Audiological Rehabilitation: Research and Scholarly Efforts 1972-1981

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Concerns for rehabilitative audiology as expressed in the literature over the years 1972-1981 are surveyed. The topics that surfaced and the recurrent themes are catalogued utilizing the categories of the *Deafness Speech Hearing (DSH) Abstracts.*

The criterion for inclusion of publications and the selection method employed are discussed. General findings are presented in relation to each of the topical categories and comparisons are made relative to the frequency of their occurrence.

There is discussion of topics with regard to the frequency of appearance of each of their several subtopics. Notation is made of those subtopics that might logically have appeared but were apparent only by their absence.

Recommendations for future effort are made based upon the survey findings.

The purpose of this survey of literature is to highlight the concerns of professionals in the field as reflected in publications and to make visible the recurrent themes pertaining to the habilitation/rehabilitation of hearing impaired persons as they have appeared over the past ten years. Stating of that purpose is highly reminiscent of the statement of purpose for the seminar on aural rehabilitation held at Michigan State University in 1966 which laid the foundation for the establishment of this Academy (1966).

This survey was of the *Deafness Speech Hearing Abstracts (DSH)* and the *Journal of Rehabilitative Audiology (JARA)* 1972-1981. It is neither an attempt at an indepth content analysis nor an evaluation of the quality of the publications. It is simply a subjective thematic analysis, and unlike the ten-year review reported by the Ad Hoc Committee on Research of the Academy of Rehabilitative Audiology (1977) which pointed up the trends in aural rehabilitation research, this survey included all of the non-research discus-

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sion-type articles and creative works, including books as well, in order that the full impact of concern might be derived from the larger group of those engaged in the various dimensions of rehabilitative audiology. Subjective judgments were made in deciding which of the *DSH Abstracts* categories should be included, as well as in the placing of the *JARA* articles into those categories.

The following statements explain the criterion employed in the inclusion or exclusion of publications and the method used in the selection of them.

METHOD

The *Deafness Speech Hearing Abstracts (DSH)* provided the primary basis for the survey embracing the ten years from 1972-1981. As stated earlier, the *Journal of the Academy of Rehabilitative Audiology* was also surveyed since abstracts of its articles have not appeared in *DSH Abstracts*. As in any endeavor of this nature, judgments had to be made concerning the central thrust of each publication and an estimate as to its importance to the habilitative/rehabilitative process of hearing impaired persons. Further, observations were made as to whether or not the publication was domestic or foreign and a judgment as to whether or not it was quantitative or non-quantitative. Publications not included were those that were simply tangential to the habilitative/rehabilitative process, for example, description of reading curricula for deaf children; the validation of new circuitry design in electronic gear for auditory measurement purposes; or the development of a new tool for use by otologic surgeons.

In order to be selected, the publications (articles, reports, monographs, books) had to focus on one or more of those components defined as being part of the habilitative/rehabilitative process utilized with hearing handicapped persons. Historically those components have been defined variously to include lipreading/speechreading, auditory training, speech conservation, and amplification. A more current view of the process includes not only those just mentioned but also a concern for educational, psychosocial and legal aspects of hearing impairment, manual communication (signing and fingerspelling), tactile stimulation, speech and language development, speech and language fractionation or delay, speech perception and discrimination, educational programming for the hearing impaired, therapeutic and rehabilitative procedures and the development of sensory aids and devices that might be instrumental in the amelioration of auditory handicap or in facilitating better understanding of the habilitative/rehabilitative process.

The selection of publications therefore was based upon an implied operational definition of audiological habilitation/rehabilitation encompassing the historically important components as well as those that comprise the more current view of the process.

Thus the method employed to obtain the data was characterized by both

objective observation and subjective judgment guided by the selection criterion.

RESULTS

Figure 1 presents the number of publications from *DSH Abstracts* judged as being in habilitative/rehabilitative audiology from 1972 through 1981. Total number of publications was 3543. There is a rather constant number appearing each year except for the years 1975 and 1976 in which the numbers of publications escalated rather dramatically. Those two years account for slightly over 26% of the total publications occurring within the ten year period.

