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AMERICAN SPEECH AND HEARING ASSOCIATION

Research Needs in Speech Pathology and Audiology

A Special Report Prepared with Support
of the United States Office of Vocational Rehabilitation
and the Veterans Administration
by the Committee on Research
of the American Speech and Hearing Association

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Foreword

The reach of science, as we see it today and as we glimpse it in the future, can be a little frightening. Our progressive mastery over energy in its many forms is producing a mechanistic control over our environment which can be, ultimately, either beneficent or devastating.

I appreciate the hazards but I do not share the alarm. In the midst of the drama which surrounds the exploitation of new power forms, too little recognition is being given to the mounting volume of research on people. This has come slowly, to be sure, and is still disproportionately small in our total research effort, but it is rising significantly. If our capacity to understand people more fully, and to exploit their latent capacities as we now are exploiting the natural phenomena of our universe, is advanced in reasonable proportion to our other advances, then the future will be full of promise, excitement and achievement.

In this approach to an understanding of ourselves, we are, admittedly, on the perimeter. But two great steps forward have been taken: we have begun to grasp the fundamental importance of communication as a researchable entity, and we have recognized that speech and hearing problems occupy as crucial a position in our total research as any of the other functional pathologies.

The speech and hearing field, like so many other phases of present-day science, has come a long way in a relatively short time. Organized research on a substantial scale is even more recent. As our research program (itself quite new) of the Office of Vocational Rehabilitation began to grapple with some of the more pressing fields of investigation in disability and rehabilitation, we were acutely aware of the problems in speech and hearing, and the tremendous possibilities inherent in a comprehensive research effort. Our National Advisory Council on Vocational Rehabilitation, which consults with us on all research plans and projects, had many discussions of speech and hearing research, aimed at a well-planned approach to the whole field. One member, and our good counselor in speech and many other professional areas, was Dr. Wendell Johnson, who has contributed so splendidly to the Council's deliberations and to our research effort generally.

The Council recognized two basic concepts—that any researcher in speech must be free to submit his research proposals to the Office, and that a broad view of research needs in speech and hearing should be secured from the profession itself, as an aid to investigators in the field, and as a frame of reference for the Council and the Office of Vocational Rehabilitation in its long-range planning.

The profession accepted that responsibility and this document presents the fruits of the work of some of the foremost leaders. As administrators of a publicly-

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supported program of research, we are grateful for this important contribution. We share the gratitude which I am sure will be felt among all speech and hearing workers; beyond that, we enjoy the sense of confidence which comes from knowing that the growing amount of attention and funds which will be devoted to scientific efforts in this field in the coming years will be invested more wisely and productively because of the guidance we have received from this document.

Mary E. Switzer, Director
Office of Vocational Rehabilitation
U. S. Department of Health, Education, and Welfare

Preface

For more than a thousand years efforts have been made to deny, eliminate, alter, or control impaired speech and hearing. In these days of the jet and the atom, telephony, television and radio, time, in a sense, has collapsed. Information from any spot in the world reaches any other spot in moments. This time collapse places greater strain than ever before on all information transmitting and receiving channels. The demands for accurate and efficient human communication are now at their peak. The prevention and reduction of communication disorders have become, therefore, objectives of international significance.

In the forefront of the forces engaged in the effort to reach these objectives, the American Speech and Hearing Association, through its professional members and specialized committees, seeks to extend the frontiers of knowledge concerning communication processes and problems. It is to be expected that the handicap of the speech and hearing impaired will be progressively lessened through relevant biological, psychological and acoustical research. The present report directs our attention to the areas of such research urgently in need of attention at the present time. Stemming, as it does, from a planned program of coordinated problem-solving colloquia of many of the acknowledged leaders in speech pathology and audiology, the report represents objectively and comprehensively the current research thinking in the field.

Too much credit for the success of the study of which this report is the outgrowth cannot be accorded its supporters. To Miss Mary Switzer, Director of the Office of Vocational Rehabilitation, and her staff, particularly the late Donald H. Dabelstein, Russell Dean, James Garrett, Gilbert Barnhart, and Miss Cecile Hillyer, and to Robert E. Stewart, D.D.S., Director, Prosthetics and Sensory Aids Service, Veterans Administration, are extended the appreciation of the American Speech and Hearing Association Committee on Research. In this expression of appreciation the Committee speaks for the Executive Council, officers, and members of the American Speech and Hearing Association, mindful of the benefits gained for the profession represented by the Association, and for the millions of children and adults served by it, from the enlightened cooperation and support of the Office of Vocational Rehabilitation and the Veterans Administration that has made possible the work of the Committee and this report of its findings and deliberations.

M. D. Steer, Chairman
Committee on Research
American Speech and Hearing Association

Research Needs in Speech Pathology and Audiology

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Introduction

THEODORE D. HANLEY

The emergence of speech pathology and audiology from the somewhat incidental part-time efforts of persons representing a wide variety of educational and clinical backgrounds to full and independent professional status is a comparatively recent development. Indeed, only within the last half-century has it been possible for a person to confine his scientific training and professional activity to remedial work with disorders of communication.

Though instances of impaired speech and hearing are to be noted early in the recorded history of Western civilization, descriptions of systematic remedial measures were slow in appearing. Professional concentration in this area of rehabilitation became possible only within the period spanned by the memory of persons living today.

Except for surgical and prosthetic intervention in cases of cleft lip and palate, in which speech habilitation was not the prime objective, the earliest remedial services for the communicatively handicapped were provided for persons with impaired hearing. An attempt to teach a deaf person to speak was described as early as the seventh

century (p. 391).¹ Developing slowly at first, then with increasing acceleration, general education for the deaf became widespread in Europe by the middle of the eighteenth century (p. 392). Early in the nineteenth century education of the deaf, including speech training, spanned the Atlantic, beginning in the United States most notably with the work of Gallaudet in Connecticut, which was followed soon after by the establishment of state schools for the deaf in New York, Pennsylvania and Kentucky (p. 397).

It was in this same period, the first half of the nineteenth century, that a speech disorder per se—stuttering—came in for concentrated professional and quasi-professional attention in this country. Speech drills, surgery and mechanical devices were variously employed in remedial efforts (p. 398). Despite this interest in stuttering, speech correction continued to lag behind the education of the deaf in the mid- and late nineteenth century (p. 406). In 1875 Alexander Graham Bell offered the first university class in speech correction techniques at Boston University. His instruction was no doubt di-

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¹Page numbers refer to references in Wallace, K. R., (Ed.), *History of Speech Education in America*. New York: Appleton-Century-Crofts, 1954.

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rected primarily to teachers of the deaf (p. 402).

Almost a decade of the present century had passed before speech correction was formally recognized, in 1908, as a function of public school education in the nation's largest public school system, that of New York City (p. 411). This beginning was followed during the next eight years by the establishment of public school speech correction programs in Chicago, Boston, Detroit, San Francisco, Grand Rapids, Michigan, and eight cities in Wisconsin (p. 411). The next and perhaps most significant step in the development of the profession came with the inauguration of university speech clinics and formal course sequences in speech pathology. Various located in psychology and speech departments as well as medical schools within the university structure, such programs before World War I set the pattern for teacher training and research centers (p. 412).

The general outlines of the profession having been defined and relevant training curricula having been devised, and trained persons having demonstrated that remedial services in speech and hearing were feasible, more and more communities recognized their needs for these services. More and more positions were created, and increasing numbers of persons undertook the training necessary to qualify for such positions. The need for advanced training came to be recognized, and research in the field of impaired speech and hearing was approved in graduate schools for such departments as those of psychology, education, and speech. A trickle of scientific articles began to appear in scholarly journals and research

reports were presented particularly at regional and national conventions of psychologists and teachers of speech.

By 1925 the profession had achieved sufficient growth and independence to warrant serious consideration of organization on the national level. A resolution favoring such organization was approved by a small group at the time of, though not in official relation to, the 1925 convention of the National Association of Teachers of Speech (now the Speech Association of America). A year later the resolution was implemented; the American Academy of Speech Correction was formed. In 1927, following some reorganization, the group was reconstituted as the American Academy for the Study of Speech Disorders. Twice since there have been changes in name: to the American Speech Correction Association in 1934 and to the present American Speech and Hearing Association in 1947. Today the American Speech and Hearing Association has more than 5,000 members and is growing at a relatively rapid rate.

Since its inception the Association, in addition to providing outlets for reports of the scientific and scholarly work of its members, has put forth major efforts toward the establishment of minimum qualifications for clinical workers in speech and hearing. Basic curricula, including recommended hours of observation, supervised practice, and professional experience, have been defined and have come to be generally accepted by educational and professional bodies. At the present time more than one hundred colleges and universities award the baccalaureate degree to students majoring in speech pathology

and audiology, and over fifty award advanced degrees in the field.

For almost a quarter-century the Association has been publishing the research and clinical reports of its members in the *Journal of Speech and Hearing Disorders* (originally the *Journal of Speech Disorders* and renamed in 1948 in recognition of the breadth of interest of the membership). In 1958 a second journal, the *Journal of Speech and Hearing Research*, was established. Monograph supplements of these two journals are also published by the Association. In 1959 the Association added two more periodicals, *Trends*, an employment bulletin, and *Asha*, a professional magazine, to its list of publications. There is a sufficient reserve of articles awaiting publication in the journals and the monograph supplements to make for a considerable time lag in publication. Moreover, articles written by speech pathologists and audiologists are also published in a wide range of other journals, including those published by the American Medical Association, the American Psychological Association, the Acoustical Society of America, the Speech Association of America, the American Hearing Society, and many other professional and scholarly organizations.

As has been indicated, the profession of speech pathology and audiology was born, grew and achieved definitive status as the need for certain specialized skills became generally recognized. A body of knowledge accrued as clinical techniques were tested and research interests were pursued. Such growth and development are normal, but in the present case the time span has been very short, in comparison with that of

various other professions. The need for personnel has been so great, and frequently the immediate need for techniques to deal with research and clinical problems has been so pressing, that there has been little opportunity for taking stock, for assessing the strengths and weaknesses of the profession as a whole and of persons trained in the profession. Awareness of the gaps between what is known and what is believed and practiced has found expression in numerous convention papers and countless discussions among members of the profession. And though belief and practice lag behind knowledge, graduate dissertations and critical reviews almost invariably reveal that much more light needs to be thrown upon every problem of clinical and research interest in the field. So large is the area of uncertainty, however, that it has not been feasible for any single individual to take stock of the field comprehensively. The need for stock-taking, meanwhile, to the end that research efforts may be directed more effectively toward the more urgent problems, is clear. The means to meet the need have not been at hand.

Perhaps the biggest obstacle in the path lay, until recently, in the decentralization of the Association. The training institutions and places of employment of the members are independent academic and clinical centers. Until 1958 the Association became centralized only once a year, at the time of the national convention. It was not clear how efforts might be bent to achieve the desired ends. With the establishment of a national office and the appointment of a professional executive secretary, in January, 1958, it became

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possible for direction to be given to projects requiring collective action for the general good.

The present report represents such collective action, applied to a problem considered paramount by many leading speech pathologists and audiologists: the determination of the areas within the profession most urgently in need of evaluation and research. First proposed by Miss Mary E. Switzer, Director of the United States Office of Vocational Rehabilitation, and implemented under the leadership of the 1958 President of the American Speech and Hearing Association, the present Editor of the Association, who is a member of the National Advisory Council on Vocational Rehabilitation, and the Executive Secretary of the organization, the study was undertaken. With the moral and financial support of the Office of Vocational Rehabilitation and the Veterans Administration, in June, 1958, the responsible officials of the American Speech and Hearing Association appointed a Research Committee to coordinate this venture.

In a meeting of the Committee in July, 1958, a plan of procedure was agreed upon and a Research Associate was appointed to assist the committee in the execution of the plan. It was agreed that the problem should be investigated in three ways, by means of (a) a survey of published abstracts designed to indicate the distribution of past research efforts, (b) a questionnaire study of the areas or problems about which practicing clinicians express most concern, and (c) a conference of specialists, meeting in problem-area committees, to review the research needs within their respective areas.

The plan having been accepted, the committee took these further steps:

- A. It directed the research associate to begin the survey of published abstracts.
- B. It directed him to prepare a questionnaire for committee review and eventual distribution.
- C. It agreed upon the general composition of the conference of specialists and established committees to study the following subject and problem-areas:
 - I. Articulation problems.
 - II. Problems of voice and speech problems associated with laryngectomy.
 - III. The problem of stuttering and problems of rate and fluency.
 - IV. Speech and voice problems associated with cleft palate and other peripheral structural deviations.
 - V. Problems of aphasia.
 - VI. Speech and voice problems associated with cerebral palsy.
 - VII. Speech and language problems associated with mental retardation and delayed speech and language development.
 - VIII. Hearing problems in children.
 - IX. Hearing problems in adults.
 - X. Hearing problems in large groups.
 - XI. Problems of basic research in speech and hearing.
 - XII. Problems of administration in speech pathology and audiology.

- D. It formulated an outline designed to structure the discussions of the first ten committees, the discussions of the remaining two being regarded as less amenable to formal structuring. (The outline is presented in Appendix A.)
- E. It directed the research associate to carry on the work assigned specifically to him with reference to the designated problem areas and in coordination with the twelve committees.

In the body of the report which follows, the specific procedures employed are described and the results obtained through each of the three approaches to the central problem are presented.

Survey of Published Research Abstracts

Several decisions were required and made at the outset of the phase of the investigation involving a survey of published research abstracts in the field of speech pathology and audiology. These were the following:

- A. To limit the survey to a quantitative view, rather than to attempt annotation and critical evaluation.
- B. To utilize problem-areas I-X, as designated in the Introduction, as categories into which references might be placed in this quantitative view.
- C. To substitute 'Speech Development' and 'Other' for problem-areas XI and XII, which were considered inappropriate categories for this phase.²
- D. To establish 1936 as the point of entry into abstract sources, with 1934 as the base year from which material should be drawn. These years marked the general beginning of a period of considerable growth in professional productivity, and represented the time of the establishment of the *Journal of Speech Disorders* (1936).
- E. To make quantitative comparisons over three-year periods (e.g., 1934-1936) as well as over the entire 24-year span, 1934-1957 inclusive.
- F. To limit entries, so far as possible, to titles of abstracts that clearly reflected a research approach to problems. This had the effect of excluding certain noteworthy contributions to the field but it was considered necessary in view of the basic objectives of the project.
- G. To exclude entries which appeared to be republications of material previously published, such as research reports first submitted to military or other contracting authorities and then published in scholarly journals.
- H. To exclude items taken from such sources as *Dissertation Abstracts*, on the grounds that dissertations constituting significant research reports probably would be published in professional journals.

²'Other' included articles which could not be placed in categories I-X or in that of 'Speech Development.' For example, the fol-

lowing reference was classified under 'Other' because of its apparent relevance to many different disorders and problems: McAllister, Anne H., Disordered speech and frustration. *New Era in Home and School*. 22, 1941, 252-255.

- I. In view of the practical goals of the project, to include only such titles as appeared to have clinical relevance to the speech pathologist and audiologist, excluding, for example, purely psychophysical research reports. While the eventual relevance to the clinician of any piece of research involving speech or hearing can be argued convincingly, it was believed that the relative concentration of research interests in certain areas might contribute to a misleading overview for the clinically oriented reader. A similar rationale was used in the omission of abstracts which dealt, to the exclusion of speech or hearing functions, with physiological, surgical, neurological, psychological, psychiatric, orthodontic, prosthodontic, and other aspects of communication disorders.

Two principal sources were used in the collection of these data: *Child Development Abstracts*, 1936 to 1958, and *Psychological Abstracts*, 1936 to 1958. *Index Medicus*, 1936 to 1947, and *Excerpta Medica*, 1948 to 1957, also were consulted. Appropriate subject-headings within each source were examined and a bibliography of all pertinent titles was prepared. Duplications were omitted.³

³The bibliography thus collected, assembled alphabetically by author within the three-year periods previously mentioned, currently exists as a card-file in the national office of the American Speech and Hearing Association where, upon application, it may be consulted. It will eventually be incorporated in a comprehensive bibliography being compiled by the National Index of Deafness, Speech, and Hearing, referred to on p. 9.

The quantification of the collected information appears in Table 1 and Figure 1. It will be noted that the values entered in Table 1 are the actual numbers of articles abstracted within the various categories over the three-year and 24-year time intervals (except that in some cases articles belonged appropriately in more than one category and so were double-listed). It was believed that the data might be more meaningfully presented graphically by converting the raw count values to percentages, and this was done accordingly in Figure 1.

The limitations inherent in the approach taken to this historical survey have been mentioned. One limitation that deserves special emphasis arises from the fact that the abstracting services select for their publications those articles believed to be of greatest interest to their respective readers. If other sources had been consulted, it is quite conceivable that concentrations of research interest at some variance with those indicated here might have been revealed.

Reference to Table 1 and Figure 1 discloses two principal concentrations of research interest, not only over the entire 24-year span, but also within each of the three-year periods. The problem of stuttering and hearing problems in adults comprise approximately two-fifths of the abstracts listed in the bibliography. Fifty-eight per cent of the total of 1,312 entries are accounted for by the stuttering problem and the three categories into which hearing problems are divided. In marked contrast, the disorders of speech associated with cerebral palsy and cleft palate were represented by limited numbers

TABLE 1. Abstracts of publications in speech pathology and audiology, 1934-1957, by categories.*

Category	1934- 1936	1937- 1939	1940- 1942	1943- 1945	1946- 1948	1949- 1951	1952- 1954	1955- 1957	Total
I. Articulation	6	23	3	5	15	11	23	14	100
II. Voice	4	7	6	3	4	9	4	4	41
III. Stuttering	25	76	39	24	23	24	23	30	269
IV. Cleft Palate	3	6	3	3	9	5	8	5	42
V. Aphasia	6	5	0	3	3	16	11	18	62
VI. Cerebral Palsy	0	4	0	5	5	4	6	20	44
VII. Mental Retardation and Delayed Speech	3	3	9	2	5	9	9	11	51
VIII. Hearing, Child	19	23	19	13	22	17	26	18	157
IX. Hearing, Adult	21	32	20	18	33	40	48	36	248
X. Hearing, Group	3	6	19	26	9	6	13	16	98
Speech Development	9	33	17	8	15	11	21	12	126
Other	17	14	9	4	9	5	8	8	74
Total	116	232	144	114	157	157	200	192	1312

*As listed in *Child Development Abstracts*, *Psychological Abstracts*, *Index Medicus*, and *Excerpta Medica*.

of research abstracts, each amounting to three per cent of the total number.⁴

Represented with considerably greater frequency than the organic speech disorders were articulation problems (eight per cent) and speech development (10 per cent). In each three-year span there were appreciable numbers of research abstracts which were not readily classifiable, eventually amounting to six per cent of the total, and these were grouped in the category designated as 'Other.'

