

COMMUNICATION (RE)HABILITATION FOR THE HEARING IMPAIRED: A CLINICAL OVERVIEW

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ABSTRACT

A review is presented of selected programs and procedures appropriate to employ in communication (re)habilitation therapy for pre-school, school-aged and adult hearing impaired clients. It is suggested that comprehensive, individualized programming can be facilitated through reference to a flexible model of normal communication.

A diversity of communicative disorders are exhibited within the population of individuals who have hearing impairments. Auditory reception, speech production and language acquisition disabilities are expected in varying degrees and combinations depending upon the site of lesion in the auditory pathway, the extent of damage or involvement, the age of the individual at the onset of the impairment and the presence of concomitant incapacities. Due to these multivarious consequences, clinicians charged with developing and/or maintaining communication skills in hearing impaired clients require knowledge of a wide variety of specialized intervention techniques.

To ensure that (re)habilitation programs designed for hearing impaired clients are comprehensive, a model of normal communication is a recommended reference. Sanders' (1976) model appears well suited to this task since it offers a guide to comprehensive yet flexible intervention programming. (Re)habilitation programs based on this model would include evaluation and development, as needed, of clients' language systems, central processing abilities, and methods for both transmitting and receiving information. According to Sanders' model, communicative information may be equivalently relayed through alternative channels, indicating a need to assess clients' abilities to employ a variety of transmission forms (including speaking, writing and signing) and receptive sensory capacities (including auditory, visual, tactile and kinesthetic).

Contemporary communication (re)habilitation programs for hearing impaired clients are developed on an individualized basis and evolve from a critical and continuous perusal of available literature. To assist clinicians in this necessary review process, a survey of current intervention strategies is presented below according to age group relevance.

Habilitation for Preschool Clients

Optimal habilitation programs for preschool hearing impaired clients follow a multidisciplinary plan designed to fulfill each child's educational, medical and social needs. Interdisciplinary cooperation particularly is required for meeting the special considerations of multiply handicapped children, a conservatively estimated 30% of the hearing impaired population (Bolton, 1972). Comprehensive team membership normally includes both consulting and continuing professionals. Continuing team membership may include a program coordinator, a teacher of the deaf, a nursery/kindergarten teacher, an educational audiologist, a child psychologist, a speech and language therapist, a child development specialist, a social worker, a parent advisor, a health representative, a physical therapist and an occupational therapist (Northcott, 1977, p. 10). As part of the occupational therapy evaluation, administration of the

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Southern California Sensory Integration Test (based on Ayers, 1972) warrants special recommendation as soon as age appropriateness is reached. This assessment of sensory functions (including vestibular, visual and tactile perceptions) can assist significantly in the selection of efficient sensory channels for communication skills development.

Parents of preschool hearing impaired children can be active, valuable members of the habilitation team. With proper instruction, many parents can serve as their child's primary habilitator. Parent training programs may follow either clinic or home based models with instruction offered either individually or in groups. Baker (1976) presents guidelines for developing effective parent training programs. Useful parent oriented home programs employing a profile approach to assessment and training include the Portage Project (Shearer and Shearer, 1976) and the READ Project (Baker and Heifetz, 1976). Both projects are appropriate for use with any developmentally delayed child. Recent home based curriculum guides specific to the communication needs of the preschool hearing impaired population have been developed by Alpiner, et al (1977), Clark (1977) and Northcott (1977).

Currently, the initial communication skills method of choice for a majority of preschool hearing impaired children is the unisensory (auditory) approach. This method was popularized by Pollack (1970) as the "acoupedic approach" and it forms the basis for the communication skills programs outlined in each of the curriculum guides cited above. The auditory method requires early fitting and continuous use of amplification throughout the child's waking hours, in addition to progression through structured auditory developmental steps. Specific instruction is provided in awareness, discrimination, identification and comprehension of both speech and nonspeech (e.g., environmental) sounds. Practice also is given on distance hearing and localization (if the child is binaurally aided). Optimal functioning of the amplification system(s), of course, is mandatory. Ruben (1975) has developed one useful primer on daily hearing aid maintenance and troubleshooting.

