

Year II and Growing: A Report from the STC Special Needs Committee: The Nature of Deafness

Andrew Malcolm

Deaf persons are not a monolithic group. Persons born deaf or who become deaf before learning the language of their environment (prelingual deafness) have a significant educational challenge as well as a communication challenge. Other deaf persons have a communication challenge.

Deaf persons may be divided into five categories. For the purposes of this paper the categories are prelingual deafness, prelingual hard-of-hearing, postlingual deafness, postlingual hard-of-hearing, and presbycusis. (old-age deafness) Each of these categories are discussed in detail including the characteristics of persons within the categories, and the nature of the problems they encounter.

INTRODUCTION

Hearing impairment, like other limitations in life, has a number of different subordinate categories. For the purpose of this paper, and for understanding hearing impairment, five categories are defined, viz.:

- prelingual deafness—deafness before learning a language
- prelingual hard-of-hearing—limited hearing before learning a language
- postlingual deafness—deafness after learning a language
- postlingual hard-of-hearing—limited hearing after learning a language
- presbycusis—deafness in old age

The meaning of the terms, *prelingual*, *deaf*, *hard-of-hearing*, and *presbycusis* as used in this paper are:

Prelingual deafness means that the onset of deafness was before persons learned the language of their environment. The age at which such a person became deaf is generally between one and five years, i.e., persons who were either deaf at birth (congenital deafness) or who became deaf from childhood disease or accident prior to developing the basics of the grammar of the language of their environment. Those who hear until they have basic competence in the language are considered postlingually deaf. *Postlingual* deafness means that the onset of deafness was after such persons learned the language

of their environment. This is generally from one to five years of age and is characterized by such an understanding of the grammar of the language that reading and writing are largely unaffected by deafness.

Deaf means having insufficient hearing with or without amplification for complex communication through sound. Such persons generally cannot understand speech. Although this is a performance description, generally a person with a hearing loss exceeding 70 decibels (70 dB) is considered deaf.

Hard-of-hearing means having insufficient hearing to consistently understand speech without amplification, i.e., without a hearing aid. Although this is also a performance description, generally a person with a hearing loss between 40 and 70 decibels (40dB—70dB) is considered hard-of-hearing. Persons with hearing losses of less than 40 dB generally function with or without a hearing aid in much the same way as hearing persons.

Presbycusis (old + hearing), for these purposes, means having lost significant hearing in the latter years of life. Because hearing is logarithmic, the onset of presbycusis hearing loss may appear sudden, but may actually be gradual. Like presbyopia (old + sight)—in which persons often experience apparent, relatively sudden loss of ability to focus on print for reading—so hearing loss—which may have been occurring steadily over a period of years—may seem to appear suddenly. Deafness may 'suddenly' appear to have impaired one's hearing when the loss marginally declines below the sound level of normal conversation.

PRELINGUAL DEAFNESS

People with normal hearing during the early years of life—some even say in the womb—develop the language of their environment. Conversely, without the ability to hear, a baby does not develop language. (There have been a few cases of children deprived of language for reasons other than deafness who have also failed to develop language.) This deprivation has a severe and lasting effect upon the person. The result of being deprived of language input during the formative years is diminished reading and writing skills.

Print confusion occurs. Consider the sentence, *Ed and Joy read books*. Only context will tell the reader whether the verb *read* is past or present (REED vs. RED). There are hundreds of such problems with English and other languages. Consider *bet*, *cut*, *hit*, *let* and *put* that are also both past and present verbs. Consider *do*, *dew* and *due*, or *right*, *rite*, *wright* and *write* that are distinguished by surrounding words and intonation. It is sound and intonation that helps us understand the differences between these words. Consider also:

- *Jo* went to church.
- *Joe* went to a church.
- *Frances* goes to *an* old church and *Francis* goes to *the* First Presbyterian Church.

While the typical hearing child enters school with knowledge of thousands of words by sound, prelingually deaf children do not. For the teacher of hearing children, the task is to *associate* the letter sounds and/or letter groups (words) with concepts already well known by the children. National literacy rates attest to the difficulty of doing this. But for deaf children, no such association is possible and the task is enormously more difficult. Primary teachers of deaf children must teach them to associate groups of letters with objects (nouns), qualities (adjectives), actions (verbs) and a great many other characteristics of the grammar of English. Consider trying to learn the function of *ing* on the end of English words:

- *Writing* is fun. (a gerund)
- *Cooking* food can be fun. (a participle)
- He is *living* here. (a progressive verb)
- They *sing* often. (a present-tense verb)

Reading tests show that prelingually deaf persons achieve an average of grade-4.5 reading skill by age 19¹ Writing tests are more difficult to standardize than reading tests. The anomalous language shown by prelingually deaf students is well known by their teachers and parents, but little recognized by the public.² Prelingually deaf students at college age often have not mastered the use of articles, plurals, prepositions and verb inflections, e.g., *He work in Tuesday every weeks*. (He works **on** Tuesdays every week.) The articles *a*, *an*, and *the* have low sound power and the rules for their use are arcane.³ The final *s* on nouns and verbs have a high frequency sound and low sound power. The rules for inflecting verbs with *s* are also arcane.⁴ Huge resources have been brought to bear on this problem with only a modicum of success. Deaf children spend a great deal more time learning to read and to write in small classes, but few achieve grade-12 reading skills or write as

grammatically appropriately as do typical high school students. For most prelingually deaf persons, a writing career—technical or otherwise—is prohibitive.

