrowths of this acknowledgement has been an intensified interest in handicapped children. For those who are predominantly interested in children with auditory disorders this has resulted in a need for clarification of early diagnosis and for more precise classification. Among those who emphasize the importance of early detection and accurate diagnoses of auditory disorders in children are pediatricians, otolaryngologists, neurologists, psychiatrists, clinical psychologists, speech pathologists, educators and audiologists. The enthusiastic interest shown by these various specialists during recent years suggests that in the future the divergent needs of these children will be determined at an early age. Such an accomplishment would minimize consequent psychological effects of auditory disorders. Positive remedial measures would be applied during that interim of life when the child is most amenable to corrective measures and management; secondary problems would not have developed to complicate the effects of the handicap and, thereby, initiate a condition which is relatively less remediable. A child with impaired hearing acuity who is erroneously diagnosed as mentally deficient, aphasic, or emotionally disturbed suffers greatly, not only from his deafness but from being misunderstood. Inadequate diagnoses, treatment and

psychological management in early life often cause problems of intense magnitude in later life.

One of the primary problems confronting specialists in auditory disorders of children is the development of reliable methods for determining auditory acuity. The methods most commonly used were designed for adults, but many diagnosticians have assumed that these methods were equally suitable for infants and young children. This assumption must be questioned. Evaluating the auditory capacity of adults who are emotionally, intellectually and physically mature is a different diagnostic problem from that of evaluating the auditory capacity of young children who are physically, emotionally and intellectually immature. It is necessary for all clinicians who examine the auditory capacities of children to consider whether the techniques and procedures are genetically suitable, whether the tests require mental, physical and emotional maturity beyond the child's capacity to respond.

Another assumption which has been made by many specialists is that lack of response to sound is an invariable indication of reduced auditory acuity. This assumption implies that overt responses will be made invariably. Thus, if a sound is presented and there is no overt response the inference is that the individual could not hear it and, therefore, has impaired acuity. This assumption, too, must be questioned. For example, an adult with psychogenic deafness does not respond to sound normally but his condition is not one of impaired acuity. This lack of a direct relationship between poor responsiveness to sound and peripheral deafness is encountered frequently in children. The younger the child the greater is the possibility of such a discrepancy being present. Therefore, the diagnostician of auditory disorders in young children is confronted with the obligation of ascertaining, not only whether impaired hearing acuity is present, but whether other types of auditory disorders which simulate deafness are present.

Parents often are not aware of the auditory disorders in their children until the symptom of lack of speech development appears. Many children manifesting a lack of speech development are taken

to the family physician, a pediatrician or an otolaryngologist, because the parents make the common assumption that hearing acuity must be deficient. Moreover, some parents take their children to a psychologist or a psychiatrist because they become concerned about mental and emotional development. Still other parents take their children to a speech pathologist because they become concerned primarily about speech deficiencies. Significantly, lack of speech development may be due to any one of these conditions and to various combinations of them. Some children do not develop speech normally because of mental retardation, some because they are emotionally disturbed, others because they are aphasic and still others because they have impaired auditory acuity. However, because of the common presumption that lack of speech is due to peripheral deafness, and that lack of direct response to sound means that such deafness is present, many of these children are erroneously diagnosed and misunderstood. Children who do not develop speech frequently do present problems of auditory responsiveness and capacity. However, many of these children do not have reduced acuity. It is the responsibility of the clinician to determine which of the various conditions is present. This means that the diagnostic problem is one of differential diagnosis. Before a diagnosis is made the condition must be differentiated from others which may produce the common symptom of lack of response to sound. It is of genuine importance that the condition be differentially diagnosed early in life. The auditory disorders of the aphasic, mentally deficient and emotionally disturbed child should not be confused with those of the child who has peripheral deafness. Such confusion may seriously impede later development and adjustment.

The psychology and the psychopathology of hearing have been over-simplified as they pertain to both children and adults. Hearing has been studied and is currently understood chiefly as a physiological process. Consequently auditory capacities have been viewed separately and as something distinct from other capacities, rather than as an integral part of behavior. The relationship of hearing to genetic development in general and to mental and emotional develop-

ment in particular has been largely overlooked. The emphasis in child audiology and differential diagnosis, however, is that hearing cannot be evaluated as something separate from other capacities. Hearing can be evaluated adequately only when it is considered in relation to the child's total development and behavior. This emphasis and rationale is the basis of the concept of auditory disorders in children. Auditory disorders is a more inclusive concept than that which emphasizes degrees and types of peripheral deafness. Auditory disorders include any incapacities relating to the reception or interpretation of sound, whether they be physical or psychological. This concept includes impaired auditory acuity as a type of auditory disorder, but it emphasizes that other types of auditory disorders are common and that these must be differentiated diagnostically. If all auditory incapacities were due to deficiencies of acuity the problem of diagnosis would be greatly simplified and the relationships between hearing and other attributes of the child would be unimportant. However, it is apparent that the diagnostician who over-simplifies auditory functioning and assumes a direct relationship between inadequate response to sound and impaired acuity will erroneously diagnose certain children as deaf. Such a diagnosis can be made with assurance only after other conditions which simulate deafness have been carefully considered and differentially eliminated. This process assumes a study of the child's total functioning. Likewise, it assumes that hearing is not evaluated only in terms of responses to intensity. Rather, auditory behavior is evaluated in relation to general behavior and specifically in relation to the child's physical, mental and emotional development.

This concept of auditory disorders and their evaluation in infants and young children stresses other related problems in auditory behavior. As stated previously, some children may not respond to sound although they have normal hearing acuity. In contrast, some children may respond normally to certain sound frequencies although they have a marked impairment of hearing for the speech frequencies. The diagnostician of auditory disorders in children is confronted with the paradox of children making no obvious response to sound

although they have normal hearing, and of children responding normally to certain sounds although they have a significant loss of hearing relative to speech acquisition and development.

Another type of atypical response to sound is made by some children. A child may respond to sound both intermittently and inconsistently. Some children will respond to faint sounds instantaneously but otherwise do not respond although very intense sound levels are used. Some children are inconsistent in another way. They respond momentarily and fleetingly to a specific sound, especially the first time it is presented, but on repeated presentations of this sound they do not continue to give responses. The concept of auditory disorders in children includes the presumption that children's auditory responses may be variable. Moreover, that they may respond to faint sounds but not to loud sounds and that they may not respond to the same sound consistently. From the point of view of evaluating auditory behavior, lack of response to sound is not considered an invariable indication of peripheral deafness. Likewise, inconsistent responses to sound are not considered as deficiencies of acuity in the usual sense. Lack of, or inconsistent response to sound is considered only as a symptom. The child's auditory behavior is analyzed in relation to the total symptomatology. It may follow that the child has peripheral deafness but further study may reveal that his auditory functioning is disturbed for other reasons. The diagnostician does not rely wholly on the child's responses to sound. Diagnosis is made only after other symptomatology and clinical evidence has been used to corroborate and validate the child's auditory responses.

In addition to ascertaining which of various conditions is causing the auditory disorder, it is frequently necessary in a given child to establish how much of the disorder is due to a disability, such as impaired acuity, and how much is due to other causes. This is the problem of multiple handicap, of one handicap superimposed on another with concomitant need for multiple diagnosis and management.

In order to analyze the problem of differential diagnosis of auditory disorders in young children a special study was inaugurated. This study was an analysis of two hundred and twenty-eight children