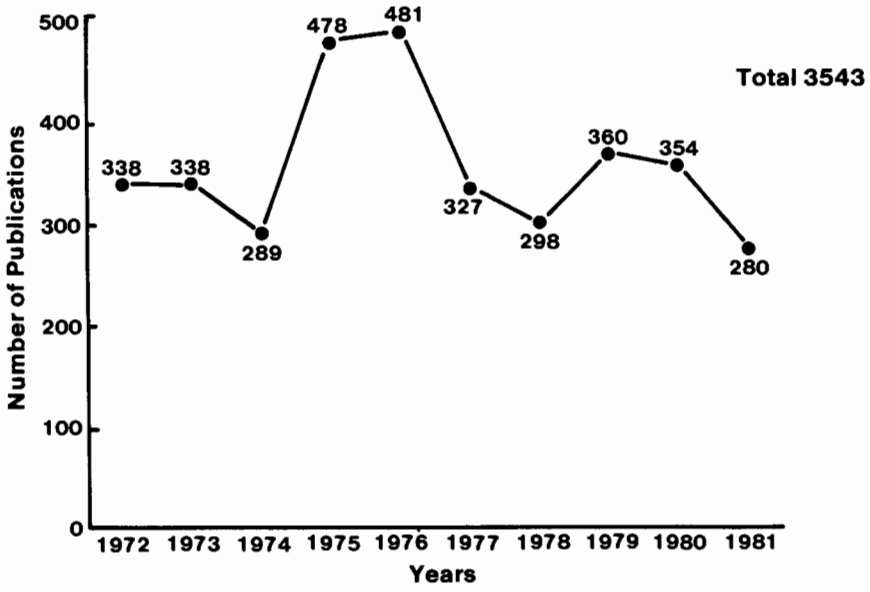

Figure 1. Number of publications in habilitative/rehabilitative audiology, 1972-1981 *(DSH Abstracts).*

Not only were the publications found within domestic sources but in foreign sources as well. Figure 2 presents the comparison of domestic and foreign publications over the ten year span. Note that at no time were the foreign publications as many as the domestic but they certainly do comprise a substantial portion of the total; in fact slightly over one-third (34%) over the ten years. Bear in mind however that these are foreign sources, not necessarily foreign authors, for many authors of foreign publications are citizens of the U.S.A. Likewise some foreign authors are published by our sources here

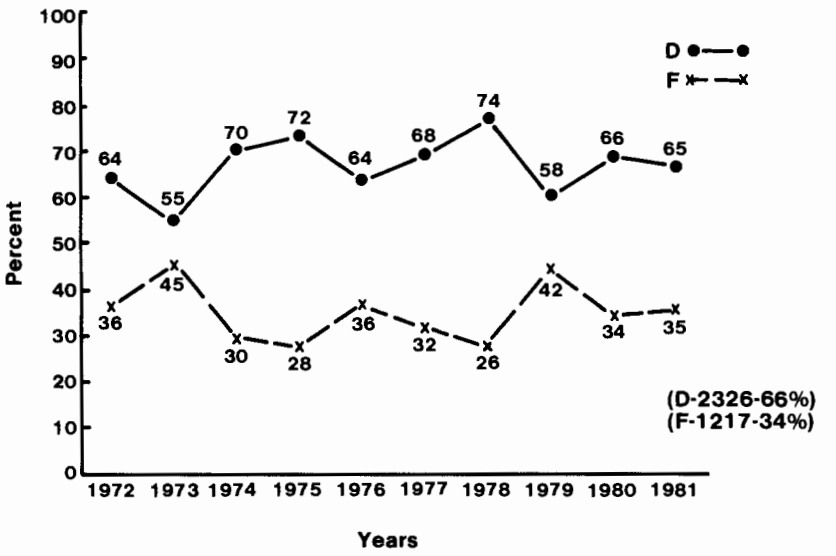

Figure 2. Percentage of domestic vs. foreign publications in habilitative/rehabilitative audiology, 1972-1981 *(DSH Abstracts).*

in the U.S.A.

Thirteen topical areas were explored that were directly a part of or highly important to habilitative/rehabilitative audiology. They included auditory training, speechreading and manual communication, hearing aids, education, speech perception, speech discrimination, psychological factors, social and legal factors, therapy-instruction-rehabilitation, speech and language development, speech and language deficiency, instruments and procedures, and a broad category called general. Other sub-areas of hearing in *DSH Abstracts* such as diagnosis and appraisal and psychoacoustics were surveyed as well when references to publications within them were listed under the several categories being examined. Figure 3 presents the number and a percentage breakdown of the publications that were found within the various topical areas. Note that contributions concerning hearing aids are greatest in number followed closely by publication focused upon the habilitative/rehabilitative process within the educational setting. As a matter of fact publications dealing with hearing aids, education and speechreading and manual communication comprise well over one-half of all contributions made. Auditory training, a principal component of the habilitative/rehabilitative process, however, shows up as comprising only three percent of the publications over the past ten years.