The only apparently significant trend revealed by the data is the rather steady increase in research reports in the hearing area. Otherwise, except for occasional bursts of activity within individual categories (e.g., hearing problems in large groups, category X, dur-

ing the war years, 1940-1945), the relative standings of the problem areas, in terms of the number of research articles abstracted, were rather remarkably consistent. The indicated concentrations of research interest are to be evaluated with due regard for the known sources of possible error and the limitations of the data.

Conclusions. As reviewed by the Research Committee, this section of the report demonstrates a significant need for a wide-scale bibliographical effort. It is particularly important, therefore, that as this report is being prepared for publication significant progress along the lines of needed advance indicated by the present study is already being made in the development of a comprehensive and continuing indexing and abstracting service to be jointly sponsored by the American Speech and Hearing Association and Gallaudet College. Essential support will be provided, through the American Speech and Hearing Association, by the United

⁴It is to be recalled that clinical reports and expository articles were omitted from the bibliography. Many such in the cleft palate and cerebral palsy categories, and particularly in those of voice problems, aphasia and mental retardation as well, were encountered in examining the sources.

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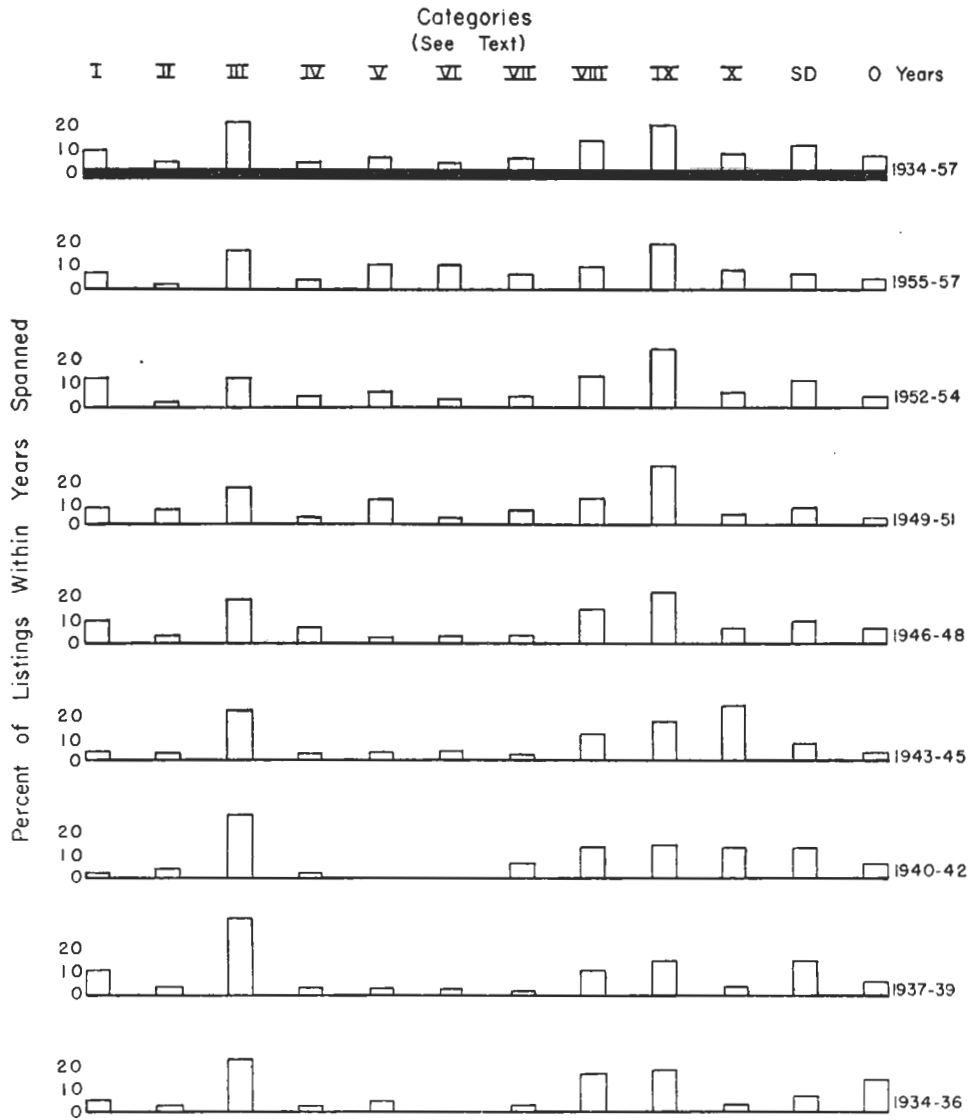


FIGURE 1. Abstracts in speech pathology and audiology, 1934-1957, by categories (see text).

States Office of Vocational Rehabilitation to supplement funds made available by Gallaudet College. The service will be known as the National Index of Deafness, Speech, and Hearing. The National Index will be of inestimable value not only to members of this profession but to others as well. It will provide research workers with better bases upon which to construct hypotheses and design investigations, and it will provide better representation of the work of speech pathologists and audiologists to other professions. Moreover, it will make possible more effective teaching and a more solid grounding for clinical principles and procedures.⁵

Questionnaire Survey

In order to provide a source of material for the proposed conference, reflective of current thinking about research needs in speech pathology and audiology, a questionnaire survey was conducted. In accordance with a directive from the Research Committee, the Research Associate prepared a questionnaire in rough draft and circulated it

among the committee members. The form, with suggested amendments, was returned to him and, revised, was sent out to a sample of 400 members of the American Speech and Hearing Association who had received clinical certification by meeting the formal requirements of the Association.

This inquiry form consisted of a brief subject identification section followed by a block of 44 cells in which respondents were asked to report problems they believed to be urgently in need of resolution, and to be researchable. The rows in this block of answer cells were labelled with the names of problem-areas I-X, listed earlier, and the four columns were labelled 'Description-Diagnosis,' 'Therapy,' 'Training,' and 'Other.' One final row was provided in which respondents might cite problems which they believed did not fall within the categories listed. The respondent was to examine the coordinate labels for any given cell (e.g., 'Articulation Problems,' 'Description-Diagnosis') and then attempt to state, as succinctly as possible, any problem falling within that cell which he believed to be significant and researchable. Most of the persons who returned the questionnaires correctly followed the directions for filling them out.

As indicated earlier, no sampling controls were used in distributing the questionnaire; a copy was sent to 400 Association members who had clinical certification. The return rate was 43.5 per cent, 174 completed forms being returned to the Research Associate. Of this total, 60 were postmarked in the central states, 47 in the eastern states, 34 in the western states, 21 in the south-

⁵The National Index of Deafness, Speech, and Hearing is an outgrowth of a project originated by Gallaudet College. It was developed into its present form through a series of conferences in which Gallaudet College was represented by President Leonard M. Elstad, Dean George E. Detmold, Dr. Stephen P. Quigley, and Dr. Powrie V. Doctor, and the American Speech and Hearing Association by the Executive Secretary, the Editor of the Association, and the Chairman of the Committee on Research. Dr. William G. Hardy and Dr. Raymond Carhart of ASHA also participated in related discussions. Planning and inauguration of operational procedures basic to development of the National Index were accomplished by Dr. Doctor and Dr. Quigley and their associates at Gallaudet College.

TABLE 2. Description of the sample of respondents from whom questionnaire data were obtained.

Classification	Number of Respondents						Total
	1-3	4-6	7-9	10-14	15-19	Above	
Paid Professional Experience: years	14	42	37	37	13	25	168
Level of Clinical Certification	Basic Speech	Advanced Speech	Basic Hearing	Advanced Hearing	Dual		Total
	87	56	4	11	8		166
Working Environment	Public School	College Clinic	Hospital	Treatment Center	Private Practice	Other	Total
	58	60	19	18	8	5	168
Type of Work	Remedial Clinician	Teacher	Diagnostician	Supervisor	Director	Other	Total
	58	10	4	30	57	1	168

ern states, eight in Hawaii, foreign countries, of with the postmark eligible, and four in New England. Table 2 presents a summary of the information about the respondents gleaned from the identification section of the questionnaire.⁶

From Table 2 it is possible to draw a picture of the 'typical' respondent to the questionnaire. He had had 8.25 years of paid professional experience (median), had the Basic Certificate in Speech (mode), worked in a college or university clinic (mode), and considered himself as being engaged in clinical activity rather than teaching, research, or administration. Actually this description represents the 'typical' respondent only in a limited, statistical sense, for there were almost equal numbers of public school and college personnel represented in the sample, with hospital and treatment center personnel

being well represented also. Moreover, there were almost identical numbers of respondents who occupied positions as clinicians and as clinic directors. It is at least safe to say that the persons in the sample drawn had a satisfactory aggregate experiential background upon which to base replies. Fifty per cent of the respondents had had more than eight years of paid professional experience and almost 15 per cent of them had had 20 or more years of experience.

Respondents, it will be recalled, had 44 cells in which to list problems requiring research efforts. The modal number of cells used was five and the median was 7.3. Analysis of the specific responses written into the 44 cells of the questionnaire was a difficult task. Many of the respondents, expressing appreciation of this opportunity, wrote volubly about professional issues but were unable to demonstrate the researchable nature of their problems. The following is an example that is roughly indicative of the character and flavor of a large proportion of the responses:

⁶Discrepancies between these data and the total figure, 174, given in the text reflect the failure of certain respondents to provide all information requested.

I. Articulation problems

A. *Description-Diagnosis:*

Etiology must be explored more thoroughly. Distinction between language retardation and disordered sound elements must be more clearly established.

B. *Therapy:*

Research should establish the point at which therapy should be stopped. We all vary so in our conception of 'corrected.'

C. *Training of Clinicians:*

A controlled investigation comparing the relative merits of different methods of supervision: (1) by example (direct), (2) by theory and criticism (indirect).

D. *Other:*

How valid is the clinician's judgment as to the severity of the problem and the extent to which the deviant speech patterns are corrected? Can it be shown that a marked deviation will have a more adverse effect on the listener than a moderate one.

Conclusions. The questionnaire responses support the position that there are an impressive number of important problems in speech pathology and audiology that require resolution. Many of these problems are seen to be philosophical or administrative in nature and hence difficult to attack by current research methods. Others, however, particularly many involving needed evaluation of commonly employed procedures of diagnosis and remedial training, can be more or less effectively attacked by techniques and instrumentation available today.

It is apparent that some regions of doubt, uncertainty, and almost complete absence of knowledge are to be found in each of the 10 problem-areas selected for scrutiny by the Research Committee. Although some of the questions raised reflect failure by respondents to acquire information that is available and dependable, nonetheless across each problem-area the need for research in etiology, diagnosis (particularly differential diagnosis), remedial procedures, and professional training is expressed by responsible, certified clinicians.

By expressing their doubts and stating their questions, the respondents provided material which several of the problem-area subcommittees found to be most useful in preconference correspondence as well as in the conference itself.

Conference on Research Needs

At the initial meeting of the Research Committee of the American Speech and Hearing Association, as reported in the first section of this report, the decision was made to submit the basic problem of this investigation to a conference of leaders in the profession (limited by financial considerations to 50 members). The conference was structured to provide for 12 problem-area subcommittees and a comprehensive topic outline was drafted to guide the discussions of 10 of these subcommittees. Two of them, the Subcommittee on Problems of Basic Research in Speech and Hearing and the Subcommittee on Problems of Administration in Speech Pathology and Audiology, were not to be bound by the outline. Certain key personnel were nominated to serve on

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the subcommittees but final decisions as to individual assignments were reserved and delegated to Research Committee members who accepted broad supervisory responsibilities for particular problem-areas. Finally, the decision was reached to hold the conference on November 20, 1958, the day following the annual national convention of the American Speech and Hearing Association in New York City.

In the weeks following the Research Committee meeting, members charged with staffing the problem-area subcommittees submitted their recommendations to the Chairman, who in turn requested the Association President to make the appointments. Acceptance of subcommittee appointment was made to the Research Associate, who provided the appointees with basic information concerning the conference and kept problem-area chairmen apprised of the development of their subcommittees. More than 80 per cent of the persons named to subcommittees ac-

cepted appointments; illness and previous commitments to two conflicting conferences were responsible for nearly all of the rejections. Fortunately there was no difficulty in filling vacancies with persons comparable in competence and professional stature to those who could not serve.

When all the questionnaire data described in the previous section had been received by the Research Associate, he forwarded copies of the relevant information to the problem-area chairmen. In addition, Subcommittee XII, concerned with problems of administration, conducted three separate questionnaire surveys in preparation for the conference.

The Association membership at large was informed by mail that the conference was to be held and all members were invited to attend. Approximately 400 persons were present when the session was called to order by the Research Committee Chairman. The conference agenda was as follows:

Morning Sessions

- 8:30 - 9:30 . . Introduction: Research Committee Chairman
Goals of the Conference
Explanation of Conference Procedure
- 9:30 - 11:30 . . Work Group Meetings, Discussion of Problems
- 11:30 - 12:00 . . Open Discussion for Visitors in Work Group Meetings
- 12:00 - 1:30 . . Luncheon

Afternoon Sessions

- 1:30 - 3:30 . . Work Group Meetings, Discussion and Preparation of Reports
 - 3:30 - 5:00 . . Work Group Reports (five minutes each)
Conference Summary: Research Committee Chairman
-
-

Following the welcome by the Chairman, introduction of distinguished guests, and explanation of the goals and procedure of the conference, the problem-area subcommittees adjourned to assigned rooms. There, using the prepared outline to structure the discussions, they attempted to reach common ground and general agreement as to the loci of the most critical research needs in the respective segments of speech pathology and audiology with which they were concerned. Toward the end of the morning sessions, visitors in the area subcommittee meetings were invited to voice questions or address themselves to the points at issue.

The early afternoon sessions were a continuation of the morning sessions, with subcommittees engaged in drafting summary reports. At the final session these reports were presented and

concluding remarks were made by the Research Committee Chairman, who expressed appreciation for the support given this effort by the federal agencies and gratification that the efforts of the problem-area subcommittees had been of high quality. He urged the subcommittee chairmen to submit written reports of their discussions within one month. The conference was then adjourned.

Within the prescribed period the written reports were submitted to the Research Associate; they were reviewed by the Chairman and members of the Research Committee, and prepared for publication by the Editor of the Association. The conclusions reached by the specialists who participated in this review of the research needs and goals in audiology and speech pathology are presented in the following pages.

I. Report of Subcommittee on Articulation Problems

JESSE VILLARREAL

RICHARD SCHIEFELBUSCH

WILBERT PRONOVOST

ROBERT MILISEN, Chairman

Research in the area of articulation problems not only must be related to other dimensions of language which may be affected, but also must build upon normative data involving the development of articulation from birth through adulthood. These data and the conditions from which they arise must provide the starting point for investigation of deviant behavior. Unfortunately, information on this subject is relatively limited and much of what is available is not highly reliable.

The conventional phonemic concept used by most research workers and clinicians in defining the articulation disorder was questioned by the committee. Creation of a more satisfactory concept is dependent, in part, upon the availability of more information about the development of articulation. Cognizant of the limitations in this area of study, the committee accepted the phonemic concept as a guide for dis-

cussion and defined articulation in the following manner: Articulation refers to the audible and visible phonetic aspects of the oral communication process.

Research Needs

Definition and Description. Well designed experimentation is dependent upon universally acceptable operational definitions of terms. The committee did not feel that adequate definitions were available, and therefore recognized:

- a. The need to develop a more satisfactory definition of 'articulation.'
- b. The need to develop a more satisfactory definition of 'articulation disorder.'

Developmental Conditions. It is generally recognized that the process of learning to articulate speech sounds, whether correctly or incorrectly, has its origin in the early developmental period from birth through the eighth to tenth year of life. Studies of articulation disorders cannot be designed, nor can their results be interpreted effectively, until the conditions affecting

Jesse Villarreal (Ph.D., Northwestern, 1947), University of Texas; Richard Schiefelbusch (Ph.D., Northwestern, 1951), University of Kansas; Wilbert Pronovost (Ph.D., Iowa, 1939), Boston University; Robert Milisen (Ph.D., Iowa, 1937), Indiana University.

the development of articulation, as one segment of multidimensional language behavior, are understood and described. In order to facilitate the achievement of this goal, the committee recommended extended investigation of the following aspects of the problem:

- a. The development of articulation ability in young children.
- b. The manner in which a child makes a transition from vocal play to communicative speech. By what process does he reject certain sounds and retain others for language usage?
- c. Articulation development in relation to other linguistic factors such as vocabulary, sentence structure, sentence length, etc.
- d. Articulation development in relation to social, psychological, physical, and intellectual factors.
- e. The relationship of articulation development to such aspects of audition as auditory memory, auditory discrimination, and auditory feedback.
- f. The effect of specified 'models' on articulation development.
- g. The role of the listener in articulation development.
- h. The similarities and differences in the learning of articulation, during the developmental period, of children learning one language and those learning two or more languages.
- i. The similarities and differences in the process of learning to articulate correctly of adults learning a second language as compared with adults learning to substitute correct sounds for those they

have been misarticulating in their native language.

- j. Factors which promote as compared with factors which impede the normal development of speech sound articulation.

Methods of Measurement. The committee recognized that some progress has been made in the refinement of methods of measurement in the last few years, but agreed that available procedures need further evaluation and that new ones must be developed. Some recommendations for study were:

- a. Determination of the extent to which present classification of articulation errors into substitutions, omissions, and distortions, represents all varieties of misarticulation.
- b. Development of more adequate and usable scales of degree of severity of impaired articulation. Basic to this objective is a study of the extent to which different types of misarticulation interfere with communication.
- c. Determination of listener validity and reliability in evaluating articulation ability and articulation errors.
- d. Development of standardized tests to measure in general and in detail the various aspects of normal and impaired articulation.

Diagnosis and Remedial Methods. It was agreed that diagnostic and remedial clinical problems are a fruitful area for research. It was further agreed that research in this area should not be limited by strict rules of laboratory experimentation but should, as required, proceed along descriptive lines. The clues gained

from such research should lead to more careful investigation and measurement under experimental conditions. Some suggested areas for study were:

- a. The relationship between diagnostic procedures and the remedial process.
- b. The effect of auditory stimuli on speech sound articulation.
- c. The effect of visual stimuli on speech sound articulation.
- d. The effect of kinesthetic stimuli on speech sound articulation.
- e. The comparative effectiveness of group and individual instruction.
- f. The role of the clinician in the remedial situation.
- g. The effect of the personality of the clinician in remedial work.
- h. The conditions under which remedial training is provided in schools, rehabilitation centers, hospitals, community clinics, and other settings.
- i. The effects of psychotherapeutic techniques in the remedial training of children and adults with articulation problems.
- j. The effects of different types of speech situations, such as those of creative dramatics or discussion, which might be used in remedial work.
- k. Evaluation of the conditions within the individual, the remedial situation, and the nature of the speech sounds themselves which facilitate acquisition of normal articulation.
- l. The amount of transfer of training from one learning experience to another.
- m. The comparative effects of teach-

ing the speech sounds in various specified orders.

