

FOURTH PRINTING

DEVELOPMENT AND DISORDERS OF SPEECH IN CHILDHOOD

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The underlying goal of the entire book is to provide an awareness of causes and treatment of childhood speech defects . . . to prevent serious communicative problems in the more productive adult life. All material is presented in a form that will be equally valuable to pediatricians, medical students, therapists and pathologists, psychologists, educators, and parents.

American Lecture Series®



Development and Disorders of Speech in Childhood

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By

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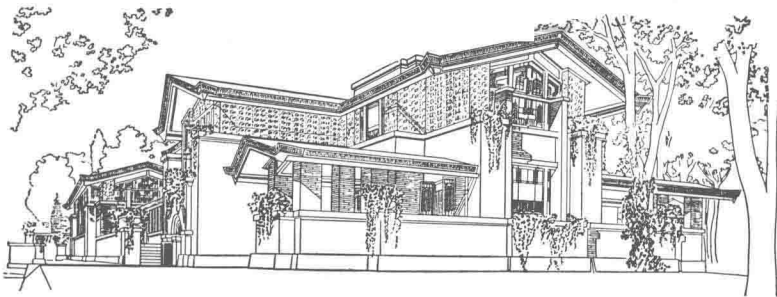
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Development and Disorders of Speech in Childhood

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AMERICAN LECTURE SERIES®

A Monograph in
The BANNERSTONE DIVISION of
AMERICAN LECTURES IN SPEECH AND HEARING

Edited by
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Los Angeles, California

DEDICATION

Isaac W. Karlin, B.S., M.D., F.A.A.P.

(1897-1962)

This book is dedicated to the memory of Isaac W. Karlin, pediatrician and pioneer in the diagnosis and treatment of speech disorders in children.

Karlin made a unique contribution to the field of language problems in children by combining his knowledge of medicine with speech pathology. As a practicing pediatrician, Karlin was interested in not only the physical health of the child, but in his emotional, intellectual, and language development as well. He was one of the first founders and organizers of a speech clinic in a hospital setting in this country. In 1916, the first classes for the speech handicapped were organized in the public schools of the City of New York. During the first part of the twentieth century, speech therapy was mainly the province of speech specialists and educators. In recognition of the close association of language development with the physical growth and development of the child, Karlin founded, organized, and directed the first hospital-affiliated speech clinic at the Jewish Hospital of Brooklyn in 1940.

Karlin first introduced his *Psychosomatic Theory of Stuttering* in the *Journal of Speech Disorders* in 1947. In the course of his work, he obtained several grants from the National Institutes of Health and the Office of Vocational Rehabilitation to study language disability in the aphasic and in the mentally retarded.

After Karlin received his degree of Doctor of Medicine from Illinois in 1924, he did postgraduate work in neuropsychiatry at the College of Physicians and Surgeons, Columbia University. Karlin practiced pediatrics in Brooklyn, New York, from 1925 to the close of his life. He was an assistant instructor in neurology at the College of Physicians and Surgeons, Columbia University, from 1931 to 1935; taught undergraduate and graduate speech courses at Brooklyn College in 1954; and was Assistant Clinical Professor at Yale University School of Medicine

during 1956-1958. In 1960, he was a lecturer and participant at the Institute of Childhood Aphasia of Stanford University School of Medicine.

In 1960, Karlin arranged with Gurren, for the publication of a book on speech and language disorders in children, that would be a compilation of his work as well as that of other authorities in the field. Due to his death in 1962, Karlin wrote only a few chapters. The present authors have completed the book, using his publications, lectures, and notes as well as contributing from their own experience and knowledge in the field. Furthermore, in order to present current ideas on the subject, the authors have included the work of other investigators in the field of speech pathology.

It is the hope of the authors that this book will serve as an appropriate tribute to the life and work of Isaac W. Karlin.

DAVID B. KARLIN, M.D.

LOUISE GURREN, Ph.D.

PREFACE

THIS BOOK discusses the growth, development, and abnormalities of speech in childhood from the pediatric point of view. It is partly an outgrowth of articles, lectures, and experiences of the authors during years of work with children having speech problems. The text is written from both the medical and educational approaches. In addition, the authors have included much of the recent thinking on the part of other authorities in the field of speech pathology.

This book embodies four main purposes in dealing with language in childhood. The first aspect describes the normal course and development of speech and language from its origin in infancy through its maturation during adolescence. A second purpose is to present the anatomical, physiological, and psychological aspects of the speech mechanism. The third aim is to explain, according to present knowledge in the field, the causes of both organic and functional (including emotional) speech and language disorders. Fourthly, suggestions for speech therapy are given for each type of disturbance. The educational, as well as the medical and clinical approaches to helping children with speech and language problems, are also discussed.

The material is presented in a form that can be understood not only by the medical and educational professionals in the field, but equally as well by parents and others who are not working directly in the area of speech. Normal anatomical and physiological development is presented first, because only after one becomes conversant with the normal mechanism of speech can one view the pathology of speech production.

Medical investigators recognize the fact that problems arising during adult life frequently can be traced to difficulties encountered during childhood development. This is certainly true for psychiatric disturbances. Similarly, many of the speech and language difficulties of the adult have their inception during childhood. The underlying goal of this book is to provide an awareness of causes and treatment of childhood speech defects,

in an attempt to prevent more serious communicative problems in one's more productive adult life.

It is hoped that the readers of this book will be stimulated toward further investigative research and the expansion of both clinical and educational speech therapy facilities for the child. Furthermore, it is the authors' desire that through this book, medical students, pediatricians, speech clinicians, educators, and parents will gain a deeper understanding of the speech development and problems in childhood.