Insofar as domestic and foreign contributions to the topical areas are concerned, we observe on Figure 4, for example, that almost one-half of the writing on hearing aids was found in foreign publications, whereas, foreign

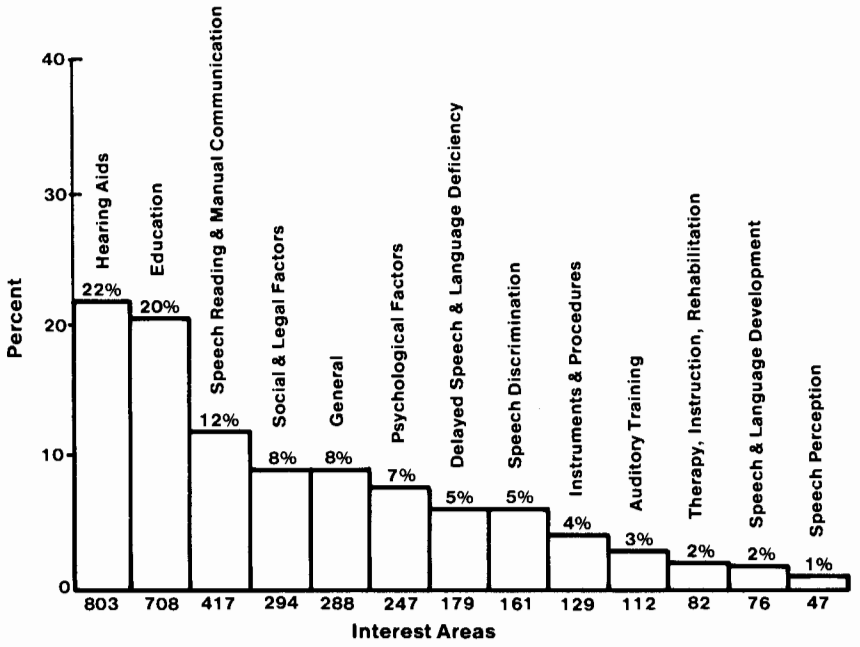

Figure 3. Percentage and number of publications in habilitative/rehabilitative audiology by interest area, 1972-1981 *(DSH Abstracts).*

publications carried only 20% of the publications on the social and legal concerns relative to the hearing impaired and only 24% on speechreading and manual communication.

The purposes of publications vary greatly. Some describe programs or discuss problems whereas others summarize unusual cases or give instructions to clients, parents, spouses, or students. Still others survey attitudes, literature, or existing conditions, of programs, etc. Yet others report upon experiments carried out in one or more of the areas of interest. Thus some publications are quantitative in nature and others nonquantitative. The curves in Figure 5 show how the publications judged as quantitative and nonquantitative were distributed over the ten years. The early seventies show an increasing percentage of nonquantitative publications with a decreasing percentage of quantitative. The gap, however, narrowed substantially from 1976 through 1981. Overall, 43% of the publications were judged to be quantitative and 57% nonquantitative.

Data in Figure 6 shows that in the areas of hearing aids, education, and speechreading and manual communication (which comprised 56% of all publications), nonquantitative contributions led the quantitative by eight percent in speechreading and manual communication, 54% in education, and

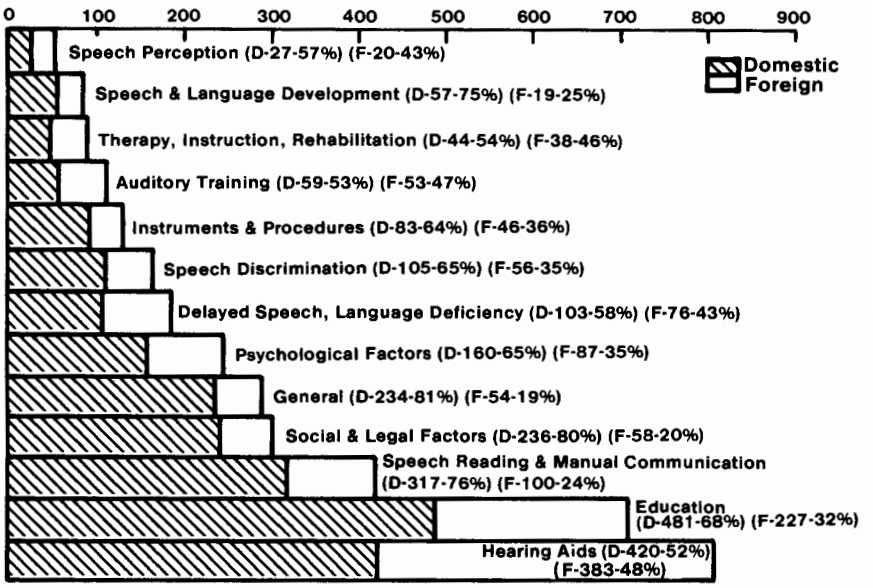

Figure 4. Number and percentage of domestic and foreign publications in habilitative/rehabilitative audiology by interest area, 1972-1981 *(DSH Abstracts).*