- n. The effectiveness of administration of remedial programs as affected by such factors as number of sessions per week, duration of sessions, size of groups, and case load.
- o. The effectiveness of the clinician as affected by the proportion of time spent in diagnosis, remedial instruction, counseling of parents, and other specified activities.

General Research Needs. The group made the following general recommendations which were not specific to any one aspect of the problem of articulation:

- a. It is desirable to have more descriptive studies not involving rigid experimental or statistical procedures. Much more descriptive information is needed as a basis for designing controlled experiments.
- b. It is desirable to explore the possibilities of developing new research methods for studying articulation problems and the effects of specified remedial procedures used in dealing with them.
- c. Longitudinal studies of the speech sound articulation of individuals and groups of speakers over an extended period of time are to be encouraged.
- d. Advantages would be gained from a research institute which could function to summarize existing information, advise on research design and technique, and coordinate research activity throughout the field.

- e. There is a need to train more students in research principles and methods and to encourage those so trained to make research in speech pathology a career.

Summary

Significant progress in research in the area of articulation problems is dependent on the further development of the investigative techniques and measuring instruments needed to analyze the articulation process in relation to other

aspects of language behavior. With increasingly effective research tools and the more adequate information which they alone can make possible the study of remedial procedures can be pursued more fruitfully.

In order for research to be carried out effectively, it must be developed beyond the limited scope within which graduate theses are carried out. Long-term and large-scale studies by experienced full-time research personnel are essential.

II. Report of Subcommittee on Problems of Voice and Speech Problems Associated with Laryngectomy

VIRGIL ANDERSON

JOHN IRWIN

WILLIAM F. WALDROP

PAUL MOORE, Chairman

Voice Problems

Description and Definition. The Disorder. Voice problems can be differentiated both etiologically and clinically from the other major types of disorders in the field of speech pathology. However, the category of voice problems encompasses a complex group of disorders, which cannot be defined precisely or classified wholly systematically at this time. Furthermore, there is a confusing and persistent inconsistency in the application of descriptive terms to voice deviations. It is the committee's belief that this lack of precise description and definition of voice problems reflects, in part at least, a sparseness of fundamental information concerning (a) the normal production of voice,

(b) etiological factors in the development of abnormal voice, (c) acoustical and physiological characteristics of abnormal voice, and (d) social and economic consequences of abnormal voice. The lack of this information interferes with the establishment of a universally accepted classification of voice disorders, impedes the coordination of research findings from various academic centers and disciplines, and limits the development and application of rehabilitative procedures. The profession of speech pathology has recognized the need for improved description, definition, and classification. To this end, glossaries and dictionaries have been compiled by individuals, and several analytical studies involving the classification of vocal problems have been conducted. The committee believes this work on terminology has been helpful, but, as noted above, the several approaches lack the logical consistency and objective foundation necessary for universal adoption. The need for stand-

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ard terminology and definition in the study of problems of voice is clearly evident both within and without the field of speech pathology.

The importance of a universal nomenclature, and all the term implies, was dramatically emphasized in the committee's deliberation by reports that various medical librarians, governmental agencies, and professional groups confronted with the requirements of description and definition of voice disorders have established their own systems. In these arbitrary classifications, there are obvious inconsistencies that intensify the ambiguities of an already highly varied terminology. The committee believes our discipline must accept the responsibility for developing a satisfactory classification of voice disorders. We recognize the size and urgency of the task, endorse the premise that the problem can be solved, and believe a satisfactory solution can be revealed by fundamental research.

Program for Obtaining Definite Information. The development of universally accepted definitions and classifications of voice disorders can be accomplished by a combination of cross-sectional and longitudinal research programs. The committee recommends that a cross-sectional, or short-term, research project be undertaken in recognition of the urgency of establishing acceptable terms and definitions at the earliest possible moment, and that a long-range program, encompassing relevant basic research, be instituted also in order to further not only the improvement of description and definition, but also the continuous development of diagnostic and remedial principles and methods.

There are many reasons for variability in presently held concepts of voice disorders; these reasons include the complexity of the factors affecting voice production, the limited samples of voice on which evaluations have been based, and semantic difficulties in the verbal description of voice. The problems arising from these circumstances can be approached through a sufficiently comprehensive cross-sectional investigation of a population sample large enough to include all types and degrees of voice variation. Only such an investigation can provide the body of data needed for an adequate description, classification, and evaluation of vocal problems.

Specifically, it is proposed that a nationwide research project be established in which carefully recorded samples of voice problems of all types would be collected from various clinical speech centers throughout the country and placed in a national repository. These voice samples, and supplementary clinical and case history information, would then be analyzed in all appropriate ways to discover their distinguishing characteristics. Subsequently, the unique features of each type and combination of types, including variations in severity, would be definitively described and catalogued. Duplicate recordings of the representative voice disorders, together with appropriate analyses of them, would then be made available as auditory and descriptive standards, or guides, to professional training instructors and speech pathologists concerned with voice problems. The cross-sectional project should be planned, directed, and conducted by a number of qualified individuals within the profes-

sion. It is assumed that several coordinated studies dealing with various aspects of the problem would be carried on simultaneously.

The long-term, or longitudinal, research program, previously mentioned, is closely related to the cross-sectional project, since both deal with the same types of material, but the purpose of the long-range program is to investigate the basic developmental sequences of voice problems. No attempt was made in the committee discussions to exhaust the subject areas that might be included in a study of basic causes, but the following questions, raised in the discussion, indicate the scope of the problem:

1. What are the characteristics of normal voice?
 - a. What are the acoustic factors that distinguish the infantile voice, the voices of the male and female adolescent, the voices of the adult male and female, and the voices of the aged?
 - b. What are the anatomical and physiological correlates of the acoustic differences listed under 1-a?
 - c. What are the acoustical and physiological determinants of good and poor speaking voices, and of good and poor singing voices?
2. What are the effects of voice training on the acoustical, anatomical, psychological, and physiological factors related to voice?
 - a. What specific acoustical changes do normal voices undergo during training?
 - b. Are there observable alterations in the physiology of the larynx, adjustments of the pharynx, or other structural or functional modifications as a result of vocal training?
 - c. To what extent do the structures of the larynx, pharynx, nose, and mouth determine the potential excellence of the voice?
3. What genetic factors are present in superior and inferior voices?
 - a. Are there hereditary factors that influence the basic pitch, quality, or loudness of the voice?
 - b. Is there a relation between designated aspects of voice and familial anatomical characteristics of the larynx?
4. What is the influence of environment on vocal impairments?
 - a. Are there demonstrable relationships between vocal impairments and such factors as size of the family, living conditions in the home, occupation, nationality, race, and religion, or such factors as urban and rural environments, altitude, humidity, or temperature?
5. What are the social consequences of voice problems?
 - a. How deviant must a voice be to be considered disordered or impaired?
 - b. How detrimental socially and economically are deviant pitch levels?
 - c. What are the effects of quality deviations such as hoarseness and nasality on social and vocational adjustment?

6. What are the relationships between emotional patterns and voice problems?
 - a. Are there distinctive emotional responses associated with designated types of impaired or deviant voice?
 - b. Do specific types of voice problems contribute to emotional disturbance?
7. What sensory and perceptual deficiencies are associated with voice problems?
 - a. Do persons with voice problems have inferior ability in pitch, quality, or loudness discrimination?
 - b. Do individuals with voice problems exhibit difficulty in following rhythms?
 - c. Are certain voice anomalies associated with faulty coordination, impaired kinaesthesia, or deficiencies in visual acuity?
8. What relationships exist between nutritional factors and voice problems?
 - a. Are certain voice problems related to dietary deficiencies?
 - b. Do highly spiced diets contribute to vocal deviations?
 - c. Are specific vitamin deficiencies, or imbalances, associated with voice problems?
 - d. Is hoarseness associated with the use of designated drugs and alcohol?
9. What are the relationships between voice deviations and specified allergies?
 - a. What proportion of persons with designated voice problems have various kinds of allergy, and vice versa?
 - b. How are the physiological effects of allergens related to vocal deviations?
10. What relationships exist between impaired voice and endocrine disturbances?
 - a. What are the vocal consequences of hyper- and hypothyroid imbalance?
 - b. What is the physiology of pitch change accompanying hormonal deviation?
11. What are the relationships between chronic diseases of the upper respiratory tract and voice problems?
 - a. Is sinusitis associated with changes in the resonance characteristics of the voice?
 - b. What are the acoustic variations accompanying chronic rhinitis?
 - c. What are the contributions of enlarged tonsils and adenoids to voice problems?
12. What is the inter-relationship of vocal abuse and impaired voice?
 - a. What forms of vocal use contribute to the formation of nodules, or to the development of contact ulcers?
 - b. Is there a chronic disease or systemic deviation underlying the formation of nodules, or contact ulcers?
 - c. What is the sequence of changes through which vocal abuse produces hoarseness, vocal nodules, and related conditions of clinical significance?
 - d. Is vocal abuse associated with malignancy?

13. What are the relationships between voice production and the structure and physiology of the larynx?
 - a. How is pitch change accomplished normally?
 - b. What is the mechanism of pitch deviation?
 - c. What are the factors responsible for normal variations in vocal quality?
 - d. How are these factors related to excessive nasality, hoarseness, and other deviations of vocal quality?

It is evident from these research suggestions that there is a need for substantial interdisciplinary cooperation. The committee expresses unaminously the desirability of more active cooperation between speech pathologists and other professional workers. Moreover, the committee recognizes the advantage to speech pathology of research in voice designed and conducted by persons with a primary interest in voice disorders.

Rehabilitation Practices. The selection of remedial procedures in the rehabilitation of persons with voice problems is determined partially by such clinical data as those yielded by speech and voice tests, medical examinations, and psychological tests, but much voice retraining is based on general clinical experience, hunch, and supposition. There can be no doubt that additional information is needed in order to further the refinement of diagnostic and remedial procedures for dealing clinically with voice problems. This information can best be obtained from structured research directly related to remedial training and from detailed clinical

observation and reporting. The committee is aware of the difficulties associated with the study of clinical procedures. Investigation must often extend to large samples of the clinical population because of the many variables involved, and even so conclusions must be restricted. Nevertheless, methods of evaluating and measuring the efficiency of voice retraining procedures are available, and rehabilitation centers are to be appropriately urged to apply these methods in their clinical programs.

It is evident that a substantial contribution to clinical voice retraining would result from research involving selected remedial procedures used in systematically varied ways in a number of speech pathology centers throughout the nation. Among the types of clinical procedures to be suggested for study are the following: breathing exercises, training in relaxation, and the practice of certain vocal drills; comparable methods of group and individual instruction and counseling; variations in the frequency and length of instructional periods; surgical treatment for organic conditions, such as nodules, as compared with voice training and combined surgery-voice training approaches; and practice in listening and self-monitoring.

The committee recognizes that the recommended extensive programs of research would require corresponding comprehensive cooperation among members of the profession and with members of other professional groups. The committee recommends accordingly that essential planning be worked out by representative personnel under the auspices of the American Speech and

Hearing Association's national office.

Training and Personnel. Many speech clinicians, particularly those in the public schools, tend to avoid working with voice problems. Apparently these clinicians feel insecure when confronted with such problems, and the extent of their insecurity, and possible related inadequacy, should be investigated.

The committee believes that academic training programs which do not include clinical observation and experience with voice disorders are inadequate for the proper training of speech pathologists. It is to be noted that many voice problems are handled exclusively by physicians, often apparently on the assumption that medical therapy is sufficient, and without benefit of opportunities of referral to qualified speech pathologists. The committee is of the opinion that the need for improved professional training facilities in the area of voice problems is clearly evident. It is hoped that increasing awareness of need will result in the development within training centers of provisions for diagnostic and remedial experience with an adequate range of voice problems.

The committee recommends the establishment of teams of specialists, including otolaryngologists, social case workers, psychologists, audiologists, and speech pathologists, to diagnose voice problems. One of the most important values of such teams is to be seen in their effect on the professional training programs in which they function; they provide students with the enriching and broadening influence of observing, and to some degree perhaps participating in, the interdisciplinary

approach to voice problems in clinical settings.

Speech Problems of the Laryngectomized

Research pertaining to the reestablishment of voice in the laryngectomized was reviewed briefly by the committee within the framework of the general discussion of voice problems. However, the unique character of vocal rehabilitation in the laryngectomized requires a separate section in the present report.

Description and Definition. Aphonia caused by the extirpation of the larynx can be defined and described clearly. However, the composition of the substitute voice that is developed to replace the normal laryngeal sound is only partially understood, and, therefore, must be described and defined incompletely at this time. Research has produced some useful information that is applicable to rehabilitation, but there are many additional problems related to the physiological and acoustical aspects of esophageal voice production that require investigation. In addition, there is a need for research into such psychosocial factors as vocational displacement, educational impairment, and social handicap caused by the removal of the larynx and the development of a vicarious voice. The problems are answerable and deserve serious investigation.

Rehabilitation Practices. Voice training for the laryngectomized seems to be in an authoritarian stage. Teaching methods have necessarily been developed pragmatically by various individuals confronted by the necessity of,

or the personal desire for, providing vocal rehabilitation. It is the opinion of this committee that the several rehabilitation techniques in current use should be evaluated. Research of the type envisioned would necessarily involve a number of training centers. It is suggested that a nationwide program be established that would develop a registry of laryngectomees in which pertinent developmental, vocational, medical, and vocal rehabilitation data would be collected. Appropriate analysis of this information would reveal trends and patterns that could have wide medical and social implications, as well as a directing influence on teacher training and speech rehabilitation.

Training and Personnel. The committee believes that training of personnel for work with the laryngectomized needs to be improved. Apparently, very few academic courses provide sufficient instruction to enable students to conduct well organized vocal reeducative programs for the laryngectomized. Furthermore, the opportunities for practical observation and supervised teaching are limited. This lack of adequate case load is inevitable where there are few or no laryngectomized persons. Therefore, it is recommended that those training centers having access to appropriate case material increase their training opportunities. It is also recommended that speech pathologists acquire adequate instruction and supervision at these centers. The following recommendations concerning the type and amount of training for teachers of the laryngectomized that were recently accepted by the Council of the American Speech and Hearing Association are endorsed by this committee:

A. Any person not a laryngectomee, to be considered qualified to work individually and independently in the speech rehabilitation of the laryngectomee, or to be responsible for a teacher training program and supervision of practical experience of those learning to become teachers of the laryngectomee, should hold status as follows:

1. Advanced clinical certification, in speech, in the American Speech and Hearing Association (ASHA), or
2. Basic clinical certification, in speech, in the ASHA plus evidence of having completed, at least, 80 clock hours of combined theory and practice, in the rehabilitation of the laryngectomee, in a program under the direction and supervision of an individual with advanced clinical certification in speech in the ASHA, and offered by an accredited academic institution.

B. In order to work in the field of speech rehabilitation of the laryngectomee, a laryngectomee who does not hold advanced or basic ASHA certification, as described under A, should have acquired automatic, fluent speech and have been successfully rehabilitated; he should be a person of good integrity and satisfactory personality, and have acquired an adequate education and social ethics. In addition, he should qualify under one of the following categories:

1. For such a person to work individually and independently in the rehabilitation of laryngectomees, he should have acquired at least

80 clock hours of combined theory and practice in the rehabilitation of the laryngectomee, in a program under the direction and supervision of an individual with advanced clinical certification in ASHA, and offered in an accredited institution. The following subjects should be covered in such training:

- a. Anatomy and physiology of the speech mechanism.
 - b. Counseling the laryngectomee and the family, pre- and post-operatively.
 - c. General principles of voice production and articulation of laryngeal speech.
 - d. Physiological phonetics.
 - e. Principles of speech correction.
 - f. Theories and principles of post-laryngectomy voice and articulation.
 - g. Orientation to the medical and the social management of the laryngectomized.
 - h. Supervised clinical practice in the rehabilitation of the laryngectomee.
2. Those who have engaged in teaching the laryngectomee, for a minimum of three (3) years and, in the judgment of a joint ASHA and IAL (International

Association of Laryngectomees) Committee, have, by experience and study, satisfied the spirit of the regulations listed under B-1 may also be recognized as qualified to work individually and independently in the rehabilitation of the laryngectomee. (It is anticipated that the people so recognized will have honored the recommendation of at least 80 clock hours by January 1, 1961.)

3. A laryngectomized person who qualifies under B, but who does not have sufficient training or experience as described under B-1 or B-2, shall work only under the supervision of persons who do qualify under A. These persons should be used at the most advantageous time in the pre-operative, post-operative, or speech training phases.¹

The committee believes that these recommendations should improve instructional procedures and stimulate useful research, and in consequence lead to more effective vocal rehabilitation procedures for laryngectomized persons.

¹Taken from Report of the Convention, American Speech and Hearing Association, New York City, New York, November 14-19, 1958, *Journal of Speech and Hearing Disorders*, 24, 1959, 206-207.

III. Report of Subcommittee on the Problem of Stuttering and Problems of Rate and Fluency

SPENCER F. BROWN

JOSEPH G. SHEEHAN

ROBERT W. WEST

GEORGE J. WISCHNER, Chairman

Eight major areas of research and thinking are presented in this report and with reference to these areas specific ideas are categorized. The verbal designations of these major areas are arbitrary, and the order of presentation is not intended to suggest a corresponding order of importance or priority of the various areas:

The eight major areas are:

1. Basic research needs.
2. 'Social psychology' of persons classified as stutterers.
3. Training of personnel for research and clinical work in this area.
4. Experimental evaluation of clinical techniques and programs.
5. Developmental approaches to the stuttering problem with emphasis

- on aging and older stutterers.
6. Sociological and anthropological considerations.
7. The administrative setting as a factor affecting clinical services for persons with the stuttering problem.
8. Publication and bibliographic needs.

Basic Research Needs

Further basic research in this area is urgent. Only through such research can we develop adequate data as a basis for both the understanding and the clinical solution of the stuttering problem. The following statements summarize the major research needs recognized by the committee.

There is a need for replication studies designed to put on a more solid footing current knowledge of phenomena which tend to be accepted as clearly demonstrated and as basically characteristic of stuttering behavior. More-

Spencer F. Brown (Ph.D., Iowa, 1937, M.D., Minnesota, 1946), School of Medicine, Yale University; Joseph G. Sheehan (Ph.D., Michigan, 1946), University of California at Los Angeles; Robert W. West (Ph.D., Wisconsin, 1925), Brooklyn College; George J. Wischner (Ph.D., Iowa, 1947), University of Pittsburgh.

over, and perhaps of chief importance, is the need for inclusion in such studies of wider and more representative samplings of subjects and settings. This would require a relatively centralized research program involving the cooperation of universities and clinics throughout the country. Every effort should be made to include persons who stutter but who have never received professional attention. The need for a central group to supervise data gathering and analysis seems clear.

