Implications of Audiologic Success

Mark Ross*

**Abstract**

In the last few years, a clinical consensus has emerged regarding the necessary components of an early management program for hearing-impaired children. Early detection of hearing loss, a parent–infant and supervised nursery program, and optimal amplification provisions are among these components. This paper explores the possible implications for those profoundly hearing-impaired children whose auditory skills become sufficiently developed, as a result of an intensive auditory management program, to permit them to function in a primarily auditory (or auditory/visual) mode under most circumstances. The additional social/vocational/cultural opportunities afforded by a successful auditory habilitation program can require painful choices by many such children. Pursuant to fulfilling their clinical responsibilities regarding amplification, audiologists contribute to this situation.

**Key Words:** Hearing-impaired children, auditory management, speech perception

The goal of maximally exploiting the residual hearing of all hearing-impaired children does not seem to be an arguable proposition. Audiologists by training and professional mission are committed to making this goal a reality. We do not, however, practice our craft in a social vacuum; our actions and activities have reactions and consequences. This paper considers the possible implications of “successful” audiologic intervention for children with profound hearing losses.

The most commonly employed criterion for audiometric deafness is an average 90 dB hearing loss or greater in the better ear (Davis, 1947). Although most audiologists would undoubtedly prefer a functional descriptor of deafness, we have been unable to agree on how this should be measured. Functionally, audiologic deafness is often defined as the inability to comprehend a spoken message through audition alone. Hearing-impaired people able to perform this task would be considered audiologically hard of hearing. If the hearing losses of such people equalled or exceeded 90 dB, most audiologists would probably describe them as “audiologic successes.”

While specific data on percentages are lacking, it would be fair to say that in past years, and even at the current time, few congenitally hearing-impaired children with this degree of hearing loss have developed audition as the primary sensory channel for communication purposes. But there have always been exceptions. And now that the early detection of hearing loss, parent–infant programming, and appropriate auditory management are more commonly observed than previously, we can anticipate more exceptions.

Let us assume that we have just seen a 6-month-old girl in our clinic with a probable diagnosis of bilateral profound deafness. We fit her with an appropriate amplification system, possibly an FM system to ensure a consistently high speech-to-noise ratio (Madell, 1988), perhaps the most critical dimension for auditory language and speech development. The parents and child are enrolled in a well-organized and intensive parent–infant program. At about age 2 or 2.5 years, she is placed in a special preschool program several afternoons a week and a regular nursery program each morning. A heavy auditory emphasis pervades all aspects of her training, with frequent audiologic follow-ups. In other words, she is the recipient of what could be considered an optimal early management program.

Behavioral thresholds measured at age 2.5 range from 80 dB to 110 dB from 250 to 4000 Hz in both ears, with averages around 95 to 100 dB. Audiometrically, this child would be considered deaf. When we measure speech perception, however, we find open-set phoneme recognition scores of 70 percent, or sufficient auditory ca-
pability to understand speech through audition alone. That this is not a far-fetched example can be seen in Figure 1.

The data in this figure were reported by Brackett and Madell (1990). The children were required to listen and imitate monosyllabic word lists scored on a phoneme basis. The scores were then compared to those obtained on the same test by a large group of orally trained hearing-impaired children (Boothroyd, 1984). The capital letter "C" stands for children who have received cochlear implants. All the FM amplified children represented by the capital letter "A" were 7 years of age or younger when the data were collected. The children reported here received just the kind of strong management program envisioned above. Considering the magnitudes of their hearing losses, their speech perception scores are remarkably high.

To return to our hypothetical child, through the proper use of: (a) residual hearing, (b) intensive direct training, and (c) dedicated efforts by the parents, she has learned to employ hearing as the primary channel for acquiring spoken information. Further testing reveals that, as expected, bimodal reception scores are significantly better than scores by either vision or audition alone. Her speech is intelligible and she has little difficulty in face-to-face communication. As she enters elementary school, an array of supportive services is made available to ensure that she continues to function communicatively and linguistically in an age-appropriate manner. It should be emphasized that while this case example is hypothetical, there are published case histories and studies that support this level of accomplishment (Geers, 1990; Green, 1990) from some profoundly hearing-impaired children.

This child represents a therapeutic "success" and we justifiably feel quite proud of ourselves. We have created a functionally hard of hearing person from one who would have been educationally and functionally deaf. Her phonologic and language development provides the same kind of access to written English as occurs with normal-hearing children. She is able to communicate effectively with her parents and other family members. The array of possible vocational opportunities far exceeds those available for functionally deaf children. Children such as our hypothetical child can take their place as equal members in the "hearing world" — or can they?