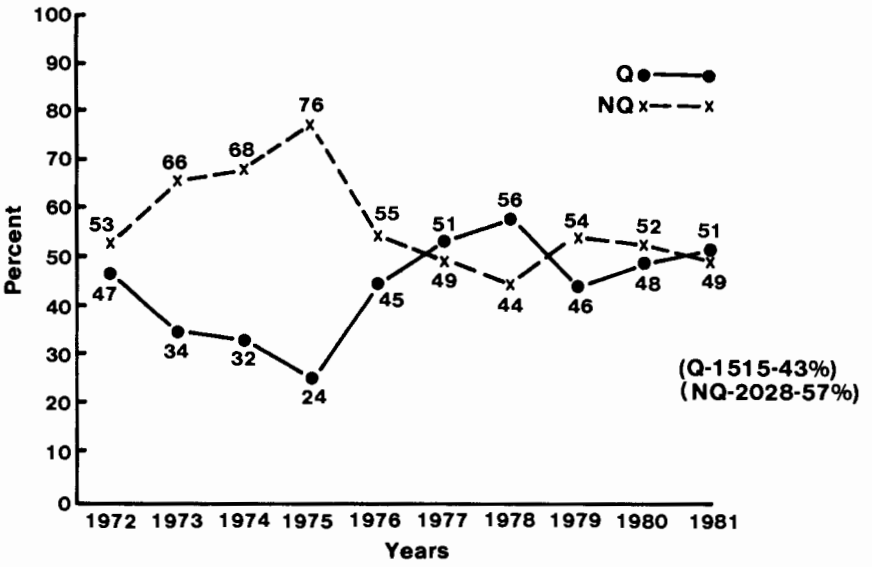

Figure 5. Percentage of quantitative vs. nonquantitative publications in habilitative/rehabilitative audiology, 1972-1981 *(DSH Abstracts).*

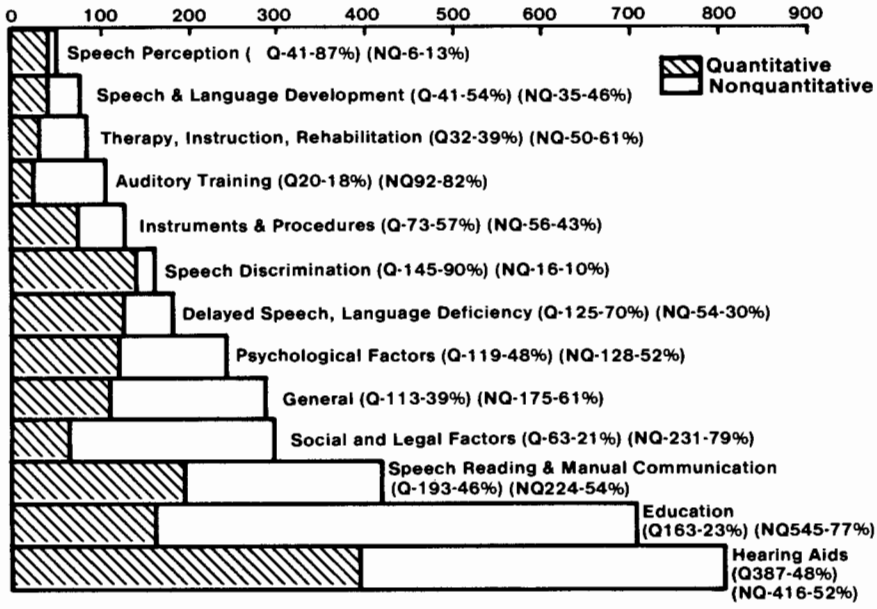

Figure 6. Number and percentage of quantitative vs. nonquantitative publications in habilitative/rehabilitative audiology by area of interest, 1972-1981 *(DSH Abstracts).*

four percent in hearing aids. In the areas of speech perception, speech discrimination, delayed speech, and language deficiency, the publications were characterized by a much greater percent of quantification.

Some may be aware, and others not, that the *Journal of the Academy of Rehabilitative Audiology* is not abstracted for publication in the *DSH Abstracts.* Therefore none of the data cited include articles from that journal. In order that we might have a picture of what has been published in the Academy journal, it also was surveyed from 1972 through 1981 and the same categories were employed as for the *DSH Abstracts.*

Total publications as can be seen in Figure 7 numbered 145. Note the generally ascending curve in terms of publications through the ten years.