Behavioral studies of stuttering and associated phenomena should continue. The adaptation phenomenon, for example, in relation to the variables of which it is a function, requires further investigation. Research aimed at the determination of the factors—reinforcing mechanisms, perhaps—which tend to perpetuate stuttering behavior is of particular concern. Knowledge gained from such studies would enhance our understanding, not only of stuttering behavior but of other forms of maladaptive behavior as well.

There is an urgent need for basic speech and language research, developmental and otherwise. We need, for example, more adequate normative data concerning 'normal nonfluency' in speech and the factors associated with them. We need longitudinal studies of young children who differ widely in the degree of such nonfluency and in other language and speech dimensions.

There is need for study of the differential diagnostic problem in relation to the identification of stuttering behavior. Systematic evaluation is to be made of the observation of what appear superficially to be stuttering reactions associated with other conditions in cases in

which primary emphasis is on 'the other condition.' For example, reactions that may or may not be appropriately classified as 'stuttering' occur, usually transitorily, in some psychotic conditions and in certain cases of organic impairment. Certain perseverative characteristics sometimes present in the aphasias, epilepsies, and some choreas are to be noted in this connection.

Another differential diagnostic problem, on which no research of consequence has been done, is suggested by the differentiation made by some workers between what they call, respectively, cluttering and stuttering. It would appear to be an important problem because of the different implications of the two diagnoses so far as clinical procedures are concerned.

In view of certain advances in instrumentation and otherwise, in chemistry and physiology, there is need to reappraise previous research findings regarding chemical, physiological, and neurophysiological variables possibly related to stuttering behavior. The approach might take at least two general directions: (a) a direct attack on the chemical and physical factors themselves, and (b) behavioral studies of stuttering with chemical and physiological measures as dependent variables. The latter orientation is suggested by recent work in conditioning of chemical secretions currently being conducted in Russian psycho-physiological laboratories.

The opinion was expressed by a member of the committee that the question of possible hereditary factors in relation to the problem of stuttering is not to be considered a closed issue and

that further relevant investigation is to be appropriately encouraged.

The relationship between disturbances in speech observed under the condition of delayed auditory feedback and stuttering behavior as it comes to the attention of the clinician needs more systematic investigation.

'Social Psychology' of Persons Classified as Stutterers

Under this general heading we are concerned with studies aimed at ascertaining answers to the following kinds of questions:

(a) In what way does the stuttering problem affect the person's vocational aspirations and choices?

(b) How are employer attitudes affected by the knowledge that a prospective employee stutters or is regarded as a stutterer?

(c) What are the reactions of stutterers to a clinician who has their problem?

(d) What realistic goals can be set up to guide those who work clinically with stutterers or who are concerned with their vocational rehabilitation?

In addition to questionnaire and opinion poll type studies in this area, there is need for investigations concerned with the deeper motivations and aspirations of stutterers, and of their more significant reactions to others and the correspondingly significant reactions of other persons to them.

Training of Personnel for Research and Clinical Work in this Area

Although primary emphasis is to be put on training, due stress is also to be placed on the selection of personnel for work in this area.

What are the desirable characteristics, abilities, or aptitudes for success in this field? What unique training and characteristics do clinicians require in order to work effectively with the problem of stuttering? Are these the same for the research worker in this area? How may they be ascertained and measured?

There is need for more precise definition of the roles of various disciplines in clinical work with the problem of stuttering. What need is there, for example, for psychiatric or primarily psychological training for the person who is to engage in clinical work with stutterers? Is it possible to determine whether conditions indicate the desirability in specific cases of remedial instruction by both a speech pathologist and a clinician trained specifically in psychiatry or psychology? There is need to examine specifically those instances in which a psychiatrist refers a stutterer for exclusive handling by a speech pathologist, or *vice versa*. What criteria are to be employed in deciding whether help both by a speech pathologist and other specialists is indicated? Who works first with such a stutterer or is it preferable that he be seen by two specialists simultaneously? Can we get research-based answers to such questions?

The training of a speech pathologist primarily interested in the stuttering problem should stress the differential diagnostic problem. It should give due emphasis to the presence of stuttering-like behavior in other kinds of disorders and provide the student with a sufficiently thorough knowledge of these disorders.

Experimental Evaluation of Clinical Techniques and Programs

Although the committee clearly recognizes the difficulties inherent in research designed to evaluate clinical techniques and programs for stutterers, it regards the need for such research as urgent.

The needed research might pursue the following directions:

- (a) Direct experimental attack on specific procedures; there are specific techniques that are advocated and utilized by clinicians in this area and these would appear to be readily amenable to experimental evaluation.
- (b) Long-term follow-up of individuals exposed to different clinical programs and techniques.
- (c) Studies of factors in the clinician that are related to clinical success.
- (d) Studies not only of the outcome of remedial instruction but also of the remedial process itself. We need much more direct observational data descriptive of the behavior of both the clinician and stutterer in the clinical session. Very few data of this kind are available.
- (e) Studies of the process and outcome of psychoanalytic therapy. This point is made separately to indicate the emphasis placed by some on the need for more systematic evaluation of the psychoanalysis of stutterers. Here, too, the first step would be to describe the details of the actual clinical sessions.

It has been the experience in other professional fields that in research on

retraining procedures or therapy, the simple experimental design, involving a comparison of individuals who receive clinical attention with those who do not, is not effective. What is needed are studies evaluating the relative effectiveness for particular persons of different procedures administered by different clinicians.

Developmental Approaches to the Stuttering Problem with Emphasis on Aging and Older Stutterers

There is need for study of older stutterers, including both those who may have had professional help and those who have never had such help. The latter would be of special interest. What does happen to persons classified as stutterers as they grow older? This question emphasizes again the importance of longitudinal studies beginning in childhood. Closely related also are long-term follow-up studies of individuals who have been in some kind of clinical program. What happens over the years to college students classified as stutterers who receive no further help following graduation and termination of services received in a university clinic?

Sociological and Anthropological Considerations

There is a clear need to utilize the resources of other disciplines such as anthropology, sociology and linguistics in our endeavor to understand the stuttering problem. There is need for more systematic comparative studies of different cultures aimed at the determination of relative incidence of the problem of stuttering, relevant etiological factors, patterns of evaluative reaction

to various forms of speech and language behavior, and methods of dealing with the problem of stuttering when and if it arises. There is also need for more systematic studies of the basic structure and patterns of relationships in the families of persons regarded as stutterers.

The Administrative Setting as a Factor Affecting Clinical Services for Persons with the Stuttering Problem

This area probably overlaps with some of those already considered. Here emphasis is on certain clinical and related practices that are governed at least in part by the administrative setting. For example, it is known that in university clinics the relationship between a given stutterer and his clinician is often broken off at the end of a semester. Again, the kind of 'group work' may be a function of the administrative setting. So may the number of clinical sessions per week. In other settings, such as that of the public school, for example, the details of speech correction are often determined, not by the speech pathologist, but by educational supervisors not specifically trained in speech pathology. These de-

tails include, among others, case load, number of sessions per week per child, length of sessions, etc. It may be noted that in such situations the educational supervisor is probably attempting to implement policies set up at higher administrative levels. It appears desirable to review those clinical practices which are governed by administrative considerations in order to determine whether they are in fact in accord with sound clinical principles. Along this line, too, there is need to investigate the kinds of relationship that are fostered between client and clinician in various clinical settings.

Publication and Bibliographic Needs

The general tenor of the committee deliberations in this area is indicated by the following recommendations.

It is time now to undertake a reassessment or reevaluation of our knowledge of the stuttering problem. This would include, at least in part, a series of critical reviews of the literature.

Consideration should be given to the development of handbooks for persons other than speech pathologists who interact with stutterers, persons such as employers, supervisors, teachers, physicians, and vocational counselors.

IV. Report of Subcommittee on Speech and Voice Problems Associated with Cleft Palate and Other Peripheral Structural Deviations

McKENZIE W. BUCK

BETTY JANE McWILLIAMS

GENE R. POWERS

DUANE C. SPRIESTERSBACH, Chairman

Basic Policies

1. It is recognized that some of the information urgently needed by our profession involves disciplines other than our own. The committee has concerned itself with these 'outside' problems only to the extent that speech is ultimately involved.

2. It is agreed that the following specific deviations fall within the considerations of this committee:

- a. Cleft palate
 - (1) Cleft lip only
 - (2) Cleft lip and palate
 - (3) Sub-mucous clefts
 - (4) Facial clefts involving speech structures
 - (5) Congenitally insufficient palates (or enlarged pharynges)

(6) Relevant associated problems

- (a) hearing loss
 - (b) impaired vision
 - (c) nasal deviations
 - (d) laryngeal deviations
 - (e) deviations in breathing and breath support
 - (f) psychiatric and psychological problems involving intelligence, attitudes, and counseling needs
 - (g) neurological involvements
 - (h) other oral deviations as listed under section 2.b. below
- b. Other oral deviations, whether associated or not with lip and palate
 - (1) Oral and pharyngeal deviations exclusive of clefts but including
 - (e) deviations in breathing
 - (b) Structural malrelationships
 - (c) Lingual anomalies

McKenzie W. Buck (Ph.D., Iowa, 1951), University of Florida; Betty Jane McWilliams (Ph.D., Pittsburgh, 1953), University of Pittsburgh; Gene R. Powers (M.A., Iowa, 1958), University of Iowa; Duane C. Spriestersbach (Ph.D., Iowa, 1948), University of Iowa.

- (2) Paralyzed velopharyngeal structures
- (3) Abnormal oral behavior, such as chronic tongue thrust, or improper placement of articulators during articulation resulting from the deviations listed in b.1. above.

With the exception of (6) above, the deviations listed under 2.a. require physical management for the establishment of oral structures which can function adequately for the production of speech. While the importance of the deviations listed under 2.b. must be carefully evaluated when they occur in connection with cleft lips and palates, they also deserve study when they occur in the absence of clefts. From studies of these deviations unrelated to clefts can come a better understanding of the relative contribution they make when they occur in conjunction with clefts.

Areas in Which Information is Urgently Needed

- 1. Diagnostic aspects
 - a. Description and quantification of the speech problem
 - (1) Terminology standardization and definition, including better definition of terms such as 'substitution' and 'distortion' used in describing articulation errors, and standardization of terms used in describing voice quality deviations.
 - (2) Acoustical analyses involving instrumental measurement and judgments of
 - (a) articulation
 - (b) voice characteristics including those due to

faulty respiration, phonation and resonance

- (3) Structural and physiological measurements related to acoustical analyses of
 - (a) articulation
 - (b) voice characteristics
- (4) Nonphysical factors related to the speech behavior
 - (a) Language behavior and deviant communicative behavior, other than misarticulations, such as facial grimaces and atypical use of the articulators
 - (b) Interpretive behavior
 - (1') By the speaker, e.g., feedback
 - (2') By the listener, e.g., judgment of intelligibility, esthetic acceptability of the speech, etc.

- b. Identification of the bases of the speech problems associated with cleft lip and palate
 - (1) Evaluation of the importance of the psychological climate, as determined by the parents' role in the problem, and of the importance of speaker's motivation to communicate
 - (2) Anatomical and physiological bases, including associated anomalies, adequacy of soft tissue, spatial relationships of contiguous structures, and as affected by type and timing of surgical management.
- c. Evaluation of the techniques used in diagnosis:
 - Validation of diagnostic techniques through

- (1) evaluation of acoustical, structural and physiological measures of speech as related to speech perception
 - (2) evaluation of scaling procedures and other psychological rating techniques used in studies of speech perception
 - (3) comparison of objective and subjective evaluations of all facets of speech behavior
2. Clinical services in speech and hearing for persons with cleft lips and palates
- a. Studies of remedial procedures
 - (1) Evaluation of specific clinical techniques including the conditions under which remedial training is done.
 - (2) Evaluation of the timing of speech training in relation to physical management. For example, what kind of training, if any, (a) is indicated prior to surgical repair of the cleft, (b) should be carried out during the active program of physical habilitation, and (c) is indicated after the physical procedures have been completed?
 - (3) Nature and extent of counseling to be done by the speech pathologist as a necessary part of his professional role
 - b. Studies of the training and personality characteristics required in the speech pathologist for establishing effective relationships with workers in allied fields, such as medicine, dentistry, education, social work, and rehabilitation counseling, in order to accomplish effective habilitation or rehabilitation
3. Prognosis
- a. Indications and contraindications of need for speech training (time, kind, and amount)
 - b. Indications of areas of professional specialization to be included in pattern of interdisciplinary management (medicine, dentistry, psychology, speech pathology, etc.)
 - c. Indications of need for counseling of child and of parents, teachers, and others
4. Evaluation of the social, educational, and vocational aspects of the problem
- Many of the studies suggested under section 1. above have relevance to sections 2. and 3. It is obvious that evaluations of speech habilitation and prognostic judgments cannot be adequately made in the absence of satisfactory diagnostic procedures.
- Answers to Specific Questions Posed by the Committee on Research and by the Conference Concerning the Area of Cleft Palate*
1. Description and Definition. Can you give an unambiguous description of the disorder?

No, at least not as far as the speech behavior is concerned.

 - a. On the basis of speech and hearing behavior only, or do you require other supplemental information such as that from the medical sciences, psychology, etc.?

Medical, dental, and psychological information is also required.
 - b. What kinds of information (tests, measurements, etc.) do you find are currently lacking in your study area that keep you from

answering part 1 unambiguously? Information is inadequate concerning the unique characteristics of cleft palate speech, particularly as they are to be related to the homogeneous sub-groups to be found within the broad category of 'cleft palate.' The areas in which more information is needed concerning definition and diagnosis are indicated in Section 1, above, labeled 'Diagnostic aspects.'

- c. Are there sufficient normative data to evaluate the degree of handicap (vocational, educational, social, etc.) associated with the disorder in specific cases?

The normative data are inadequate. Practically no systematic information is available concerning the extent of the vocational, social, or emotional handicaps imposed directly and indirectly by the cleft.

2. Rehabilitation Practices. Does the description of the problem lead to an established specific program of speech rehabilitation?

The present state of the description of the problem does not lead to the establishment of specific adequately evaluated programs of rehabilitation.

- a. If there are alternative procedures, how do you choose the procedure to be employed in any specific case?

Selection of alternative procedures should be based on diagnostic findings, including those of the specialties other than speech pathology, such as the ones indicated in Section 1, indicated previously. Since the currently employed diagnostic procedures

have not been adequately evaluated and systematized, available choices for rehabilitation are made to some degree on the basis of personal bias or unevaluated preference.

- b. What additional information is needed to decide between the alternative procedures?

The minimal additional information necessary for choosing between alternative procedures in individual cases cannot be exactly predicted. In general, more knowledge is required concerning the factors of personal motivation, family constellation, and semantic environment (cultural factors within the immediate environment that are affecting the problem), as well as additional information about the functional relationships between speech behavior and structural characteristics.

- c. Are there sufficient means to evaluate or measure the efficiency of a rehabilitation program?

Since it is largely the diagnostic procedures that are used in evaluating the efficiency of the rehabilitation program, evaluation is limited by the extent to which these procedures are adequately developed and quantified. Furthermore, this type of evaluation is extremely difficult. Many persons working with this phase of the problem need more advanced academic training and greater professional maturity in order to make substantially adequate eval-

- uations of rehabilitation programs.
- d. Is there evidence which favors a particular setting (school, clinic, hospital, etc.) for conducting this rehabilitation procedure?
There is no evidence which favors a particular setting for the remedial speech services required by the person with a cleft palate. Hospital and school programs are limited with respect to time. Hospital and clinic programs are limited by cost factors. Many programs, particularly those of the schools, are limited by the training of the clinicians. Thus, careful diagnostic work-ups are frequently not exploited by clinicians. In short, the minimal conditions for effective remedial speech services have not been established.
- e. Is there evidence which favors a particular type of scheduling (full-time, part-time, concentrated, spaced, etc.)?
There is no direct evidence which favors any particular type of scheduling of speech training for persons with cleft palates. Obviously, scheduling requirements are not the same for all age groups, all types of problems, all family situations, or all persons. This question needs to be explored along with such issues as when to begin training, when to stop for a time, when to begin again, and when to discharge the person as having reached his maximum level of speech proficiency.
3. Training and Personnel. What are the needs for further training of major workers in your study area?
- a. What modifications or extensions of present training programs (curriculum, physical facility, practicum) are required to meet these needs?
- (1) There is need for speech pathologists to have more training in anatomy, physiology, embryology, and acoustics relevant to speech production to the end that they might better determine rational bases for speech training.
 - (2) There is need for medical and dental specialists to have more opportunity to undergo instruction and practicum experience in the operative care of patients with cleft lips and palates and for the acquisition of appropriate professional language essential to adequate interprofessional understanding.
 - (3) There is need for students of speech pathology to have more practicum experience, under competent supervision and with adequate facilities, and involving thorough diagnostic evaluations and demonstrations of speech training and counseling with a variety of individuals with clefts.
 - (4) There is a need for at least one speech pathologist with training equivalent to the Ph.D. level in any cleft palate team program.
- b. What evidence is there that attributes other than those acquired through training contribute to competence in your study area?
There is no systematic evidence

to support the accepted observation that the adequacy of a clinician depends upon a great deal more than training. This question suggests the need for studies designed to delineate the characteristics of successful clinicians, which attempt to define the minimal innate characteristics required in a clinician, and which suggest those necessary characteristics and skills which can be achieved through training. Such studies are especially pertinent in areas such as this one in which interprofessional relationships are so essential to the success of rehabilitation programs.

- c. What specific contributions from related fields are required for rehabilitation in your study area?

Contributions from the medical and dental fields are mandatory in the areas of plastic surgery, orthodontia, and prosthodontia. Contributions from the areas of otology, pediatrics, psychiatry, psychology, and social service are highly desirable. Again, no systematic studies have been completed to determine the minimal extent of the interprofessional relationships essential to an adequate program of rehabilitation in this area.

4. General

- a. By what means do you attempt to determine the immediate causes of the disorder?

In a very basic sense the cause of the disorder is the presence of the cleft. From a practical point of view, however, many additional factors contribute to the problem

of the person who has the cleft. The speech pathologist is involved in the study of etiology to the extent that the relevant characteristics of the developing individual, his environment, and the type of management employed in dealing with the cleft determine the nature and magnitude of the total problem. The means used to determine 'the immediate causes of the disorder' are varied accordingly, and include testing, observational, and evaluational procedures appropriate to the several determinations required in a given case.

- (1) What functional relationship obtains between such causes and your rehabilitation procedure?

On the basis of studies and clinical experience in this and other areas, it is assumed that important functional relationships exist between the casual factors and the rehabilitation procedures. The clinician routinely attempts to identify and modify factors which may be contributing to the speech problem. These may include parental attitudes about the child and their role in causing and maintaining the problem, the child's attitudes toward himself and his environment, level of intelligence, hearing acuity, and other associated variables.

- (2) What are the needs for extension of information concerning causation?