The authors gratefully acknowledge the constructive suggestions offered by Dr. Robert West, Editor of the American Lecture Series in Speech and Hearing, and Professor of Speech, University of California at Los Angeles. The writers are also appreciative of the helpful suggestions made in the field of audiology by Dr. Maurice Miller, Assistant Professor of Clinical Otolaryngology, New York University School of Medicine. The authors also wish to express their appreciation to the many publishers who have so generously given permission for the use of illustrations. They are indebted to the many investigators in the field of speech and language whose works have been quoted herein.

A grateful acknowledgment is given to Mr. Robert Carlin who so skillfully prepared the photographs of the illustrations, and to Miss Irene Musil who was responsible for the typing of the manuscript. Dr. David Karlin also wishes to thank his wife, Adrienne, for her understanding and encouragement during the writing of this book.

DAVID B. KARLIN, M.D.
LOUISE GURREN, Ph.D.

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Development and Disorders of Speech in Childhood

Part I

**ORIGIN AND NORMAL DEVELOPMENT OF
SPEECH AND LANGUAGE**

Chapter 1

THEORIES OF THE ORIGIN OF SPEECH AND LANGUAGE IN MAN

SPEECH is characteristically and distinctly a human function. Apart from the mechanical noises made by many animals, no form of life lower than the amphibians is capable of making laryngeal sounds. With birds, however, there is a great advance in sounds which foreshadow the production of vowels. Even the parrot, who supposedly produces intelligent speech, is capable of making only certain noises. These noises appear to the human brain as reproductions of sounds made by man in the production of speech. The mammals show no advance over lower animals in the production of sound. Yet, because of their larger brain, the mammals possess two important elements of language: the involuntary cry of emotion and the voluntary cry of warning. Thus, mammals convey limited messages, although their cries do not possess the faculty of symbolization characteristic of human language.

Recent observations by von Frisch (1) disclose an elaborate system of gestural communication in the social insects. In the bee, at least, communication as concise and explicit as a system of naval signals dominates social organization. Although Revesz (2) denies the relevance of "animal language" to the understanding of human speech, animal communication is accepted today as a biological fact of first importance by Zangwill (3). Peterson (4), a noted ornithologist, states that there is truly such a thing as "the language of the birds." Some of it is innate and some of it is acquired. Can one ever understand this "language"?

Speech, unlike almost all other human activities, has left no record of its origin and development. The mystery of the origin of speech is veiled in the origin of the human race. Many theories of the origin of speech and language have been formulated. Yet, none has proved adequate in providing a satisfactory explanation.

Hieroglyphics, the earliest drawings and writings, are valuable in explaining man's history. They indicate, however, that complex symbolic processes had already been developed and that the beginnings of speech had long been passed. The fact that the origin of speech goes far back beyond recorded human history, indicates that any attempt at explanation must be theoretical.

THEORIES OF ORIGIN OF SPEECH

The theories of the origin of speech and language can be divided into the earlier hypotheses and the later theories with their attempted, more scientific, explanations. To the earlier group of theories belong the divine origin theory, the onomatopoeic theory and the interjectional theory. Later day work was responsible for the gesture theory with its modifications, as well as the most advanced psychological and philological explanations.

Divine Origin Theory

The earliest theory of speech is that of *divine origin*. The theory is expounded by theologians and philosophers. It is stated in Genesis (5), "And whatsoever Adam called every living creature, that was the name thereof." It is of interest to note that the Bible also speaks of the origin of the various languages throughout the world. In the beginning, the whole earth was of one language and of one speech. As the sons of Noah journeyed east, they decided to build a city with a tower reaching toward heaven. The Lord then decided to, "confound their language that they may not understand one another's speech." The tower was called Babel and the Lord, "scattered the people abroad upon the face of the earth."

One notes in literature that belief in divine origin of speech is not limited to Judeo-Christian theology. Other races and other tribes had their own legends touching upon the beginnings of language. To the Norsemen, speech was a gift handed down by Thor, the God of Thunder.

Onomatopoeic Theory

Lefèvre's (6) *onomatopoeic theory* assumes that primitive words arose in imitation of various natural sounds, such as the

barking of dogs and the crackling of fire. Although onomatopoeic words comprise only a small portion of human speech, they do form a significant group in the vocabulary of the small child. Lefèvre (6) traces the origin of speech back to the human cry and still further back to the animal cry. Although it has been shown that some primitive tribes speak languages in which onomatopoeic words are totally absent, this theory does account for a part of the origin of articulate communication.

Interjectional Theory

The *interjectional theory* of Judd (7) is based upon the belief that the earliest speech sounds were involuntary exclamations brought about through emotional excitement such as joy, fear, sorrow, and astonishment. The usual interjections are abrupt expressions for sudden sensations and emotions. They represent a reflex process with a highly emotional overtone. Thus, an interjection may serve the purpose of communication or warning, as when the instinctive cry of a frightened animal puts the herd to flight. The interjectional theory attributes the derivation of language to the emotions common to both man and animal.

The onomatopoeic and interjectional theories fail to consider speech as a form of social intercourse, as a means of communication between man and his neighbor. To explain the purpose of speech and language as a means of communication, one must consider the psychological gesture theory of Wundt (8), the oral gesture theory of Paget (9), the philological vocal play theory of Jespersen (10), and the social control theory of de Laguna (11).

Gesture Theory

The *gesture theory* of Wundt (8) of the origin of speech is based on the psychological law that every sensation has its own distinct expression. Each sensation is brought about through nerve connections between organs that receive a stimulus (receptors) and those that respond to the stimulus (effectors). In other words, a stimulus or a gesture, such as touching the finger to the eye, causes blinking. Not only does the action serve a