Figure 8 shows a breakdown by number and percent by sub-area. Discussion of hearing aids and habilitative/rehabilitative audiology as related to the educational setting are the topics most frequently discussed, as was the case in the larger survey.

In terms of articles judged to be quantitative-nonquantitative, Figure 9 shows that every other year the quantitative articles outnumber the nonquantitative and vice versa. However, over the ten years the nonquantitative type represented 59% of the publications with 41% being quantitative. Recall that

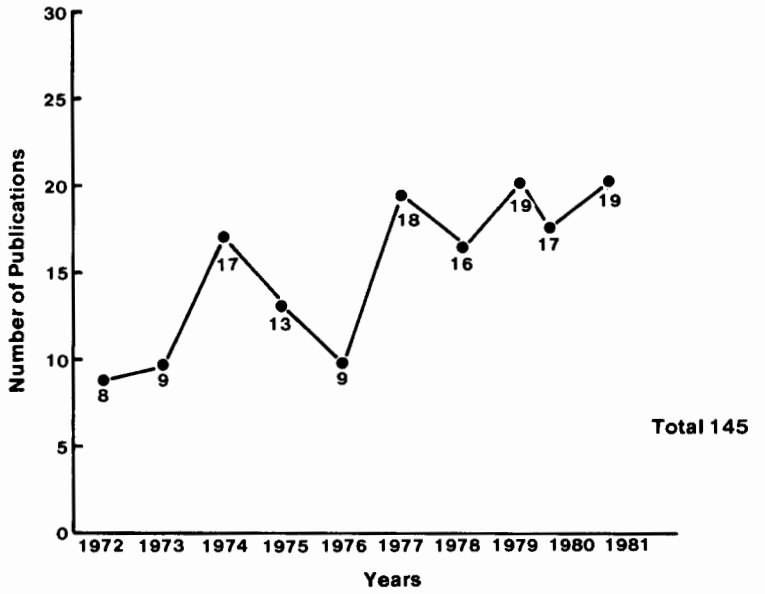

Figure 7. Number of publications in habilitative/rehabilitative audiology in *JARA*, 1972-1981.

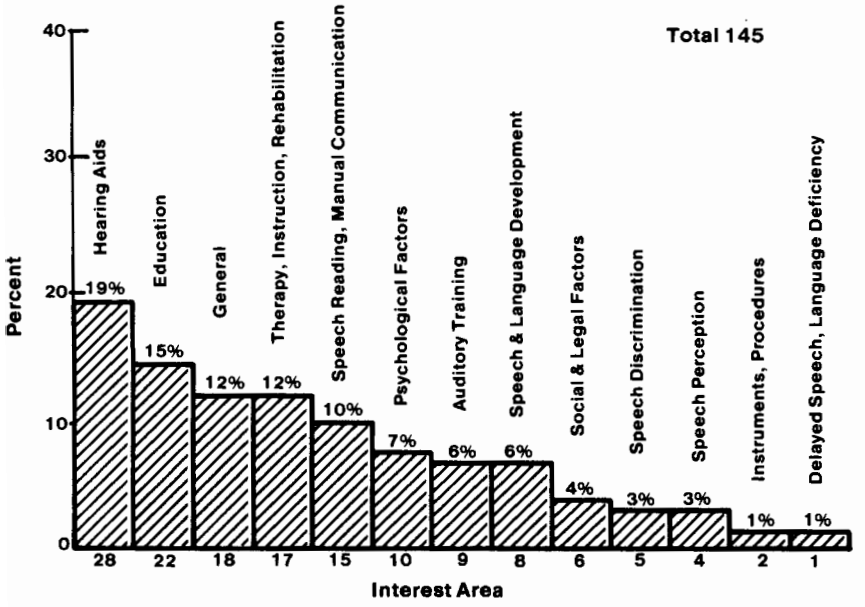

Figure 8. Percentage and number of publications in habilitative/rehabilitative audiology in *JARA*, 1972-1981.

in the *DSH Abstracts* survey the distribution was 57% nonquantitative and 43% quantitative.

Figure 10 shows the quantitative and nonquantitative distribution by subarea. The four least frequently appearing topics shown at the top of the figure are 100% quantitative whereas the four most frequently appearing topics are predominantly nonquantitative.

Table 1 presents a rank order comparison of the topics of the two surveys. Note that the first six items in each comprise three-fourths or more of the entire number of publications. It is of interest to note that the first six topics found in each are identical with the exception of the appearance of social and legal factors in the larger survey and therapy-instruction-rehabilitation in the survey of the Academy journal.