A better understanding of the etiology of clefts, resulting primarily from research in disciplines other than speech pathology, is needed to enable the speech pathologist to deal more effectively with the family counseling needs. There are also important needs for extension of information about the combinations of factors which contribute to the development of speech problems in individuals with cleft palates. The following are examples of relevant lines of investigation.

- (a) In a broad sense, all of the needs for clarifying or establishing functional relationships among the factors discussed in Section B, above, are related to issues concerning causation.
 - (b) How does intelligence influence speech development in persons with clefts?
 - (c) What are the factors related to the language development of persons with clefts? Is the level of language development related to prognosis?
 - (d) How do parental attitudes influence the child's emotional development and, in turn, the nature of his speech problem?
- b. What important research findings in your study area are not being well exploited in clinical practice?
- There is a discouraging lack of evidence that current research findings are reaching the average clinician. This is especially evident in such areas as the following:
- (1) The nature of velopharyngeal closure
 - (2) The physiological and acoustical requirements for the production of speech sounds
 - (3) Diagnostic procedures for determining the basis of the speech problem
- c. What major differences concerning clinical procedures in your area seem to you to be resolvable through research?
- (1) The extent to which speech habilitation procedures are capable of developing compensatory behavior for structural deviations, particularly those of a marginal nature.
 - (2) The relative emphasis to be placed on nasality and impaired articulation, respectively.
 - (3) The extent to which physical management procedures can meet the needs of individuals with clefts.
 - (4) In the final analysis, all of the differences in approach and procedure discussed throughout this report can be resolved through appropriately designed research.
- d. Do you feel it would be profitable to explore relations between particular administrative arrangements (including sources of sup-

port) and the patterns of rehabilitation and research in this area?

There is a wide variety of administrative arrangements, some much less costly and time-consuming than others. The minimal characteristics of a habilitation program of optimal efficiency have not yet been specified. It would undoubtedly be profitable to explore the possibilities of deriving better answers than we now have to this general question.

- e. What evidence is there that various kinds of prevention (medical, educational, etc.) will attenuate the incidence and severity of the disorder?
 - (1) Research on the etiology of congenital anomalies, especially clefts, will provide information which will be of great help to clinics which provide counseling in the area of genetics.
 - (2) There is evidence that the nature of the physical management can result in major differences in the magnitude of the resultant speech problem. For example, the incidence of speech problems in children with clefts is reportedly markedly less among English children than among American children. To the extent that this is true, it is assumed that the differences are due primarily to differences in the respective programs of physical management in the two countries.
 - (3) The value placed on early speech training, parental

counseling and emphasis on the holistic approach to the total cleft palate problem as preventative measures stems largely from reasoning from other types of behavioral problems rather than from systematic research in this area.

- f. What factors (materials, inducements, etc.) are needed for selectively recruiting the kinds of workers required in your area?

The inducements that appeal to those interested in medicine, dentistry and nursing might appeal also to students interested in speech pathology, because in this area there is an opportunity for speech clinicians to work intimately with those professional persons involved in the physical and medical habilitation of children and adults.
- g. What questions pertinent to your area have not been included by the Research Committee?
 - (1) How can we become less provincial in our handling of the cleft palate problem? How can we synthesize research findings from medical, dental, and behavioral areas from the United States and abroad and disseminate them more effectively to clinicians?
 - (2) The 'psychological' factors have been alluded to throughout this discussion. In the opinion of this committee, the identification and evaluation of these factors ranks in importance with the establishment of criteria for the

adequacy of the physical structures involved in speech production.

- (3) The statements made in this report concerning cleft pal-

ate apply in broad applications also to the oral deviations listed in section 2.b., *Basic Policies*, when they occur without clefts.

V. Report of Subcommittee on Problems of Aphasia

WALTER AMSTER

SHULAMITH KASTEIN

FRANK KLEFFNER

JOSEPH WEPMAN, Chairman

Definition and Description

The subcommittee agreed on a working definition of aphasia as being 'any language disorder occurring consequent and subsequent to demonstrable central nervous system impairment, excluding those disorders of speech and language resulting from general mental defect, mental illness, severe sensory impairment, or severe structural or muscular defect.' Included in this definition are all of the aphasias, the apraxias and the agnosias of language generally subtended under the generic term aphasia. To facilitate procedure further it was agreed that the term aphasia would also include the 'failure to develop language in children when that failure was due to any "demonstrable" central nervous system impairment.' Both definitions engendered considerable discussion, es-

pecially about the inclusion of the word 'demonstrable,' since so many aphasic disorders are diagnosed and treated in patients in whom organic impairment is assumed rather than demonstrated.

Following this discussion the committee identified as one of the most important needs of the field a study designed to provide an unambiguous description and definition of the entire area which would lead to better understanding of the patient and his disorder, better communication among speech and hearing specialists, and better communication with other specialists concerned with the problem and the patients demonstrating it.

The subcommittee recognized as a second fundamental need a survey of the incidence of aphasia in both children and adults. It was recognized that there is an almost total lack of precise information concerning the number of aphasic patients, where they are, and in what age groups they fall. While some educated guesses seem to place the total number of aphasic adults at between one and two million, not even

Walter Amster (Ph.D., Syracuse, 1954), Center for Crippled Children and Adults, Miami, Florida; Shulamith Kastein (Dip., Vienna, 1929), Medical Center, New York, N. Y.; Frank Kleffner (Ph.D., Wisconsin, 1952), Central Institute for the Deaf; Joseph Wepman (Ph.D., Chicago, 1938), University of Chicago.

an estimate could be arrived at concerning the number of children who would be so classified. As an addenda to the recommended survey of incidence it is suggested that further information on the resources now available for treating the condition would be of extreme value.

The subcommittee recommends, therefore, that a fact-finding survey be made of both children and adults diagnosed as suffering from aphasia, and that information be collected and made generally available concerning the clinical resources now available.

Rehabilitation Practices

The subcommittee members agreed that there is a serious lack of information concerning rehabilitation practices and that there is a basic need for a survey of the field of rehabilitation for aphasia as it now exists. It is recognized that since aphasia, by definition, occurs in adults simultaneously with organic pathology, part of every treatment plan must include the services and interested participation of representatives of the medical profession; since aphasia occurs only as a result of brain injury, any or all of the psychological problems and ills of the brain-injured are likely to be present in the patient, and the services of the psychologist or the psychiatrist are likely to be important; and since recovery from aphasia should logically only be considered in the light of recovery of physical structure and function, and of re-establishment of vocational or independent living goals, the physical medicine therapies are all involved. A survey of rehabilitation practices seems, then, to have as its primary objective the determination of

the role played by each member of the rehabilitation team. Certainly definition here seems most vital. The recommendation that a survey of rehabilitation practices be made, including the practices of the many disciplines and resources presently engaged in the total rehabilitation of aphasic patients, is made with a view to bringing increased order into what is felt to be a relatively chaotic therapeutic process in many situations.

Training and Personnel

Here, too, the need is seen for fact-finding in advance of experimental research. While it is recognized that the systematic evaluation of different approaches to the training of speech and hearing clinicians might be valuable, it seems more important to begin with a collation of the present curricular offerings in colleges and universities designed to provide training for aphasia language clinicians. In addition, the subcommittee favors a survey of the clinicians now in the field to ascertain what they regard as their greatest deficiencies in training, and of the directors of speech and hearing clinics to sample the deficiencies in training which they note in the persons employed by them and in those applying to them for employment. With the findings of such a survey and the general experience gained from our collective past experience, we should be able to design a core curriculum essential for preparing speech and hearing clinicians to engage in work with aphasic adults and children. The subcommittee recommends, therefore, that a survey of present curricular offerings and of the noted deficiencies in training be conducted in

order to provide a basis for an improved core curriculum for language clinicians.

Attention is also to be directed to the constant need for research workers broadly trained and attentive to the challenge of normal and impaired brain function and language behavior as an area worthy of study. Responsible representatives of the field of speech and hearing should, it is felt, recognize their obligation to encourage more students to prepare themselves to undertake the much needed research in this area.

Specific Research Areas

The subcommittee used the responses from the questionnaire sent to some 400 members of ASHA as a starting point in considering specific research needs. The subcommittee recognizes that in the investigation of as complex a problem as aphasia almost any question one could raise would be worth studying. Certain questions, however, seemed to recur both in the questionnaire responses and the subcommittee discussions, and these might be grouped as follows:

A. Therapy

1. The effect of the social environment on therapy.
2. The relationship of pre- and post-morbid personality to therapy.
3. Longitudinal studies of the therapy process in adults and of the developmental process in children.
4. Prognostic indicators of successful therapy.
5. Therapeutic processes related to different aphasic categories.

6. Therapy as differentially related to intelligence, education, sex, and age.

B. Etiology

1. The relationship between different aphasia categories and etiology.
2. The differential role of organic and psychogenic factors in etiology.
3. The relationship between etiology and prognosis.

C. Interdisciplinary research

1. The structure of normal language and its impairment in pathologies of different types, notably the differential disruption of language in such conditions as schizophrenia and aging.
2. The relationship of degree and rate of recovery to hemiplegia and to other physical conditions such as seizures, facial paralyzes, etc.
3. The relationship between language disturbance and location of injury in left and right brain hemispheres.

D. Testing

1. The development of clinically useful and statistically valid tests of aphasic language disorders for purposes of classification, clinical program planning, and research.
2. The isolation of prognostic indicators by means of tests for aphasia.
3. The use of psychometric and projective tests in estimating intellectual and personality properties in aphasic patients.

4. The identification of positive indicators of aphasia in children.

General

Special attention is to be directed to the need to encourage interdisciplinary research, including that of the aphasia specialist, relating study of aphasic problems to advances in neurophysiology and neuroanatomy, to normative linguistic and psycholinguistic studies, to learning theory, and to personality theory. Such research should lead to a greater exchange of knowledge among the fields concerned. Equally important is the extension of research to the problems of children classified as aphasic about which relatively little appears to be known.

Research on aphasia within the field of speech and hearing is also to be viewed as offering important opportunities which are too often overlooked. The effects of hearing loss on the communication behavior of aphasic adults represent an illustrative problem, and the relationship of dysarthria and dyslalia, both articulatory disorders, to aphasia is another question upon which our present knowledge throws comparatively little light. The problem of the differential diagnosis of comparative speechlessness in children seems perhaps the most outstanding of all in either the intra or interdisciplinary types of research in the area of concern to the subcommittee on aphasia. Differentiating children who are, respectively, deaf, mentally deficient, emotionally disturbed, and 'simply' delayed

in language development from aphasic children is a problem which needs to be but has not been subjected to comprehensive systematic and rigorous research.

Recommendations

The recommendations of the subcommittee are directed to four basic objectives:

- A. Definition and description of the disorder designated as aphasia by selected panels including representatives of all interested disciplines.
- B. Surveys of incidence of aphasia, nature of available clinical resources, number and character of training programs, and number and qualifications of available professional personnel.
- C. Specific interdisciplinary and intradisciplinary research projects.
- D. Free and continuous interchange of information essential to the maintenance of research at the level of the most challenging problems, and to the avoidance of the plateauing of interest which tends to occur when individual research workers are unacquainted with work in progress in centers other than their own.

With the field of aphasia research so challenging, the amount of tested knowledge now possessed so limited and spread so broadly through so many areas, it is to be hoped that more and more attention will be directed to this very vital area.

VI. Report of Subcommittee on Speech and Voice Problems Associated with Cerebral Palsy

MARSEE F. EVANS

MERLIN J. MECHAN

MARGARET C. BYRNE

FREDERIC L. DARLEY, Cochairman

HAROLD WESTLAKE, Cochairman

Description and Definition

Speech pathologists work with other nonmedical and medical personnel in ministering to the needs of children and adults with cerebral palsy. Cerebral palsy may be grossly defined as a motor disability resulting from damage or deficit in the upper central nervous system located within the cranium. According to this definition a motor problem must always be present, but along with motor involvement there may be found any or all of the other hazards to speech and language attendant upon upper neural damage: problems in channeling sensation, perceptual problems, reduced or distorted conceptual

functioning, difficulties with symbolization, or organically based as well as functional emotional problems. The motor disturbance is necessarily always present, but it constitutes only a part of the clinical problem.

In many clinical situations, particularly in hospital settings, speech problems related to cerebral palsy are given attention along with speech and language problems associated with muscular dystrophies, post-poliomyelitis, multiple sclerosis, Parkinson's disease, cerebro-vascular accidents, and other varieties of congenital or acquired neural damage. The inclusiveness of the work of so-called 'cerebral palsy' clinics was recognized by the United Cerebral Palsy Association recently in its redefinition of its program to include all of the conditions listed above.

The various conditions referred to are defined in the relevant clinical literature and represent types which can

Marsee Fred Evans (Ph.D., Iowa, 1932), Birmingham Southern College; Merlin J. Mechan (Ph.D., Ohio S. U., 1954), Brigham Young University; Margaret C. Byrne (Ph.D., Northwestern, 1958), University of Kansas; Frederic L. Darley (Ph.D., Iowa, 1950), University of Iowa; Harold Westlake (Ph.D., Michigan, 1938), Northwestern University.

be isolated diagnostically. Differences of opinion in definition are more likely to involve terminology than interpretation of clinical evidence. Although differences in speech behavior and in hearing might offer clues to etiologic classification, it is not possible to define a problem on the basis of the speech or hearing data alone. The basic consideration is that the speech clinician is faced with the fact of impaired speech, and the nature of the neural damage in many cases may not be of major importance so far as his particular contribution to the total clinical program is concerned. Any single etiological factor may result in behavior which differs greatly from case to case in quality as well as quantity. A clinical work-up constitutes a definition of a specific case, and such a definition can be very different for individuals who can be grouped into one etiologic category.

Much has been made of the need for special tests, such as those used for measuring the mental capacity of persons who are limited in their ability to respond. Many of the special tests devised for cerebral palsied persons have been 'single shot' tests, each measuring only one aspect of intelligence. These limited tests have been designed primarily to obtain adequate responses for purposes of evaluation of intelligence in spite of the physical disability, and they have not taken into account other more subtle problems. Several, for instance, depend entirely upon visual perception, which may be disturbed in the cerebral palsied, and they might minimize or disturb rather than facilitate the subject's responses accordingly. Several of the psychologists who have

had substantial experience in testing persons with cerebral palsy have expressed the opinion that there is not so much need for new tests as for psychologists who are trained in the area of cerebral palsy. It is their contention that the tester is more important than the test and that present tests can be useful if the tester understands the basic condition of the individual being tested. A psychologist with special training in the various aspects of language functioning can work to advantage in cooperation with a speech pathologist.

Another type of information which is of clinical importance is that which is needed for an interpretation of the family and community factors related to the problems of the cerebral palsied child or adult. There is a great need for social service workers who are trained in dealing with persons who have cerebral palsy and who are sensitive to the social and cultural factors which contribute to their problems.

Although normative data essential to an evaluation of the degree of handicap in individual cases are far from complete, there is an even greater lack of comparative data of a different sort. Multiple handicaps are encountered frequently in the cerebral palsied population. When a speech pathologist is faced with a person who has some degree of mental retardation and seizures, for example, in addition to the motor problem of cerebral palsy, he would find it useful to know how that degree of mental retardation or how the seizures have affected language acquisition and usage. Definitive knowledge of the combined effects of various types of single handicaps is much needed. Research on the speech of the mentally

retarded, for instance, has been very gross. In most comparative studies the mentally retarded of varying grades of severity have been combined. Meanwhile, it is important to know how different degrees of mental retardation affect speech and language development.

As a rule, persons with cerebral palsy are not seen first, or only, by the speech pathologist. Any speech problems that such persons have are associated with other clinically significant conditions, and the speech pathologist functions accordingly in a team made up of various medical and nonmedical professional workers. Although there is much that these various specialists do not yet know, there is a vast amount of professional information available. Such information, however, is presently less adequate in the behavioral sciences than in anatomy, physiology, and neurology.

Clinical Services

Definitions of the large categories included in cerebral palsy do not imply specific remedial speech programs, although they do tend to suggest certain problems which might be expected with particular types of cases. A careful clinical work-up, including speech, language, and hearing evaluations, is essential to the determination of the remedial speech services that need to be provided in a given case.

A first impression might be that there are 'schools' or widely divergent approaches to the clinical speech work. Such differences as are to be found may be more apparent than real. To one who takes a more fundamental approach and analyzes the possible aims

and rationales of different methods, the picture appears less confused than it might seem to be to one who thinks on a purely operational or 'what to do' level. All so-called methods of speech training for persons with cerebral palsy are presumably based upon information obtained by observing relevant neurological, neuromotor, and psychosocial behavior. As knowledge of these aspects of behavior increases, present differences in speech training methods probably will decrease. Even on the basis of present knowledge different methods appear to bear a 'citizen' relationship to a large armamentarium of techniques from which a discerning speech clinician selects what is appropriate for an individual of a particular developmental age with a particular degree and type of involvement. The greatest hazard in a loyalty to a method is that it limits one's usefulness if it results in the use of only one method for all cases. Thorough scholarship and 'a single method' are not compatible. The work of speech pathologists could probably be improved by more basic information about neuromotor functioning.

Much more must be done in basic as well as clinical research. More work is being done in the former than in the latter at the present time; indeed, there are more answers in the basic sciences than some clinicians realize.

Much information is needed on what present remedial speech programs are accomplishing. Possibly much of the necessary research could be done in present clinics if the scales and measures now used to gauge progress were refined and the dimensions of improvement better described. Most medical

and nonmedical clinical workers are not trained to do research and their attempts at scientific investigation often do not measure up to acceptable standards. Provision for research consultation could result in the more systematic gathering of useful data. No one knows at present whether itinerant remedial speech services such as are commonly provided in the public schools are more or less effective than intensive institutional programs. It is not known whether or not periodic intensive speech training is more or less productive than uninterrupted intensive training. It has not been determined whether there are particular age levels at which certain types of speech training are more fruitful. The relative effectiveness of various techniques of speech correction and their suitability for particular types of cases of cerebral palsy should be systematically investigated.

To a considerable degree the present organization and administration of speech correction programs for the cerebral palsied have been determined by availability of resources in particular communities and the geographical distribution of populations rather than by information regarding the relative usefulness of the different types of programs. The urgency of the problem might have justified setting up the first programs on this basis, but controlled clinical research is needed to justify long-term investments in any given pattern of program structure.

Presently there is practically no organized information about cerebral palsied adults. The greatest emphasis has been on young children. Services are not now available for most cerebral

palsied persons of high school age and practically none are provided for those over twenty. It is not known whether or not the benefits of early speech training carry over into later years. It has not been determined whether or not persons dismissed from remedial speech programs at an early age can profit from clinical speech services at a later date. No one knows what happens to the majority of cerebral palsied adults.