Progress through the auditory approach should be monitored regularly. Both Northcott (1977, pp. 39-45) and Northern and Downs (1974, pp. 268-270) have developed scales which may assist in predicting and evaluating such advancement. Northcott's Auditory Objective Scale summarizes the acquisition of specified auditory and auditory-oral skills by children in her preschool program. Auditory progress is reported in relation to both severity of hearing loss and "hearing age", i.e., length of time amplification was worn. Northern and Downs' Deafness Management Quotient attempts to predict potential for success in an auditory program by weighing estimates of auditory thresholds, intellectual capacity, central processing abilities, family support and socio-economic status. Available recommendations regarding the minimum length of time an auditory approach should be followed prior to evaluation for multisensory training vary from 6 months (Clark, 1977, p. 275) to 1-2 years (Calvert and Silverman, 1975, p. 169) after full time hearing aid usage has been achieved.

Satisfactory progress through the auditory approach must include demonstration of adequate speech and language development in addition to auditory skill achievement. Prescriptive language evaluations appropriate for the preschool hearing impaired population include the Uzgiris and Hunt (1975) preverbal language scales the Bloom and Lahey (1978) form by content analyses. Ling (1976) has outlined a useful evaluative and instructional program for speech skill acquisition. This program is discussed in greater detail below.

Nonauditory instructional procedures should be added to habilitation programs for preschool hearing impaired clients who are not progressing satisfactorily through an auditory approach. Visual, tactile and/or kinesthetic cues comprise the most common supplements. Traditionally, clinicians have been encouraged to employ, as needed, any available nonauditory techniques with the exception of manual communication. Modification of this attitude in recognition of manual communication as an effective habilitation tool is recommended at the present time (e.g., by Brainerd, 1976; Moores, 1974; and Wilbur, 1976). The philosophy of incorporating appropriate aural, manual and oral methodologies in order to ensure effective communication with and among hearing impaired persons is referred to as Total Communication.¹ Garretson (1976) and Jordon, et al (1976) have verified the dramatic increase in adoption of the Total Communication philosophy in educational programs for the hearing impaired over the past ten years. Summaries of available manual communication systems have been written by Moores (1974) and Wilbur (1976), among others. According to a recent survey by Jordan, et al (1976) Signing Exact English (Gustason, et al. 1976) is the manual system most commonly employed with preschool hearing impaired children.

(Re)Habilitation for School Aged Clients

Appropriate educational placement is of prime (re)habilitative importance to school aged hearing impaired children. A variety of specialized educational services are required to fulfill individual needs. Ross (1976a) recommends availability of both aural/oral and total communication classes. Both Ross (1976a) and Leslie (1976) recommend availability of alternative programs correlated with each of the seven levels of the Cascade system of special education. The required alternatives include regular class placements with or without supportive services, regular class placements with supplemental instructional services, part-time special class attendance, full-time special class attendance, enrollment in special schools, home bound programs and instruction in hospitals, residential or total care settings. Each child should be moved away from full mainstreaming (i.e., regular class placement) only as far as necessary and he/she should be moved towards full mainstreaming as quickly as possible.

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Regular classroom assimilation is a goal of optimal communication (re)habilitation programs for hearing impaired school aged children. Success at this level, however, requires that a) the child be a good candidate for mainstreaming, b) the teacher and classmates receive appropriate orientation information, and c) the classroom acoustics are adequate for the use of amplification. Predictive evaluations of candidacy for mainstreaming have been developed by Rudy and Nace (1973) and Ross (1976b). Rudy and Nace's Transitional Instrument combines measures of intelligence, academic achievement, hearing loss level and socialization skills to predict probable success in a regular classroom. Ross' criteria for full mainstreaming include: ability to employ audition as the main input channel for speech and language development, a minimum delay of two - three years in standardized tests of speech and language, intelligible oral speech in unstructured situations, an outgoing personality, and demonstrated ability to function in the regular classroom. Preparation of teachers and classmates may be accomplished through use of Systems O.N.E. (Orientation to Normal Environment)². Discussion topics of this slide-tape orientation program include: administrative guidelines, classroom communication, hearing aids, language, reading, speech and peer orientation. Expanded consideration of mainstream problems and practices also can be

found in recent texts by Nix (1976) and Northcott (1973). Classroom acoustics should be evaluated in regards to reverberation time, ambient noise level, and distance of the hearing aid microphone from the teacher. Ross (1972) presents a discussion of these concerns. Optimal listening conditions can be provided by employing auditory training systems in the classroom. Hetherington (1975) presents a review of available systems.