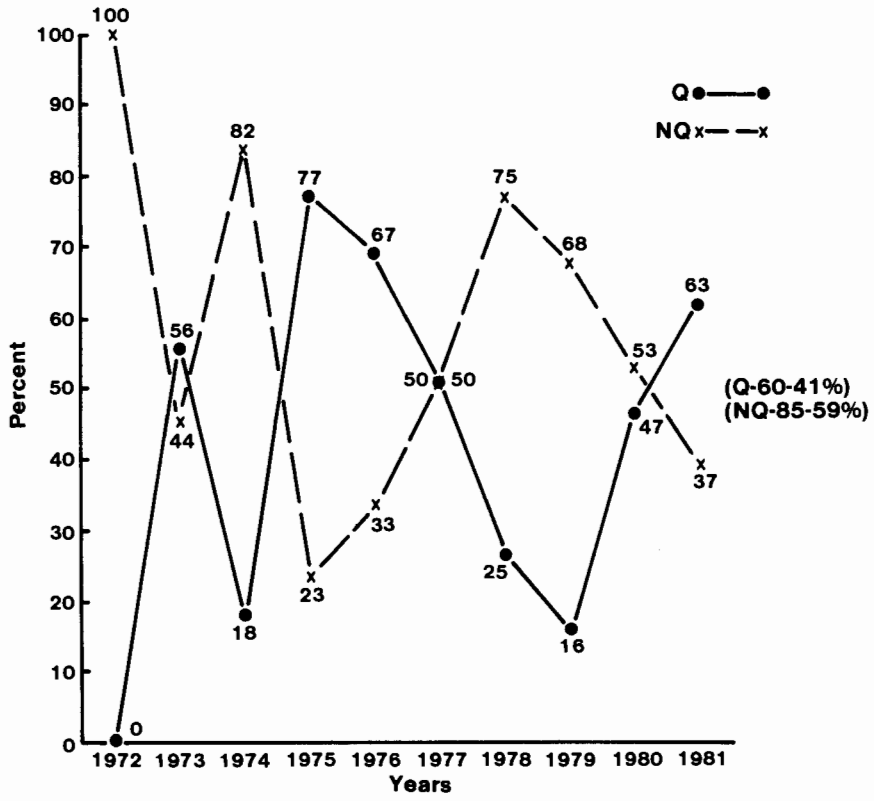

Figure 9. Percentage of quantitative and nonquantitative publications in habilitative/rehabilitative audiology in *JARA*, 1972-1981.

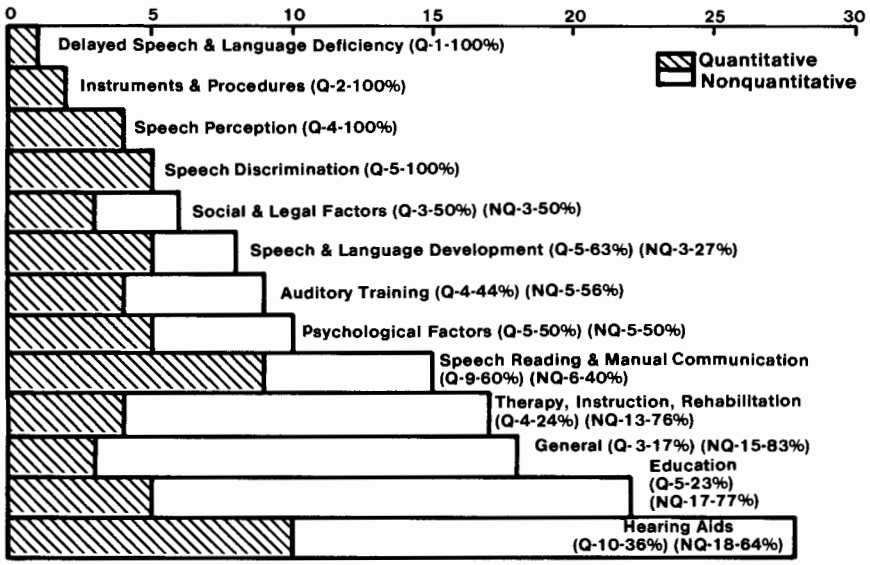

Figure 10. Number and percentage of quantitative vs. nonquantitative publications in habilitative/rehabilitative audiology by area of interest in *JARA*, 1972-1981.