There has always been much more interest in severely involved cerebral palsied persons than in those with slight impairment, and clinicians seem to have been primarily trained to struggle with the difficult cases rather than to work with the others. In many ways the milder cases have the more difficult adjustments because they are expected to keep up with the normal. Medical personnel are divided, many of them concluding, without adequate evidence, that not much can be done with 'these so-called lesser' involvements. It must be remembered that what a cerebral palsy specialist labels as a 'mild' case would have a considerable problem by normal standards. It may be that the personal and social gains could be much greater in this presently relatively neglected group. At least no segment of society should be excluded from needed clinical services without a convincingly substantial reason.

It is a fair summary to say that at the present time most remedial speech programs are based almost entirely on clinical hunches and clinical judgment. Basic research is moving along relatively well. Clinical research is far behind.

Training and Personnel

In the fields of medicine, physical therapy, and occupational therapy there is general acknowledgment of the need for special training for those who work with the cerebral palsied. At the same time, many employers and apparently many speech pathologists assume that minimal basic training equips an individual to deal with all speech and language problems. As a consequence, a large number of speech clinicians who have had no relevant specialized training are presently working with persons who have speech problems associated with neurological damage.

The speech personnel who work with cerebral palsied individuals are possibly in greater need of advanced training than are occupational therapists or physical therapists. The physicians ordinarily make definite recommendations regarding occupational and physical therapy. Responsibility for speech and language evaluations, however, as well as for the planning and execution of programs of remedial speech training, necessarily rests with the speech clinician. It is essential, therefore, that speech pathologists employed in clinics and institutions serving the cerebral palsied have, in addition to general preparation, specialized training appropriate to the demands made upon them.

There is a basic need for the profession of speech pathology and audiology to provide administrative officials and professional workers in related fields with essential information about areas of specialization and levels of training appropriate for work with specified types of speech and hearing problems and in various kinds of clinical settings.

In order to meet this need as effectively as possible the profession requires continuing study and review of the patterns of specialization within the total scope of its interests and activities.

To train students to deal adequately with the speech and hearing problems of persons included in cerebral palsy programs requires facilities that cannot be organized in all colleges or universities. It is hard to visualize an adequate program away from medical and educational specialists who have active interests in the field. Speech pathology and audiology students should be exposed to all of the other specialists and to representative case loads. There are enough places in the country where comprehensive training can be organized, but isolated colleges can hardly provide it. Advantages would seem to lie in developing a limited number of favorably located professional training centers. In addition to an exposure to all disciplines concerned with cerebral palsy, the speech pathologist should have preparation in anatomy, physiology, neurology, speech kinesiology, psychology, and language pathology. Systematic study of perceptual and conceptual functioning and symbolic behavior are as important as the thorough consideration of motor activity in expressive language. Internship experience is important not only for the practical training involved, but also for its value in enabling the student to determine the strength of his motivation to work in this area. Inexperienced persons are often not ready to accept the behavior and appearance of the more severe cases and in general are not emotionally ready to work with them.

General Considerations

Extensive research concerned with possible causes of cerebral palsy is now under way, largely in the fields of experimental neurology and embryology. The aim of this research is to find ways by which the condition can be prevented or the damage reduced. The investigators do not feel that they have so far closely approached their objective, and until the objective is substantially achieved, the problems of speech correction and of rehabilitation generally will remain.

Meantime, in speech correction as in other aspects of rehabilitation one must not only deal with the original condition, but also with secondary problems. For example, early weakness of the flexor muscles of the neck and trunk can result in deformity of the rib cage which will tend to limit breathing for speech. Imbalance of the facial, masticatory, and lingual muscles can produce occlusal and related oral conditions which make speaking very difficult. By studying the development of these secondary problems and experimenting with different ways of alleviating them, the speech pathologist can contribute much to the well being of cerebral palsied persons.

Presently speech pathologists working with cerebral palsy need to become better acquainted with the work in neurology, physical medicine, physical therapy, and occupational therapy. Other specialties, some of which have had long experience with cerebral palsy, have much to share with clinical workers in speech and hearing. In gen-

eral, broader basic training would make the speech clinician, as well as other professional workers, less susceptible to fads and unsound practices in training and clinical services.

The participants in this conference have only begun to contemplate what must be done in research, training of clinical personnel in speech and hearing, and the effective coordination of speech pathology and audiology with the other facets of rehabilitation. Several days could profitably be devoted to another conference on cerebral palsy. In such a conference such issues and projects as the following might well be considered:

- (a) What constitutes adequate training for speech pathologists engaged in work with persons with cerebral palsy?
- (b) How might specialized interest in the speech and hearing problems of the cerebral palsied gain recognition within and outside the profession of speech pathology and audiology?
- (c) By what means can the available information on cerebral palsy be most effectively assembled, interpreted, and made available to speech pathologists and audiologists?
- (d) By what means can provision be made for the further research which must be done to give speech pathologists the information they need in order to work as effectively as possible with persons who have cerebral palsy?

VII. Report of Subcommittee on Speech and Language Problems Associated with Mental Retardation and Delayed Speech and Language Development

S. RIGRODSKY

GEORGE GENS

BERNARD SCHLANGER

JACK L. BANGS, *Chairman*

It does not appear possible at this time to present an unambiguous description of mental retardation, the speech and language problems associated with mental retardation, or delayed speech and language. Most persons professionally involved with these problems are inclined to describe in operational terms the particular population with which they are dealing at any given time. This leads to some confusion when persons in the various disciplines concerned attempt to communicate with each other. There is very considerable need, therefore, of basic descriptive research from which further clarification of essential definitions and diagnostic distinctions can be developed.

Seymour Rigrotsky (M.A., Brooklyn, 1955), Vineland Training School; George Gens (Ph.D., Michigan, 1947), Newark State Teachers College; Bernard Schlanger (Ph.D., Wisconsin, 1952), West Virginia University; Jack L. Bangs (Ph.D., Iowa, 1947), Houston Speech and Hearing Center.

The following list of areas for research is intended to illustrate some of the problems with which speech pathologists and audiologists are now confronted in dealing with the speech and language problems associated with mental retardation and delayed speech and language development.

Delayed Speech and Language Development

1. What, if any, are the differences between delayed speech development and delayed language development?
2. Are these best regarded as separate entities or as aspects of a pervasive disturbance of a general maturational process?
3. What factors should be considered pertinent in the development of more adequate language and speech development scales?
4. What factors should be considered

- in predicting the degree of adequacy of future language or speech proficiency? How early in the child's life can we make this type of prediction?
5. Are some so-called functional articulation problems basically due to cerebral pathology?
 6. What is the relationship between language and speech skills and vocational success?
 7. How can the auditory ability of very young children be more objectively and accurately assessed?
 8. What means can be used to establish better communication of research developments and findings among medicine, psychology, physiology, and speech pathology and audiology? All of these disciplines are engaged in research on growth and development and each needs to be aware of the results, interests, and plans of all the others.
 9. What are the socioeconomic prospects of the pseudoretardate, whose main deficit is in the area of speech and language, as contrasted with those of the global retardate?
 10. In what ways does the self-concept of the brain-damaged child with delayed language development vary from that of the child with normal language development? In what way is body image related to self-concept for both types of children?
 11. What are the similarities and differences between adults with aphasia and so-called congenitally aphasic children?
 12. What is the relationship between apraxia and delay in speech and language development?
 13. What factors contributing to intellectual deficit also affect speech and language development? Can these be measured?

Mental Retardation

1. What is the extent of present information about vocabulary, syntax, articulation, hearing loss, and comprehension as factors associated with mental retardation?
2. How are these factors, or their effects, different, if they are, among the mentally retarded as opposed to the intellectually normal?
3. How can these differences, if any, be quantified?
4. In what ways can psychometric tests be modified to minimize the effects of disordered communication behavior on the test results?
5. Do mental retardation, per se, and the speech, language, and hearing problems of the mentally retarded have the same etiology?
6. How can we predict the ultimate level of communicative ability of a mentally retarded child?
7. What are the interactions of cultural, social, and other environmental factors with the speech and language behavior of the mentally retarded?

Clinical Speech Services: Delayed Speech and Language Development

It is relatively obvious that the purpose of clinical speech services for the mentally retarded and children with delayed speech and language development is to develop their ability to communi-

cate orally. It is quite another matter, however, to define the procedures to be followed in attempts to achieve this purpose or to identify and evaluate the factors influencing the success or failure of these attempts.

The following questions are designed to point up some of the problems involved:

1. How can evaluations best be made of the present philosophies of speech correction such as those underlying the structured and the non-structured, or the whole word and the phonetic approaches?
2. What are the relationships between electroencephalographic and other neurological signs of cerebral insult and (a) decisions regarding remedial speech procedures and (b) success in speech or language training?
3. What are the effects of specified drugs on the effectiveness of speech and language training for children with delayed development of speech and language?
4. What relationships exist between variables such as I.Q., self-concept, family interactions, personality of the speech clinician, and results of speech and language training?
5. How can we best determine whether speech or language training

should be carried on with groups or through individual work?

6. What are the factors which determine whether speech and language training should be provided in residential or day-school settings?
7. What are the relationships between the locus of brain lesions presumably responsible for delayed speech or language and prognosis for speech or language training?

*Clinical Speech Services:
Mental Retardation*

1. What are the necessary or desirable differences between techniques used in the remedial speech and language training of the retardate as opposed to the intellectually normal child?
2. What is the relationship between the employability of the mental retardate and the degree of his ability to communicate?
3. Where, when, and by whom, should remedial speech and language training for the mentally retarded be done?
4. What are the criteria upon which decisions can be soundly based in determining whether to provide remedial speech or language training, or type of training, for the mentally retarded with speech and language problems?

VIII. Report of Subcommittee on Hearing Problems in Children

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LOUIS M. DICARLO

S. RICHARD SILVERMAN

WILLIAM G. HARDY, *Chairman*

At the time of the conference the subcommittee met with a group of approximately 40 persons, most of whom took an active part in the discussion. It was decided to follow the outline prepared by the Research Committee as closely as possible, and, further, to concentrate attention on broad ideas, rather than minutiae. The various topics were considered serially with open discussion throughout.

Description and Definition

Special attention was paid to problems of description and definition. It was the concensus of the group that these have been, and remain, focal aspects of research needs. Much further work is required to clarify the dimen-

sions of hearing impairment, in terms of auditory sensitivity, integration, memory, and recall. Related to these ends are some practical ideas in clinical management, specifically better determination of data in a personal history that can be put to use in predictive terms, and in learning how various clues to behavior can be validated.

The group felt that there is need to develop modes for evaluating the degree of handicap; this involves much more than the amount and kind of hearing impairment. Some of the present uncertainties are semantic, and it was agreed that much more attention needs to be given to the nomenclature of auditory and related behavior. Moreover, it was felt that much can be done in order better to relate quantitative and qualitative information about the child. This, in turn, implies a fundamental psychosocial question: 'What is a deaf person?' Do deaf persons as a group develop particular social attitudes which then affect their perspectives? Or is this a highly individual matter?

Charlotte B. Avery (M.A., Northwestern, 1947), Eye and Ear Hospital, Pittsburgh; Louis M. DiCarlo (D.Ed., Columbia, 1948), Syracuse University; S. Richard Silverman (Ph.D., Washington U., 1942), Central Institute for the Deaf and Washington University; William G. Hardy (Ph.D., Cornell, 1943), Johns Hopkins University and Hospital.

To what extent does education contribute to the nature of the individual's problems; do different educative procedures change this contribution in any significant way? How does preeducative training change the picture?

In short, the problems of description and definition which are pertinent for further study involve approaches from many perspectives, ranging from fundamental neurophysiology to social and educational psychology. The interpretation of the various findings requires careful calibration among the many different groups of persons who are interested in the problems of hearing impairment of children.

Clinical Services

Almost inevitably, some of the problems centered in clinical practices are to be considered concurrently with those of description. The group was unanimous in expressing the need for a statement of a general concept of rehabilitation (or habilitation, so far as the affected child is concerned). There are various anthropological and sociological questions to be considered here, for possible aspects of rehabilitation range from one's capacity to earn a living to the most subtle details of psychological adjustment. It was felt that a broadranging study is required to promote a better understanding of a rehabilitative concept: what works? toward what goals? from what backgrounds? The group was aware of several current studies which contribute to these matters, but felt that a piecemeal approach cannot produce the kind of total picture that is wanted. Much more is needed than a record of employability and employment. What is

wanted is an evaluational description of the group of individuals with impaired hearing, of various levels and degrees (not just the deaf), as members of society. From such a basis a concept of rehabilitation may be derived that will be of general and lasting use. Once this is accomplished in broad range so that there can be a better idea about where and how a given individual may be expected to fit in society, then the array of rehabilitative procedures should be more or less obvious. In many respects, the problems of the child with hearing impairment are rather more developmental and educative than rehabilitative. Yet, a suitable pattern of backgrounds and goals must sensibly be derived in sociological terms, and this is very much the concern of rehabilitative thinking.

Training and Personnel

Problems of training and personnel were discussed at length. It was clear that the group was more interested in certain basic propositions than in the details of course program structure. There was unanimous agreement that training has to do with knowledge, skills, and attitudes, and that a high level of performance on the part of a teacher does not necessarily relate directly to a given training program. Moreover, within recent years, more and more groups of professional persons have come to concern themselves with the child with impaired hearing. The discussion made clear the impression that there is no system of evaluation of personnel, at least at the public school level. There is no method for deriving normative data about what constitutes a good, or successful, or

effective remedial speech teacher or speech clinician (or, for that matter, a clinical audiologist). Without doubt, related to this is a similar lack of data about what constitutes a good training program. What is wanted is a clear record of what is needed in, say, a teacher of the deaf, or a speech and hearing clinician, exclusive of any limits of certification. A similar record would be pertinent for each special group—in audiology, in school nursing, in psychology, and the like—which participates in work with the hearing impaired child. Then, there is needed a delineation of ways and means to augment group interaction with a common vocabulary and common goals. At present, the various groups are not infrequently at odds because of heterogeneity in goals, procedures, and the language of assumption and discussion.

General Considerations

Various general topics evoked quite extensive discussion. The study of etiology is a major current effort in fields bearing upon problems of impaired hearing. A paramount question in this regard is that of the efficacy of preventive medicine. Several major investigations are under way (including the study under the aegis of the National Institute of Neurological Diseases and Blindness of the fate of 40,000 pregnancies, of which several studies of hearing in children are a part) and there is a wide variety of studies of lesser scope. There is promise that within a few years a much clearer picture will be available than can be seen today. On the other hand, various aspects of the social pathologies related to causation of problems centering around impaired

hearing have scarcely been touched upon in orderly investigation: these include familial attitudes and predilections, sibling relations, problems of parental guidance, problems of the impaired child as a member of a group, and the like.

The subcommittee agrees that most current findings are being exploited to some extent in clinical practice. That this is not achieved in better degree nationally no doubt reflects a basic need to coordinate many agencies and activities. Obviously, more workers in the clinical and educative fields are needed.

Most of the vagaries of clinical differences can be resolved, it is felt, by extension of work in terms of description, definition, and nomenclature. It is not so much lack of effort that is involved here, perhaps, as the need to proceed from common assumptions toward common goals. At present, the field of medicine and the nonmedical specialties most closely related to medicine appear to be somewhat in advance of special education and rehabilitation in terms of differentiation of various problems in children. This is most obvious in dealing with the needs of the multiply-handicapped child (and many children with serious communication disorders fall within this category), in whom impaired hearing is only one of several deficits; it is much easier to describe the needs of such children, however, than it is to fulfill these needs with adequate facilities and educative procedures.

At the level of administrative arrangements, the group expressed itself freely to the effect that extensive, hard-headed investigation is needed. 'Team-

work' has become a byword, and it signifies an agreeable principle. Teams need captains, however, and interagency actions require managerial principles. A major need has to do with the development of a principle of primary responsibility in management of the child. Is this medical, or educational, or rehabilitative, or a combination of these—in varying degrees, or in varying patterns, according to the nature of individual problems? There is more sociological research to be done in this regard, and it should extend far beyond the polling of administrative or professional opinion. Perhaps some answers can be evoked from a careful evaluation of the affected groups in society.

Together with a principle of primary responsibility should be considered the order of management of each particular child. This is presently an evanescent thing, scarcely subject to an agreed pattern or agenda in national terms.

Some time was spent at the conference in discussing matters of recruitment of personnel, especially teachers. When one examines carefully the current resources of, say, teachers of the deaf, he finds two main channels: parents or relatives of deaf children, and young persons who happen to live in a community where there is a school for the deaf with a training program. The group felt that there must be a much better way to design a program of procurement, but felt incapable of doing this. There was considerable interest in speculation about the implications and effects of the various labels attached to the jobs and the persons in the field, and about whether some

changes, some relabeling, might not generate more, or at least a different, interest among those who might be drawn into the field.

Attention was drawn to the encouragement of further investigation of the use of well-baby clinics for early detection of problems. With this was expressed the need to explore ways in which closer coordination between school and health programs can be fostered.

A final suggestion had to do with the establishment of some kind of central clearing house of technical research, such as that provided by the Armed Forces-National Research Council Committee on Hearing and Bio-Acoustics (CHABA). Its function would be to collect, annotate, and evaluate the pertinent literature. It was felt that with the enormous current output of articles and studies, the task of maintaining a critical bibliography is becoming too great, even for the aggregate of professional journals. Part of this task is being undertaken by various organizations and journals; yet, a central resource for everything that has to do with hearing and hearing impairment is highly desirable.¹

The subcommittee wishes to express its continuing interest in all these matters, and its appreciation of the arrangements which made this study and discussion possible.

¹See statement on p. 9 concerning the newly established National Index of Deafness, Speech, and Hearing jointly sponsored by the American Speech and Hearing Association and Gallaudet College.

IX. Report of Subcommittee on Hearing Problems in Adults

BERNARD ANDERMAN

MOE BERGMAN

LEO G. DOERFLER

FRANK LASSMAN

RAYMOND CARHART, Chairman

Definition of Hearing Problems

It is not possible at present to give an unambiguous description of hearing problems in adults in terms of hearing behavior alone, in terms of information from related fields, or in terms of the two combined.

The reason this cannot be done is that there is a lack of normative data necessary to assess the interactions (a) between the individual's hearing capacities and the multitude of his other characteristics, (b) between his hearing capacities and his environment, and (c) between his nonauditory capacities and his environment. It may even be questioned whether the terms currently

used in the attempt to describe the hearing problems of adults are appropriate.