PRELINGUAL HARD-OF-HEARING

Like prelingually deaf persons, prelingually hard-of-hearing persons have language problems. While they may acquire much more of the language of their environment than those with greater hearing loss, nevertheless they often have difficulty reading and writing.

Detection of congenitally hard-of-hearing children can be a problem. Often such a child has sufficient hearing so that their hearing loss is not apparent early in life; they react to sounds, but are unable to discriminate between different sounds. Often vital years of language learning are lost because hearing loss goes undetected and unmitigated by hearing aids or instruction.

POSTLINGUAL DEAFNESS

are formed by compounding signs for Postlingually deaf persons face a very different set of problems than those who are prelingually deaf. The onset is often sudden and is often a result of disease or medication for disease. Such persons need to learn a new mode of communication quickly. In the United States, this mode is often American Sign Language (ASL). The placements, motions and handshapes that create a sign word—while often suggestive of an object or an action—are not easily learned. The grammar of ASL is quite different than that of English. Consider this sentence in ASL.

ME POSSESS GIRL BABY TWO.
→ I have two daughters. ←

In ASL there is no distinction between *I* and *me* and many other English word pairs. Many signs other words, *GIRL + BABY = daughter* and plurals are often omitted on nouns. Sometimes plurals are made in ASL by repeating a sign, e.g., *BOOK BOOK = books*. Quantities and other modifiers—like French—are placed after the noun they modify. It is historically true that ASL derived from French, not English sign language, but this may not be the reason for this placement. Postlingually persons often speak and read much as they did before the onset of deafness. Speech sometimes may gradually be lost as the feedback upon which it depends is lost. Often newly popular words may create

pronunciation problems. And, of course, understanding other person's speech becomes labored. For postlingually persons speechreading (lipreading) is often quite comfortable. Most hearing people spend a life time seeing lip movements and hearing the associated sound, so if a person becomes deaf, their speechreading skills may be excellent. (Prelingually deaf persons—having not heard sound with lip movements are less likely to develop good speechreading skills.)

PRESBYACUSIS AND POSTLINGUAL HARD-OF-HEARING

Presbycusis⁴ and postlingually hard-of-hearing persons are the most likely to benefit from hearing aids—although they may also be of great benefit to the others discussed in this paper. When properly fitted and matched to the specific needs of individuals, hearing aids can be quite helpful.

Many deaf persons suffer with *tinnitus*,⁵ the hearing of false sounds. Such sounds interfere with hearing through a hearing aid. Some modern hearing aids are able to mitigate the sounds of tinnitus. Another problem for hard-of-hearing persons is *recruitment*⁶—pain from loud sounds. Often the threshold of pain is lower than in persons with normal hearing. Thus, hearing aids, while amplifying the sound to make it understandably loud, may also introduce pain. The region between understandably loud and painful is often quite narrow.

CONCLUSION

The problems of deaf persons are varied and depend upon the kind of deafness. Mitigation of the negative effects of deafness takes many forms. Hearing aids help some, learning speechreading (lipreading) helps others, learning sign language helps still others, and extensive language instruction helps those who, because of deafness, have not learned the language of their environment in a natural way.

REFERENCES

¹The average grade-equivalent reading scores for hearing-impaired high school graduates are 4.5 on the Stanford Achievement Test for paragraph meaning. See R. Trybus and M. Karchmer, "School Achievement Scores of Hearing Impaired Children: National Data on Achievement Status and Growth Patterns," *American Annals of the Deaf* (April 1977) 122:2, p.64.

²D. D. Johnson, "Communication Characteristics of a Young Deaf Adult Population: Techniques for Evaluating their Communication Skills," *American Annals of the Deaf*, (August 1976) 121:4, pps.409—424

³The use of articles comes naturally to those who have been immersed in English from birth, but for those who must select articles by rules, the selection is difficult. Just for selecting *a* and *an*, there are at least six preconditions required, and many exceptions that confound the foreign and deaf learner. Go to <http://www.rit.edu/~a0mnce> and select 'grammar.'

⁴Fred H. Bess and Larry E. Humes, *Audiology: Fundamentals*, Baltimore: Williams and Wilkins, 1990, pps.148--49

⁵*ibid*, p. 144.

⁶John C. Ballantyne, *Deafness*, Boston: Little, Brown & Co. 1960, p. 41.

Andrew Malcolm, Associate Professor
National Technical Institute for the Deaf at the Rochester
Institute of Technology
2235 Lyndon Baines Johnson Building
52 Lomb Memorial Drive
Rochester, NY 14623-5604
voice/TDD: [716] 475-6332; fax [716] 475-6500

Andrew Malcolm, STC fellow, has taught English to prelingually deaf technical students for 30 years. Previously, he was a design engineer, chief draftsman, technical writer, publisher and supervisor in the aerospace and defense industries for 20 years. He served as 1991—93 (2 years) President of Teachers of English and Language Arts, a special interest group of the Convention of American Instructors of the Deaf. He is a Life Member of the Institute of Electrical and Electronics Engineers.

ADDITIONAL RESOURCES

Additional information on deafness may be found from the following organizations:

Alexander Graham Bell Association for th Deaf
<http://agbell.org>

American Academy of Otolaryngology, <http://entnet.org>

American Speech and Hearing Association,
<http://asha.org>

Center on Employment of the Deaf,
<http://www.rit.edu/ntid/co/ce>

Convention of American Instructors of the Deaf,
<http://caid.org>

Self Help for the Hard-of-Hearing, <http://www.shhh.org>

World Federation of the Deaf, <http://www.wfeneeds.org>

Wallace Memorial Library, *extensive bibliography*,
<http://rit.edu/internet/subject/deafness.html>