Table 1

Rank Order Comparisons of Publications in Habilitative/Rehabilitative Audiology By Interest Areas In *DSH Abstracts* & *JARA*

	DSH Abstracts			*JARA*	
	1. Hearing Aids	22%	19%	Hearing Aids	
	2. Education	20%	15%	Education	
77%	3. Speech Reading & Manual Comm.	12%	12%	General	75%
	4. Social & Legal Factors	8%	12%	Therapy, Inst. Rehab.	
	5. General	8%	10%	Speech Read. & Man. Comm.	
	6. Psychological Factors	7%	7%	Psychological Factors	
	7. Delayed Speech & Lang. Def.			Auditory Training	
	8. Speech Discrimination			Speech & Lang. Dev.	
	9. Instruments & Procedures			Social & Legal Factors	
	10. Auditory Training			Speech Discrimination	
	11. Therapy, Instruction, Rehab.			Speech Perception	
	12. Speech & Language Development			Instruments & Procedures	
	13. Speech Perception			Delayed Speech & Lang. Def.	

DISCUSSION

As for the recurrent themes that were noted within the seven topical areas of both surveys, the following brief observations are made. The subtopics noted are always given in rank order with the most frequently appearing one first, the next most frequent one second, and so on.

Hearing Aids

There is little question but what hearing aid evaluation was the outstanding recurrent theme through the ten years followed closely by technical discussions of design and characteristics of hearing aids and earmolds. Discussion of cochlear implants showed up constantly, although rather modestly, throughout the ten-year period until a crescendo of interest was evidenced in 1979. It has continued to be a prominent topic since then but with far fewer publications.

As one might assume, the topic of dispensing of hearing aids continued to be of interest to writers of articles, as did trauma related to wearing of hearing aids, and telephone system linkage with hearing aids. Hardly a year passed without recurrent discussion of hearing aids and the elderly with a greater emphasis given to this topic toward the end of the decade.

I was impressed with the many articles that dealt with children and the dearth of articles focused on the hearing aid in relation to auditory training, speech reading, counseling, speech and language training, etc. that are often so necessary for complete habilitative/rehabilitative efforts.

Education

Scrutiny of the sub-topics within education that were most pervasive throughout the decade leaves little doubt as to those areas that have been of continuing concern and discussion. By far the four most prominent ones are those focused upon: (a) mainstreaming of hearing-impaired children in regular school classes, (b) language learning by severely hearing-impaired children, (c) descriptions of programs of education and/or habilitation/rehabilitation of severely or profoundly hearing-impaired persons, and (d) psychological factors as related to hearing impairment.

Of less prominence but most certainly of great visibility are publications dealing with speech development of hearing-impaired children, materials-aids-equipment useful in programs of education and habilitation/rehabilitation, teaching aids-strategies-methods-materials, techniques-equipment, and the continuing questions concerning the role of the audiologist in the educational setting. The attention given to parents and family of severely hearing-impaired children was indeed quite apparent, as were discussions of manualism-oralism-total communication, and academic achievement of hearing-impaired people.

Literally dozens of other topics surfaced that were focused upon ethnic

consideration in the education-habilitation/rehabilitation of hearing-impaired children, multiple handicaps, interpreters, legal aspects of education of the hearing handicapped, and demographic data, etc. Although these did not call attention to themselves because of the frequency of their occurrence within a year, or periodic recurrence through the years, they nonetheless contributed importantly to the revealing of the full range of concerns in the educational area.

In general, there was a noticeable emphasis on problems of hearing-impaired children with far less emphasis upon adolescents and adults. Conspicuous by their absence were studies of a longitudinal nature which differentially assessed the contributions of individual and combined intervention strategies. The predominance of publications dealing with the deaf child throughout the entire section on education was overwhelming.

Speechreading and Manual Communication

Total publications dealing with manual communication outnumbered those on speechreading by over two to one (225 manual — 101 speechreading). However, the number of publications reporting research efforts in both areas were virtually the same (83 manual — 79 speechreading).

Close scrutiny of research topics showed no definitive patterns throughout the years for either the areas of speechreading or manual communication with the exception of total communication. This topic was the focus of 23 publications in six of the ten years.

Other topics that surfaced frequently were related to tactile supplementation, contributions of auditory and visual cues important to speechreading, training and effectiveness of interpreters, cued speech, situational cues in speechreading, and a variety of linguistic variables as related to signing. An obvious concern was noted for the various aspects of language development as related to signing and also for the viability of the several extant systems.

Creative works of a general nature are evidenced in both areas of speechreading and manual communication as are discussions of methods of instruction.

Studies directed toward determining the long-range benefits of manual, oral, tactile, or combined approaches were noticeably absent.

Social and Legal Factors

Two aspects are outstanding. The first is that this whole area deals almost exclusively with social and legal problems of deaf people. The second is that readily identifiable themes emerge clearly in the literature over the ten year span.