However, it is possible, partly by way of illustrating the difficulty, and partly by way of suggesting the first steps in realizing a more effective definition of hearing problems in adults, to mention a few areas worthy of research:

1. What are the varieties of experience that are encompassed in hearing? For example, what are the relationships between hearing and listening? What are the roles of loudness, pitch, discrimination of complex symbols, and other factors in auditory experience?
2. What is the relationship between measures of hearing function and the handicap an individual possesses?
3. What other aspects of human function and human reaction, in addition to auditory factors, inter-

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- act to determine the magnitude and nature of social handicap?
4. What are the critical dimensions, from the social point of view, of auditory function at suprathreshold levels?
 5. How does a hearing problem interact with other problems which the individual possesses? That is, what is the nature of 'multiple difficulties' as encountered in adults?
 6. What is the relationship between self-evaluation of a hearing problem and society's evaluation of the same problem?
 7. What is the scope of hearing problems as these exist in the adult population? For example:
 - a. What, from the standpoint of formal diagnosis and classification, are the types and incidences of hearing problems?
 - b. What, from the standpoint of human adjustment, are the types and incidences of hearing problems?
 - c. What, from the standpoint of human adjustment, are the significances of the measures which are yielded by formal auditory tests?
 - d. What are the unique features of the auditory disorders which are typical of different stages in life? How, for example, are the problems of young adulthood distinguished from those of the 'twilight years'?
 8. What are the physiological foundations and the backgrounds in pathology which underlie the impairments in auditory function encountered in adults?
 9. What insight into the basic processes of audition and of the organism can be obtained from seeking relations between hearing problems in adults and aberrations in either the structure or the function of the auditory system?
 10. What new tests of hearing function are needed and what is the meaning of existing tests?
 11. What new tests of communicative efficiency are needed and what is the meaning of existing tests, if such tests are currently available?
 12. Finally, as a last illustration, what profiles of performance (i.e., multiple descriptions of human function) can be developed for the purposes of (a) categorizing hearing problems in adults, (b) predicting 'live-a-day' efficiency, and (c) making prognostic judgments as to both the cause of the hearing problem and of its interpersonal implications?

Clinical Services in Aural Rehabilitation

Aural rehabilitation may be defined as improvement in the capacity of an adult with hearing impairment to cope with his environment. However, it is not possible at present to give either (a) a satisfying description of the scope in the needs for aural rehabilitation among adults with hearing problems or (b) an adequate evaluation of procedures for such rehabilitation. The major difficulty lies in the fact that these things can be known only as the features of hearing problems, themselves, are adequately defined in terms of the human interactions involved.

Nonetheless, it is possible, partly

for the purposes of illustration and partly as the first step in recasting current concepts of aural rehabilitational needs and procedures, to cite a few areas for potential research.

1. What is the relation between a person's need for management by specific contemporary clinical procedures and the nature of his hearing problem as currently conceived? To wit, and restricting the example to hearing aids:
 - a. What should be the criteria for considering the use of a hearing aid?
 - b. What should be the procedures in selection of a hearing aid?
 - c. What are the principles which should govern decision to use a binaural instead of a monaural hearing aid?
 - d. How should the design of hearing aids and the criteria for their selection be related to the etiologies of hearing impairments and to the disturbances in auditory function which individuals evidence?
 - e. What should be the program of follow-up for the individual who procures a hearing aid?
2. What are the proper criteria for specifying a program of auditory training, speechreading, speech training and related procedures when a particular type of hearing problem is encountered?
3. What are the relative merits of combining clinical procedures and, if such merits exist, what principles should guide in selection of combined procedures for an individual? For example:
 - a. What are the values of combining speechreading and hearing aid use?
 - b. What is the value, if any, of employing auditory training prior to procurement of a wearable hearing aid?
4. How may the efficiencies of clinical measures be determined? For example:
 - a. How may the results of a particular procedure be assessed upon its completion?
 - b. How may efficiencies of clinical procedures be predicted?
5. What special considerations must be given to the effects which particular occupations and patterns of living have upon the magnitude of the hearing problem associated with auditory deficiency?
6. How would contemporary theory and practice in aural rehabilitation be revolutionized if reassessed from the viewpoints of other disciplines and professions? In other words, how would 'aural rehabilitation' be redefined by such reexamination?
7. How may we determine the value of clinical services to the individual himself? What are the really pertinent parameters involved and what are their relative significances to the individual?
8. What is the role of publicity, education of the public, and the control of community attitudes in determining the individual's receptiveness for clinical services?
9. Finally, as a last illustration, what profiles of performance, i.e., multiple descriptions or human function, can be developed for the purposes of (a) evolving diagnostic and remedial procedures, (b) im-

proving the management of the individual, and (c) evaluating the effectiveness of his clinical program?

Evaluation of Clinical Programs

Research into the relative merits of different administrative plans for clinical services and of different professional patterns for aural rehabilitation is feasible only to a limited degree. It is practical to ask the question as to whether there are special merits to some of the organizational structures which *are evolving in our culture*. It is not practical to ask whether programs which hold no promise of finding an easy place in our culture have added merit or not, even though these programs be highly ingenious.

Preparation of Professional Personnel

It is impossible to outline definitively the requirements which should be satisfied by persons engaged in professional management of hearing problems in adults. These requirements must depend, ultimately, upon determination of the function which personnel in this area are to perform. These functions must be defined in terms of (a) the

nature of hearing problems and (b) the scope of the aural rehabilitational management to be accomplished. These two factors themselves must first be clarified through research, as outlined earlier. Once this clarification is achieved there still remain two other research tasks. The first task is to determine the skills which a person must possess in order to perform the professional duties involved. The second task is to determine the 'characteristics' (biographical, biological, intellectual, etc.) of persons who demonstrate these skills in high degree. Once these tasks have been accomplished, the appropriate program (or programs) both for selection and for preparation of personnel in this area will quickly become apparent.

In the meantime, numerous practical problems of shorter term importance can be investigated for the purpose of improving existing curricula and practices in the training of professional workers. The emphasis must be upon achieving effective preselection of personnel and an optimal educational sequence. The latter must embody judicious integration of basic subject matter, materials from allied fields, the substantive aspects of audiology, and personal mastery of clinical techniques.

X. Report of Subcommittee on Hearing Problems in Large Groups

ROGER B. MAAS

E. THAYER CURRY

HAYES A. NEWBY, *Chairman*

The discussion in the conference group concerned with hearing problems in large groups was organized around three main topics: hearing problems in industry, hearing problems in school populations, and hearing problems in military populations. Under each of these topics the subcommittee and conference participants who met with the subcommittee discussed (a) problems in discovering the presence of hearing loss, (b) problems of medical and educational follow-up of those determined to have impaired hearing, and (c) the training of personnel to participate in hearing conservation programs in these various environments.

Hearing Problems in Industry

Following are some of the more important questions which, in the subcommittee's judgment, deserve further research:

What is the best way of conducting

Roger B. Maas (D.Ed., Stanford, 1949), Employers Mutual Liability Insurance Company; E. Thayer Curry (Ph.D., Iowa, 1939), University of Illinois; Hayes A. Newby (Ph.D., Iowa, 1947), Stanford University.

hearing surveys in large industrial populations? Should a standard pure-tone screening test be employed, or should a single-frequency screening method as suggested by Glorig be utilized? Should group audiometry be attempted? Or should some form of automatic audiometry as used by the military be employed?

How do the hearing losses in industrial populations compare with the results of such surveys as the one conducted at the Wisconsin State Fair? Are there differences in hearing acuity among various ethnic groups represented in our industrial populations? Are there differences in the incidence of clinically significant hearing loss among these ethnic groups? Should, for example, separate standards be applied to Negroes in determining the presence of hearing loss? There is some evidence to suggest that the incidence of hearing loss may be greater in Norway and Sweden than in other European countries. Does this suggest that Scandinavian population groups in the United States might show a greater incidence of hearing loss?

There is a need to standardize methods of conducting tests in various industries and to establish criteria for identifying hearing loss so that information may be more freely exchanged between one industry and another. Standardization of methods of conducting tests and reporting data might well be worked out through conferences of representatives of various industries. A very important question that concerns the industrial group is that of the best method of determining compensation for hearing loss. Should compensation be based on the results of speech audiometry, or is it possible to work out an equitable method of evaluating hearing loss for compensation purposes on the basis of pure-tone audiometry?

An important aspect of the industrial problem has to do with determining who shall be charged with the responsibility for performing these tests in industry. And how shall the individuals selected to administer the test receive proper training? There is a need for more study of the reliability of serial audiograms in the industrial setting as one means of arriving at the adequacy of utilizing partially trained personnel for performing the necessary tests. What should be the role of the professional audiologist in relation to industrial hearing conservation programs? Does he have a role, or can the industrial physician perform the duties which would ordinarily be considered to be audiological? There is a considerable need to improve the calibration of individuals who are to do the testing. How can responsible individuals in industry best be informed of the need for improving methods of discovering hearing loss, and how can the advis-

ability of utilizing the professional services of audiologists best be brought to the attention of these individuals in industry? Does ASHA have any function to perform in acquainting industry with the responsibilities of the field of audiology? In this connection, as an aside which might be taken up under the heading of military problems, there is no provision in the military table of organization for recognizing audiology as a separate discipline.

In connection with problems of following up the results of testing programs in industry there is a need to know the answers to such questions as the following: How can workers be motivated to utilize available ear protectors while working in noise? How can they be motivated to seek otological help when needed? How can physicians who see industrial patients be made aware of the importance of proper counseling? What is the proportion of treatable versus untreatable hearing losses discovered in industrial hearing conservation programs? There is a need for more extensive hearing surveys of adults to gain more information on what constitutes normal hearing among adults in various age groups.

Following are some miscellaneous problems associated with the industrial environment: Where is the economic break-even point on numbers of employees to be tested? In other words, when does it become feasible for an industry to institute a program of testing involving every employee? How adequate are presently-available mobile units for providing proper testing environment in industry? How can we provide better audiological services

for industrial workers, including speechreading, auditory training, hearing aids where indicated, and frequently speech conservation? How can these services be provided by industry and paid for through the medium of compensation insurance? More work needs to be done on the psychological problems produced by hearing loss associated with acoustic trauma. Also, more needs to be done on discovering those individuals who are noise-susceptible. Can any simple test be devised which will pick out the individual who is likely to incur damage to his hearing through exposure to noise? Are there psychological tests which will help to identify noise-susceptible individuals? That is, are there psychological characteristics which are correlated with noise susceptibility? What are the psychological and physiological effects, other than those associated with hearing loss, of employment in noisy situations? Some work has been started in all of these areas, but much more information needs to be acquired.

Problems in School Populations

One of the problems which is being studied now and which requires further investigation is the matter of the single-frequency or two-frequency method of screening versus the more complete screening test. Also, of course, the controversy between the proponents of group testing and the proponents of individual testing is still continuing, and more research is needed to determine the suitability of group tests. There is a need for dissemination of information concerning the results of hearing conservation programs from one district to another and from one state to

another. At the present time it is difficult to make comparisons of hearing surveys in various parts of the country because of the use of different techniques, different standards of passing or failing screening tests, and different standards for determining the medical significance of hearing loss.

Some thought should be given to the question of redefining what constitutes a medically significant hearing loss sufficient to warrant an otological examination. How important are the high frequency hearing losses, those at 4000 and 8000 cps? Many otologists regard these very high frequency losses as congenital defects in hearing or at best static losses which will not be affected by treatment. There is need for a longitudinal study of children with these very high frequency losses to see if indeed they are static, or if they become progressively greater with the passage of time, and perhaps also extend into the lower frequencies which are of importance to speech. The possibility of developing a speech-hearing screening test, or perhaps a test which combines speech and pure tones, should be considered for use in the public schools.

What is the incidence of problems of perception of speech stimuli as opposed to problems of merely sensory acuity? In other words, is there a considerable number of children who have difficulty in 'auding' but respond to pure tone stimuli well enough to pass a standard screening test? What is the relative incidence of hearing loss in the various grades? What is the relative incidence of conductive and perceptive types of loss in the public school populations? What is the effect on the incidence

of hearing problems of providing medical care for those children discovered to have hearing impairment? In other words, can it be demonstrated that hearing conservation programs are valuable in that medical treatment accorded children who fail screening tests does result in restoration of hearing to normal limits in many instances?

The best way of organizing hearing conservation programs needs to be worked out, perhaps at a national conference of representatives of the various states. How frequently should a child's hearing be tested? Who is to perform the hearing testing in the public schools? What shall be the training requirements of public school audiometrists? Some uniformity throughout the country needs to be developed.

There is a need to know more about what constitutes normal hearing at all frequencies in various age groups throughout the public school population. Also the differences in hearing acuity and differences in incidence of hearing loss among various ethnic groups of children should be investigated. What differences do variations in geography and socio-economic level make in incidence of hearing loss? Are there sex differences in type, degree, and incidence of hearing impairment? Is there a group tendency for the right ear to be more acute than the left ear, as has been suggested? Is there an effect on incidence of hearing loss of such factors as the presence or absence of iodine in the diet?

An area that needs considerably more research is that of nonorganic hearing problems in children. What is the incidence of such problems, and what are the reasons which operate to influence

children to assume a hearing loss? What is the best way of handling these problems in medical and educational follow-up?

Problems in the Military Organizations

There is considerable overlapping between the audiological problems in the military and those in industrial populations, and for practical purposes both of these groups could be considered under a single heading. There is a need for longitudinal studies of those individuals who are noise-exposed in military environments, and for some way of determining whether the general military environment has any effects on hearing. Why do people leave jobs, either in the military or in industry? Is change of job related in any way to noise levels or to acoustic environment of an unpleasant nature in which work is performed? Among military populations, more needs to be known about the incidence of otological problems. What proportion of hearing problems in the armed forces is conductive and what perceptive? More needs to be known concerning the correlations, if any, between prevailing noise spectra and frequencies affected on the audiogram. The relationship between auditory fatigue in laboratory experiments and the occurrence of permanent, irremediable hearing loss needs to be studied. Again, how can the individual who is noise-susceptible be identified?

An important question for the military has to do with the effects of hearing losses of various kinds on the performance or efficiency of military personnel. For example, does a high fre-

quency loss at 4000 or 8000 cps have any effect on the ability of fliers to function in their jobs? At what level of severity does a hearing loss interfere with the ability to understand military voice communications? How important is speech audiometry in assessing the hearing ability of military personnel? Another problem which is receiving investigation is the comparative efficiency of automatic and manual audiometry in identifying military personnel with hearing problems. The adequacy of automatic audiometry needs to be studied more thoroughly.

What are the differences in effect on hearing of exposure to vibration type noise and impact noise? What are the problems involved in protecting the ear from impact noise? Do they differ from problems of protection from vibration noise? More needs to be known about the long range effect on the hearing of persons who have been removed from

noisy environments. Over a long period of time is there any recovery of function that has once been lost? We know about the immediate effects of removal from a noisy environment upon the auditory acuity of a person who has not been in the noisy environment for any great length of time, but what are the effects after a period of years?

Conclusion

The subcommittee is aware that research is presently being conducted on many of the problems mentioned. Much more research is needed, however, to answer the many perplexing questions which confront the worker in this field. The subcommittee feels that much could be accomplished in the way of standardizing procedures in hearing conservation programs by holding conferences, and it recommends that federal agencies assume leadership in sponsoring such conferences both on a regional and national level.

XI. Report of Subcommittee on Problems of Basic Research in Speech and Hearing

JAMES F. CURTIS

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Speech and Hearing Research

The primary concern of this subcommittee has been with the basic research needs in the area of speech and hearing. There can be no question, when one surveys the field broadly, that through the years there has been considerable sophisticated research in the areas of speech and hearing. In general, it appears that the more substantial research has been concerned with the processes of normal speech and hearing, rather than with the abnormal. The major contributions have come from a very broad range of disciplines from mathematics and electrical engineering to physiology and psychology. A limited number of these contributions have been made by persons whose primary profession is within the area of speech and hearing.

James F. Curtis (Ph.D., Iowa, 1942), University of Iowa; James P. Egan (Ph.D., Harvard, 1947), Indiana University; Ira J. Hirsh (Ph.D., Harvard, 1948), Central Institute for the Deaf and Washington University; Jack Matthews (Ph.D., Ohio S.U., 1946), University of Pittsburgh; Gordon E. Peterson (Ph.D., Louisiana S.U., 1939), University of Michigan.

The areas of speech and hearing, however, certainly have not been reduced to disciplines which are rigorous in nature. We have very little ability to apply definitive (or mathematical) statements to the speech and hearing processes and at the present time the field is afflicted with verbal descriptions and theoretical speculations which have little systematic basis.

It is the firm belief of the members of the subcommittee that the major burden for research in these areas should be carried by persons who have specialized and who have primary interests in the areas of speech and hearing. We look upon research as an unending process of continued modification, contribution to, and advancement of the basic knowledge of the field. We consider it imperative, therefore, that means be found to develop and support more extensive and more substantial research in the speech and hearing fields. The first and greatest need is for research on the processes of normal speech and hearing involved in communication. Certainly an understand-

ing of the pathological contributes to an understanding of the normal, and a study of the pathologies aids greatly in indicating and defining the parameters involved in the normal processes. Without basic concepts of normal function, however, it becomes extremely difficult to interpret and define the abnormal. The subcommittee believes that this point of view extends well beyond the restricted areas of speech and hearing to the function of systems and mechanisms in general.

Training for Research

The subcommittee feels that the first and most demanding need in this field is not for the definition of specific informational lacks and research needs, but rather for the support and development of educational and research opportunities for those interested. The field is very clearly interdisciplinary in character and large amounts of knowledge from many related areas are essential to substantial and enduring contributions to an understanding of speech and hearing communication. Both junior and senior persons working in this field have not had and do not now have sufficient opportunity to devote themselves to study and research. The completion of a Ph.D. degree within the area of speech and hearing is at present generally an inadequate preparation for responsible research in this field. The need of post-doctoral study and research opportunities is exceedingly critical. There are already outstanding research laboratories and clinics in this country (some of them not within departments of speech) where people specializing in the areas of speech and hearing could gain tremen-

dous benefit from post-doctoral research experience. In general, the laboratories within the specific areas of speech and hearing are inadequately staffed, and have utterly inadequate funds to provide proper post-doctoral research experience for many who would greatly appreciate the opportunity if it could be provided under reasonable financial circumstances. The talent, abilities, and sometimes even facilities are already available at these laboratories, and the urgent need is for supporting funds for interested post-doctoral personnel who can devote their efforts primarily to intensive study and research.

It should be emphasized also that a number of the more senior persons working in this field, who have long had genuine and sincere interests in study and research contribution, fully recognize their limitations in background and in experience in the atmosphere of a mature research team. It would be a tremendous contribution to the development of research in this country in the area of speech and hearing if senior fellowships could be granted which would make it practical for some of these men to spend one or more years studying in schools, departments, and laboratories of their choice to advance their own knowledge and research experience and techniques.

At the more junior level there is also an urgent need for funds to support graduate students in the manner of scholarships and fellowships. These aids should be directed toward those students seeking more scientific backgrounds and actual research experience in clinics and laboratories throughout the country.

Research Problems

The above statements constitute the subcommittee's primary conclusions and major recommendations. Against this background, some of the major areas of needed research may be presented.

On the basis of the considerations set forth above, the subcommittee would consider it presumptuous to attempt to define the full scope of research in this field, or to judge the relative importance of specific areas or research problems. The following suggestions, then, are intended mainly as illustrations of research needs which are currently evident.