As with preschool clients, a multidisciplinary approach to comprehensive (re)habilitation programming is recommended for school aged hearing impaired children. Extensive discussions of the role of educators, academic tutors, psychologists, social workers, audiologists and speech clinicians are presented in Northcott (1973, pp. 47-96).

Whereas recommended communication skills programs for preschool hearing impaired clients emphasize the acquisition of language and basic listening skills, formal speech training should be stressed when these clients reach school age. Ling (1976) has organized an auditorily based speech development program which appears appropriate for this task. Ling regards speech as a motor skill requiring continuous practice for optimal development. He recommends teaching sequenced speech patterns in short (two to three minute) syllable drills practiced several times daily. During drill sessions, clients orally produce auditorily received speech patterns. Each pattern is drilled until it can be produced precisely, rapidly, in a variety of suprasegmental contexts, and alternated with all other known syllables. Carryover is achieved by providing structured opportunities for use of the overlearned speech in meaningful communication situations. (Support for training speech as a motor skill through nonsense and meaningful speech practice can be found in McLean's (1976) discussion of articulation development strategies.)

Ling proposes a seven stage model for speech development. During stage one, vocalization quantities are increased through reinforcement and nonspecific vocalization on demand is taught. Suprasegmental aspects of speech are introduced in stage two. Using nonspecific vocalizations, clients are required to imitate speech patterns varying in duration, intensity and/or pitch. Vowels and diphthongs are developed in stage three. These phonemes are taught in sets with each set containing front, mid and back tongue placements. Practice in defining the boundaries of the oral cavity is used to foster maximum tongue movement and flexibility. Stages four through six require instruction in simple consonants. These speech sounds are presented in sets with consonants in each set varying in manner of production but similar in place of production. The instructional order for place is sequenced from the front to the back of the mouth. Voice-voiceless distinctions are the last simple consonant skills to be acquired in the program. During the final stage of Ling's model, consonant blends are introduced. Sequencing in this seventh stage is based on both the number of speech organs involved in producing each blend and the complexity of the manner of production.

Hearing impaired clients will vary in their ability to progress through the Ling model employing auditory cues exclusively. Children who do not advance after receiving extensive auditory simulation can continue in the program with multisensory instruction. Suggestions for appropriate multisensory techniques are plentiful and can be found both in Ling (1976) and Calvert and Silverman (1975).

Clinicians are reminded to view the development of speech skills as only one component of a comprehensive communication (re)habilitation program for school aged hearing impaired clients. As indicated above, all areas outlined in the model of normal communication need to be evaluated and treated, as necessary.

Habilitation for Young Deaf Adults

As a group, congenitally deaf young adults are characterized as having normal intellectual potential (Hoemann and Ullman, 1976) yet demonstrating low academic achievement (Lane, 1976), delayed emotional development (Meadows, 1976) and vocational immaturity (Lerman, 1976). Comprehensive habilitation programs, therefore, must focus on both daily living and employment skills (Bolton, 1976). Recommended personal and social preparatory services include training in and opportunities to utilize communication skills, basic educational skills, and independent living skills. Recommended vocational preparatory services include evaluation of each client's work personality and capabilities, a period of work adjustment in a simulated employment environment, skill training, job placement and follow-up assistance as required.

Clinicians responsible for improving the communication skills of young deaf adults should foster optimal communicative interactions between themselves and their clients. Each client's preferred communication method is the recommended technique to be employed for interviewing, giving directions and feedback, and counselling. Potential alternatives include speaking, writing, fingerspelling, signing and using an interpreter. Bornstein, et al (1976) provide strategies for the effective employment of each of the above methods with the adult deaf population.