There are three themes that are very prominent throughout the decade. The most prominent is regarding services for hearing-impaired persons. The major points of emphasis are determining the need for services, planning for

them, describing the delivery systems and evaluating their effectiveness. The second most prominent is the identification and description of problems of personal and social adjustment. Here the emphases are on self-reflections, assessment of the deaf community as a subculture and perceptions of acceptance by and integration into the various facets of the larger society. The third most prominent theme concerns the legal implications of the handicap associated with impaired hearing. Equality of opportunity is a major concern as are matters of advocacy, interpretation of public acts, and review of court decisions.

Of less prominence in terms of sheer numbers of publications but nonetheless very observable as frequently recurrent topics are those focused upon personal communication devices and broadcast media, employment, the elderly, parents and family, social rehabilitation programs, counseling and interpreters.

As was indicated previously, the vast majority of publications dealt with social and legal questions of deaf people. In contrast was the dearth of focused discussion and research on the social consequences of being hard-of-hearing.

General

The general area is just that. This potpourri of publications is diverse with topics ranging from private practice to proceedings of conferences, and from listening to latency of recall. Their placement within this category implies that they did not fit easily within the other established categories. Nevertheless these publications are of potential interest and value to the professional and to the hearing impaired person as well.

Psychological Factors

There are clearly evident themes that run through the ten years in relation to psychological factors and hearing impairment. Insofar as frequency of occurrence of topics is concerned, there are three orders of magnitude readily visible.

Of greatest magnitude is that of psychological tests and evaluation. The topics of social and emotional adjustment and counseling are clearly of second order magnitude but yet very prominent. Of third order magnitude insofar as numbers of publications are concerned are personality characteristics of hearing-impaired people, parents and families, linguistic aspects, behavioral characteristics and problems, psychogenic hearing loss, mental health services, disease entities as related to psychological problems, the elderly, impulsivity of deaf people, noise, and prostheses.

Once again, the great emphasis is upon the psychological effects as related to deafness. There is little emphasis upon those who are mildly, moderately, or severely hard of hearing.

Therapy, Instruction, Rehabilitation

Speech training of hearing-impaired people was by far the topic of greatest discussion in the publications appearing in the category of therapy, instruction, and rehabilitation. It appeared approximately four times as frequently as its nearest competitor. Topics that appeared less frequently but were noticeable because of their recurrence throughout the decade were hearing rehabilitation of the elderly, language therapy, parents and family as related to rehabilitation, music therapy for hearing-impaired people, manual language instruction, the Verbotonal Method, and total communication.

Not apparent to this reviewer were any broadly based sustained discussions directed toward formulating systematically a model or models for intervention with hearing-impaired persons. Concerns for accountability of programs, predictability of therapeutic efforts, and the efficacy of supplying habilitation/rehabilitation to special groups such as the elderly, the mentally retarded, and so on did not surface as principal topics for discussion.

SUMMARY AND RECOMMENDATIONS

Thus the past record of publications stands as vivid testimony of the concerns of rehabilitative audiologists and related professionals for the problems encountered by hearing-impaired children and adults. Hopefully the documentation of the substance of those concerns not only serves to advance the understanding and care of hearing-impaired people, but also stands as an invocation to those who labor in the vineyards to provide even greater understanding and more informed care to the hearing impaired in the decade before us. Toward that end I submit the following recommendations.

1. Examine more closely the relationship between the use of the hearing aid and the other variables of concern in the habilitation/rehabilitation of hearing-impaired individuals.
2. Focus attention upon the personal and interpersonal problems associated with acquired mild, moderate, and severe hearing loss in adults with particular attention to such variables as marital tensions and family solidarity.
3. Determine the long-range benefits of oral, manual, tactile and combined approaches in the facilitation of speech and language development in young children and in communicative efficiency in older children, adolescents, and adults who are hearing impaired.
4. Study the differential socioeconomic consequences of hearing impairment ranging from slight loss to deafness as a function of socioeconomic levels.
5. Develop more longitudinal data that would permit the assessment and evaluation of the contributions of individuals and combined interven-

tion strategies in the habilitation/rehabilitation of hearing-impaired persons.

6. Develop a research-based systematic and comprehensive plan of auditory training that provides for better understanding and utilization of residual hearing.
7. Initiate broadly based dialogue aimed at the systematic development of evaluative protocol from which prescriptive therapy can logically flow.
8. Develop models of audiological habilitation/rehabilitation that are defensible in terms of accountability and from which outcomes of habilitation efforts can be predicted reliably.

Let the past but serve as prologue for an even more exciting future characterized by further refinement and further scientific development of this our applied science, rehabilitative audiology.

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