The major research needs are not to be expressed only in terms of specific research projects, for one of the more basic limitations in the field at present is the lack of suitable instrumentation and techniques for research. In the study of both speech and hearing it is necessary to deal with biological mechanisms that are very complicated in structure and that are not particularly accessible nor easily observed. In measurements of the various aspects of the physiological production of speech in particular, instrumentation and technology are considerably retarded relative to the technology of related physical and engineering sciences. Thus, support is needed and a great deal of it, not simply to find answers to specific problems, but to apply modern techniques and instrumentation to the study of speech and hearing processes. The development of methods of measurement and observation is in some cases even more essential at this time than the discovery of answers to specific questions of fact. In some cases

the development of a new technique or application of modern instrumentation would make possible the development of a whole new area of technical knowledge within the field of speech and hearing.

Language. During the last 20 years there has been a very extensive development of theoretical linguistics, primarily in this country. This development has in general been achieved at a relatively abstract level and the reduction to rigorous methods of description is yet to be achieved. Language, in the sense of symbolic structures, is a very essential aspect of the total process of communication; one could hardly expect to understand speech and hearing functions or their pathologies without a related knowledge of the codes involved. Substantial further research on language and the specification of language in terms of its semantic and code properties is essential. It is obvious that an understanding of the nature of language is of tremendous importance in dealing with many types of disorders of speech and hearing. It seems difficult, however, to make meaningful applications until the basic properties of language are better understood and described; the development of more rigorous research in this field is much needed.

Speech Production. One of the most undeveloped fields of investigation in the communication sciences is that of physiological phonetics or speech production. An understanding of linguistic structures in terms of the mechanisms of speech production is particularly needed. Almost every aspect of the production of speech is in need of more modern techniques of study and re-

search and the development of instrumental methods.

Respiration. The relation between respiratory processes and speech production is very poorly understood. There is, of course, only a limited knowledge available about the basic mechanisms of respiration. There has been much speculation in the past about the relation of respiratory patterns to speech, and most of the hypotheses have been seriously questioned by many who work in the field. After better understanding of the basic mechanics of respiration has been achieved, it may be possible to relate respiratory patterns to voice production and to voice problems. There is a need for a better understanding of the relation of external bodily movements to internal thoracic changes. It is believed that body type may be a basic parameter in the analysis of these relationships. **While** the primary requirement for normal speech production is supporting **breath** pressure, it appears very probable that there are major secondary **effects** and influences upon voice and speech according to the pattern of respiratory control employed.

Adequate knowledge of respiration is also essential to the development of a general theory of speech and linguistic structures. There is some evidence that respiratory impulses occur at syllable rates in the production of speech; this in turn would imply that the syllable may be an essential linguistic unit based on the physiological system of speech production. Research on this subject is not only obviously applicable to linguistic theory but also to those types of speech disorders

which involve problems of respiratory control.

Vocal Quality. The various qualities of voice have long been one of the major mysteries in speech. Some physical theories of the operation of the larynx have aided in gaining an understanding of the nature of voice quality. However, vocal quality is not only the result of actions of the larynx; supralaryngeal characteristics also have a pronounced influence upon the quality of voice. The further development of techniques for observing the actions of the larynx, and the extension of present techniques to an organized treatment of vocal pathologies is highly desirable. A major step forward would be to relate characteristic patterns within the normal voice to corresponding acoustical features; later this should be extended to the various vocal pathologies. Once acoustical descriptions of the various types of laryngeal and supralaryngeal productions have been achieved, it may then be possible to study the perceptual aspects and attributes of voice quality.

Nasalization. The study and interpretation of nasalization in speech has been particularly handicapped because it is associated both with vocal quality and with the articulation of certain speech sounds, and because the actions of the velum are not reflected in a simple manner in the acoustical signal. In fact, the interpretation of velar actions and nasal resonances according to the acoustical signal is a highly technical problem. There is a need and also a possibility of developing methods of direct observation of the activities of the palate during normal speech. Nasal probes offer the possibility of studying nasal resonances. Since nasality is an important

problem in speech pathology, it seems highly desirable that there be corresponding support of research on both the physiological and the physical properties of nasality.

Articulation. One of the most varied and complex, and also least understood, aspects of speech production is that of articulation. In past studies the mechanical techniques employed usually could not be properly calibrated. It would seem highly advantageous to make applications of electro-acoustical methods for the study of static and dynamic articulatory pressures; aero-dynamic methods should also be applied to the analysis of turbulent articulatory sounds. Until instrumentation and research methods are adequately developed for such studies, it does not seem likely that any major advance in understanding of the articulatory processes will be achieved. At present there is almost no possibility, therefore, of a technical understanding of the mechanical aspects of impaired articulation.

Hearing. One of the ultimate and most basic objectives of research on communication is an understanding of the nature of speech perception. The committee regards adequate knowledge of the processes of speech production and speech acoustics to be the prerequisite to this understanding. In addition, a basic knowledge of auditory processes is obviously essential.

Perception of Natural Sounds. Early psycho-physics has been primarily concerned with tones the frequency properties of which could be specified. Somewhat later the interests were extended to the time domain, and at present there is considerable rigorous knowledge about auditory function in the

perception of tones, random noise, and impulses. There is a great need to extend this research to a fuller understanding of the neural mechanisms involved. There is an equal need to extend the research in audition to include the types of sounds which are more characteristically found in nature, such as the sounds of impulsed resonators. There is little question but that many parameters not now properly appreciated play a predominant role in the auditory perception of sounds which are naturally generated and which thus have special associated semantic properties.

Hearing Measurement. While techniques of audiometry have been greatly improved in the past two decades, there is now a serious need to develop procedures for establishing norms and for quantifying difficulties at various functional levels of audition. There is a particular need for research directed toward a coherent description and specification of the various functional levels of auditory detection and recognition within the central nervous system. The step from tests utilizing pure tones to actual language tests is tremendous; there are certain intermediate stages in the transition from the sensation of an elementary type of signal to the recognition of complex speech patterns which require new techniques of measurement and intensive study. Not only is much basic research in these areas needed, but attention must be given to the application of the findings of such research to an understanding of the processes of normal communication and of the auditory pathologies which may interfere with communication.

XII. Report of Subcommittee on Problems of Administration in Speech Pathology and Audiology

JOHN O. ANDERSON

DARRELL MASE

MARGARET HALL POWERS

CHARLOTTE G. WELLS, *Cochairman*

MARTIN F. PALMER, *Cochairman*

The subcommittee on administrative problems, by the nature of its assignment, worked with a self-formulated structure rather than within the framework used by the other subcommittees, and was concerned with problems beyond the general scope of clinical work, as such. Concern for problems in the area of administration is essential, the subcommittee believes, because of the large number of individuals—professional workers as well as those served—involved in programs controlled through administrative decisions and because sound policies and understanding are basic to providing an advantageous climate for research.

Four of the subcommittee members assembled materials on research needs

John O. Anderson (Ph.D., Ohio S.U., 1950), Southern Illinois University; Darrell Mase (Ph.D., Columbia, 1945), University of Florida; Margaret Hall Powers (Ph.D., Iowa, 1938), Division of Speech Correction, Chicago Public Schools; Charlotte G. Wells (Ph.D., Wisconsin, 1941), University of Missouri; Martin F. Palmer (Sc.D., Michigan, 1937), Institute of Logopedics and University of Wichita.

in the area of administration. Dr. Darrell Mase studied administrative problems in medical and related nonmedical areas; Dr. Margaret Powers assessed the problem of administration as it relates to public school speech and hearing programs; Dr. Charlotte Wells gathered information from directors of college and university training centers; and Dr. John Anderson obtained information from deans and presidents of colleges and universities offering training programs in speech pathology and audiology.

Each of these investigators, during the meeting of the subcommittee, summarized the information obtained. The subcommittee then selected the following points as salient:

1. Definitions of 'work areas' are needed in order to clarify, not only for speech pathologists and audiologists but also for workers in related medical and nonmedical fields, the function and scope of speech pathology and audiology.

2. The professional role of speech

and hearing specialists in the public schools needs study and clarification.

3. The distribution of the members of the total professional group in speech pathology and audiology, as well as those who are members of ASHA, needs to be determined, so that the distributions of workers in various areas can be seen clearly and research can be evolved to meet the needs of the greatest numbers.

4. Some of the most pressing problems of administrators of academic training programs in speech pathology and audiology need careful and immediate consideration. Among these problems are those of recruiting students for such academic training programs, of obtaining and holding a well-qualified staff, and of meeting the academic requirements of colleges and universities that are superimposed on professional training programs.

5. Chief among the other problems cited by directors of training programs are those of load distribution, academic and certification requirements, personnel, liaison, funds, space, and equipment.

6. Space, time assignment, staff procurement, and limited finances seem to be the most serious problems for college and university deans and presidents. The needs for coordination of related professional personnel in academic training, clinical services, and research procedures are also of concern to these administrators.

7. Schools can be useful in providing large numbers of subjects for research in the fields of speech pathology and audiology. With support from federal or state agencies, public schools can assist in research on many kinds of

speech and hearing problems by furnishing a large population for studies of deviations and by providing subjects for 'normative' surveys.

8. Certification of academic speech pathology and audiology training centers in our colleges and universities seems desirable.

9. A national registry of speech pathology and audiology personnel is needed.

10. Solution of some of the administrative problems might well facilitate research and improve clinical work.

11. Research in administrative problems should be broad in scope, focusing first on present administrative policies and practices. Until the present state of administrative practices is known, detailed study of special problems will not be as meaningful as it would be otherwise.

Three general research areas seem basic to the understanding of administrative policies and practices: (a) Surveys and studies should be made of present administrative policies and practices in the many types of programs designed to train speech and hearing clinicians, speech pathologists, and audiologists; (b) surveys and studies are needed to determine administrative policies and practices in a variety of settings, such as public schools, hospital clinics, university clinics, medical schools, and others; (c) and appropriate patterns of administrative practice should be determined for the guidance and information of interested administrators. Eventually, the information from these and other kinds of studies should be disseminated effectively to our own and allied professions.

The following specific projects might be undertaken to provide the information about administrative problems that is needed:

1. Survey sampling of present concepts about the training and the functions of speech and hearing clinicians, together with analyses of educational, medical, and other organizational frameworks within which these clinicians operate.

2. Surveys of relationships between members of the American Speech and Hearing Association and personnel in medical and nonmedical professions and organizations to determine the nature and extent of such liaison problems as may be in evidence.

3. Survey of information needed to clarify for medical and dental schools the relationships between speech pathologists and audiologists and medical and health-related personnel.

4. Studies of terminology used in speech pathology and audiology that would result in better communication between speech pathologists and audiologists and other nonmedical as well as medical personnel.

5. Studies designed to clarify the relationship between academic training programs in speech pathology and audiology and the work of public school speech and hearing specialists.

6. Job analyses designed to clarify present practices in the public schools.

7. Consideration of the effectiveness of specific organizational approaches to public school speech and hearing services in terms of number of meetings per week with children, itinerant versus centered programs, referral methods, and related matters.

8. Consideration of large-scale speech and hearing studies that would be possible with the cooperation and support of public school administrators.

9. Determination of present policies that govern academic training programs in speech pathology and audiology.

10. Consideration of effective means of recruiting students in order to provide needed professional personnel.

11. Development of 'guide lines' for training program administrators to assist them in meeting the several requirements of academic and professional programs in the colleges and universities.

12. Presentation of administrative 'guide lines' for deans and presidents who do not have first-hand information about the scope of training programs in speech pathology and audiology.

13. Informational studies of present programs, the current college and university situation, and the difficulties apparent to staff members who train speech and hearing clinicians.

14. Consideration of a plan for evaluating professional training programs in speech pathology and audiology in academic institutions, perhaps at two levels, in order to give recognition to the specialized evaluational needs of the smaller schools.

The response to the subcommittee's attempts to determine research needs in the area of administration emphasizes the urgent priority for such research. The study of administrative problems can provide the necessary orientation and the basis for sound planning that will serve as a key to success in all other types of research in the fields of speech pathology and audiology.

Summary and Recommendations

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The basic purpose of the study here reported was to determine and describe the important research needs in the field of speech pathology and audiology. This purpose was pursued in a manner calculated to focus attention by the members of the American Speech and Hearing Association upon the problem of research needs and to insure participation of Association members in the study. In brief, this was accomplished through the medium of the Research Committee of the American Speech and Hearing Association, which planned and executed a program involving (a) a survey of relevant publications as abstracted by four major abstracting services, (b) a polling of a representative sample of clinical workers in the field with regard to their expressed needs for research, (c) and a conference of fifty leaders in the profession who functioned as twelve subcommittees each concerned with one aspect of the total problem. The conference was also attended by some four hundred interested members of the Association in response to a general invitation to participate in the deliberations of the subcommittees. A Research Associate

appointed by the Research Committee devoted six months to the task of carrying out the activities essential to execution of the project and the preparation of the report.

Major Findings

1. A need for a compilation of comprehensive bibliographical information was revealed by the analysis made of the major abstracting services upon which professional workers concerned with speech and hearing problems currently depend. Relatively complete information concerning published information in the field is essential to effective research, instructional, and clinical work in the area of speech and hearing rehabilitation.¹

2. Polling of clinical workers in the field revealed a universal sense of urgency in regard to the need for a more substantial research underpinning of diagnostic and remedial procedures. It also indicated a need for systematic evaluation of professional training programs in relation to specific diagnostic

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¹See statement on p. 9 concerning the newly established National Index of Deafness, Speech and Hearing jointly sponsored by the American Speech and Hearing Association and Gallaudet College.

categories, clinical problems, and institutional settings.

3. The conference and the subcommittee discussions served to substantiate previous indications that persons with impaired speech and hearing make up one of our very largest handicapped groups. While additional surveys at all age levels are needed, it is clear that more than a million adults in the United States have speech and hearing disorders. There is reflected in the reports of the various subcommittees a particularly urgent need for research on the degree to which each of the different types of speech and hearing impairment contributes to social maladjustment and economic disadvantage. Present knowledge does not appear to justify the assigning of priority ratings to the various categories of impairment with regard to the need for research on their social and economic significance. The basic fact is that all forms of impaired communication play a significant role in the individual's social and economic adjustment.

4. The needs for research were expressed by the various subcommittees most clearly and urgently in terms of the following issues and problems:

a. The subcommittee reports indicate a fundamental recognition of the fact that the understanding of communication disorders requires interdisciplinary patterns of investigation and the pooling of data from many research centers in order to insure a sufficient mass and variety of information for purposes of dependable generalization.

b. There is a striking need of review and refinement of terminology employed in the description and definition of speech and hearing problems. This

is due in part to the fact that these problems are dealt with by a wide variety of specialized personnel and in part to the fact that the problems themselves are subtle, complex, and varied in their specific forms.

c. A related basic problem is that of differential diagnosis. Improved diagnostic procedures are essential to further clarification of terminology. Not only is there need for clarification of terminology and for precise definition of the terms employed in clinical description and diagnosis, but the instruments used to reveal aberrant communication behavior are also in need of refinement. It is to be expected that increasingly precise and quantifiable diagnostic information will be made available through continuous improvement of testing techniques and the development of new procedures.

d. Included under the heading of diagnosis, but extending further into considerations of remedial training, is the question of the degree of communication impairment which qualifies a person for admission to clinical services. The question also arises as to the degree of competence the individual should achieve before being released from the clinical program. Closely allied to these two problems is the need for developing adequate instruments for evaluating the effects of remedial procedures.

e. Comparative evaluations of different forms or techniques of remedial instruction are also among the important research needs in speech pathology and audiology.

f. Paralleling the expressed need for the evaluation of clinical procedures is

the need for evaluation of professional training programs and curricula.

g. The varying patterns of administrative control over clinical services in speech and hearing are also deserving of review and evaluation.

h. Finally, the need for more research in the biological and physical sciences, to which scientific workers in the area of speech and hearing may contribute their knowledge and skills, and upon which they depend for much of their basic information, is to be recognized and emphasized.

In final summary, it is the expressed conviction both of the subcommittees and of the Research Committee of the American Speech and Hearing Association that the profession of speech pathology and audiology stands in critical need of intensified research effort both in breadth and depth. This is

not only an immediate need but a continuing and long-range one as well. Longitudinal studies and cross-sectional investigations involving either descriptive research or controlled experimentation, are recognized as effective approaches to the unexplored and partially explored areas within the field of speech pathology and audiology.

Scientific research is done by men and women trained, motivated, and situated to do it. The success of the total research effort in speech pathology and audiology depends, therefore, on effective recruiting and training of research workers, adequate financial and other inducements for these workers to devote their time to research, and the availability of appropriate laboratory facilities, governed by administrative policies favorable to their intensive and effective utilization.

Appendix: Outline Provided Subcommittees to Structure Discussions and Reports

- I. *Description and Definition.* Can you give an unambiguous description of the disorder?
 - A. On the basis of speech and hearing behavior only, or do you require other supplemental information such as that from the medical sciences, psychology, etc.?
 - B. What kinds of information (tests, measurements, etc.) do you find are currently lacking in your study area that keep you from answering A. unambiguously?
 - C. Are there sufficient normative data to evaluate the degree of handicap (vocational, educational, social, etc.) associated with the disorder in specific cases?
- II. *Speech and Hearing Rehabilitation Services.* Does the description of the problem lead to an established specific program of speech and hearing rehabilitation?
 - A. If there are alternative procedures, how do you choose the procedure to be employed in any specific case?
 - B. What additional information is needed to decide between the alternative procedures?
 - C. Are there sufficient means to evaluate or measure the efficiency of a speech and hearing rehabilitation program?
- D. Is there evidence which favors a particular setting (school, clinic, hospital, etc.) for conducting this speech and hearing rehabilitation program?
- E. Is there evidence which favors a particular type of scheduling (full time, part time, concentrated, spaced, etc.)?
- III. *Training and Personnel.* What are the needs for further training of major workers in your study area?
 - A. What modifications or extensions of present training programs (curriculum, physical facility, practicum) are required to meet these needs?
 - B. What evidence is there that attributes other than those acquired through training contribute to competence in your study area?
 - C. What specific contributions from related fields are required for rehabilitation in your study area?
- IV. *General*
 - A. By what means do you attempt to determine the immediate causes of the disorder?
 1. What functional relation-

- ship obtains between such causes and your rehabilitation procedures?
2. What are the needs for extension of information concerning causation?
- B. What important research findings in your study area are not being well exploited in clinical practice?
 - C. What major differences concerning clinical procedures in your area seem to you to be resolvable through research?
 - D. Do you feel it would be profitable to explore relations between particular administrative arrangements (including sources of support) and the patterns of rehabilitation and research in this area?
 - E. What evidence is there that various kinds of prevention (medical, environmental, public education, etc.) will attenuate the incidence or severity of the disorder?
 - F. What factors (materials, inducements, etc.) are needed for selectively recruiting the kinds of workers required in your area?
 - G. What questions pertinent to your area have not been included by the Research Committee?