Comprehensive communication evaluations should be completed on young deaf adult clients regardless of their preferred method of communication. One appropriate screening battery has been developed at the National Technical Institute for the Deaf (NTID) (Johnson, 1976). Using CID Everyday Sentences, the NTID communication skills profile receptively assesses hearing (speech) discrimination, speechreading with and without sound, manual communication, and simultaneous communication (i.e., reception when all of the above stimuli are employed). Reading vocabulary and comprehension are measured with the California Achievement Test. Expressive skills of writing intelligibility, speech intelligibility and non-verbal kinetic intelligibility (body language) are determined with institution (NTID) made tests. Gochnour (1973) has outlined a variety of procedures she employs in making a more detailed evaluation of communication skills of young deaf adults. Gochnour's article particularly should be useful to clinicians who are inexperienced with this population as she provides both appropriate suggestions for standardized test modifications and some normative data. Both Gochnour and Johnson remind clinicians that regardless of scores on communication evaluations of young deaf adults employing everyday speech, they all require training in the vocabulary of their vocational area of choice.

Communication skills development programs for young deaf adults should employ the most expedient avenues of communication from the onset of therapy. Use of the auditory approach as the initial method of choice is not recommended for this population. Alternative to (re)habilitation programs for younger hearing impaired clients, formal speechreading instruction in an adult's vocational area of choice frequently is appropriate from the onset of therapy. Factors correlated with speechreading proficiency which can be used to structure evaluation and training programs include the following from Jeffers and Barley (1971) and Sanders (1971): familiarity with employed language, perceptual set to speechread, knowledge of message topic, knowledge of visually contrasting speech movements, visual acuity, ability to focus accurately and quickly, visual awareness and memory, peripheral vision, synthetic ability (e.g., perceptual and conceptual closure), flexibility, and practice in reduced levels of redundancy.

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Most young deaf adults are proficient in American Sign Language (ASL) but deficient in English language skills. Due to this first language competence in ASL, English language remediation may be accomplished most easily through second language instructional techniques (Kannapel, 1974, among others). The English Language Tutorial Centre at Gallaudet College employs such a bilingual philosophy (Goldberg, et al, 1975). In order to minimize interference between the two languages, English is taught only in the written form in the Gallaudet program.

Rehabilitation for Hearing Impaired Adults

A number of adventitiously hearing impaired adults should be referred for communication rehabilitation services. Hardick (1976) suggests that candidates for such programs include clients whose hearing loss makes them equivocal candidates for amplification and clients who have previous unsatisfactory hearing aid experiences or who hold unrealistic expectations concerning amplification.

Geriatric clients constitute the majority of adults requiring communication rehabilitation. Clinicians working with this population need to be aware that hearing impairment is not an isolated sensory deficit for the client. With the aging process, changes in the auditory, visual, tactile, kinesthetic, olfactory and gustatory systems are all expected. Recognition of these widespread sensory losses suggests that the value of communication rehabilitation programs for geriatric clients may be increased by integrating the services into comprehensive sensory retraining programs. Shore (1976) outlines intervention techniques and deprivation simulation activities for each sensory system. Also of interest should be Oyer and Oyer's (1976) comprehensive discussions of the communication needs and problems of older persons.

Communication rehabilitation programs for adventitiously hearing impaired adults can be successful. Characteristics of such programs, according to Hardick (1976), include a client centered philosophy, use of group therapy techniques, involvement of clients' normal hearing friends and/or relatives, use of "graduates" in group activities, a short-term treatment approach, consumer oriented information, and advertisement of available services. Goals of Hardick's program include provision of information concerning normal hearing, hearing losses, hearing aids and services offered by relevant professionals and agencies; orientation to speechreading and the involved problems; experimental hearing aid use; procurement of recommended hearing aid (if any); listening improvement; and counseling regarding attitudes and behaviors. A more extensive discussion of treatment philosophy and procedures may be found in Alpiner (1978).

NOTES

This definition of Total Communication has been accepted by the Conference of Executives of American Schools for the Deaf and reported in the **American Annals of the Deaf**, 1976, p. 358.

²Systems O.N.E. is available from the A. G. Bell Association for the Deaf, 3417 Volta Place, N.W., Washington, D.C.

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