It is important to note that we have not created a "hearing" child out of a deaf child. Such children still have profound hearing losses, with all the attendant difficulties that this presents. For example, although effective in face-to-face communication, they are often bewildered, isolated outsiders in group conversations. As these children reach their teens, it is the group or the "crowd" that defines the social matrix into which they must fit. Often they can not do this very well. In spite of excellent speech and language, they cannot follow the rapidity of alternating comments in a group conversation, or the wisecracks and whispered asides. Whatever communicative level they achieve in a quiet situation is further obliterated in the presence of noise. The school dances, Saturday night concerts, basketball games in the school

![Figure 1 Phoneme recognition scores for 19 profoundly hearing-impaired children who use FM systems as a primary amplification device (A), and 12 children with cochlear implants (C). The results are compared to the data reported by Boothroyd (1984) of 120 orally trained hearing-impaired children (o-o). The dashes (-----) represent one standard deviation around the mean performance.](image)
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gym—these are acoustic situations that preclude effective auditory communication for our therapeutic “successes.”

During their teen years, the children usually become aware that there is a “deaf” world out there, composed of people with hearing losses like themselves, but who lack or do not use oral communication skills. Their reactions and attitudes to this discovery vary widely. Some of our therapeutic “successes” reject any identification with these “deaf” people and continue to make their way in the hearing mainstream culture, in spite of the continuing challenge and difficulties. Others find the idea of communicating by sign an attractive possibility. They learn sign and attempt to integrate into both the deaf and hearing cultures. Others attribute their social isolation and miserable school years in a mainstream setting to their hearing loss. As a result they are angry at the impositions they feel were inflicted upon them, and reject the hearing world as their primary identification (although, ironically, they may develop into leaders of the deaf community because of their ability to communicate orally).

We do not have any way of knowing what choices our profoundly deaf auditory-verbal “successes” will ultimately make. Nor can we know in advance what their experiences will be in mainstream school and social settings. And perhaps not knowing the ultimate choices of such children is just the point. Our early and effective management efforts open up opportunities that otherwise would not have been possible. As they grow older, they select from the array of options those that best suit them. Professionals are involved only minimally, if at all, in these kinds of decisions. Our obligations to the young child and the parents are to practice intelligently our audiologic skills, and to inform them as best we can of the implications of their decisions. Paradoxically, it is our audiologic “success” that opens up these sometimes painful choices for a child, but what are our alternatives? Can we ignore the presence of residual hearing? Should we be less effective in our audiologic and educational practices? Should we make the deaf culture choice for the child by doing nothing?

An increasing number of children who receive cochlear implants may soon become members of the auditory “success” category. By virtue of their candidacy for implants, these children are clearly audiologically “deaf.” Yet post-implant, their auditory skills can be equivalent to children with severe hearing losses, as shown in Figure 1. With the complementary use of visual cues, their oral verbal skills may be sufficiently advanced to permit effective interpersonal oral communication. Our intervention practices with them involve more than the effective use of residual hearing. Extraordinary measures (surgery) have been taken to foster some auditory skill development. The accumulating body of evidence suggests that many implanted children will develop functional oral communication skills (Owens and Kessler, 1989). Clearly, we have wrought changes in a child’s condition sufficient to affect later cultural choices. We will have to wait some years before we find out from the children themselves how they feel about these extraordinary measures designed to bring them into the world of the hearing. Judging from our experience with profoundly hearing-impaired children, there will be no unanimity of response. What we will have done is increase the economic and social opportunities available for them, at a cost we cannot now determine.

Most professionals concerned with young hearing-impaired children have their own therapeutic “recipe.” Since we are all fallible human beings, we can safely assume that all are flawed to some extent, either philosophically or in execution. Nevertheless, we still need some framework, some supportable rationale for how we approach therapy with young hearing-impaired children. In my recipe and judgment, hearing loss is initially a condition with which we must deal. Later, depending upon the course of our early therapeutic efforts, the cultural aspects are superimposed.

I recommend an early auditory approach for two basic reasons: (a) the auditory channel is the normal biologic route for learning speech and language, and (b) at an early age, we do not know the specifics of a child’s hearing loss, nor how he or she will respond to amplified speech signals. Assuming that we are doing everything right (good speech-to-noise ratio, appropriate linguistic input, intense parental involvement, etc.), the difficult questions relate to our “success” criteria. What level and rate of auditory/verbal accomplishments are acceptable? Does the child exhibit an inordinate degree of frustration in attempting to communicate? How do we define “inordinate”? Are the children who do not meet the “success” criteria to be considered
failures? Are we sending the message that an alternative communication approach is only recommended for auditory-oral failures?

There are no ideal solutions. For our audiologic "successes," we have dealt with the condition and reduced its impact considerably. The auditory/verbal accomplishments of some of these children are amazing, but the hearing loss still remains as an impediment to communication in many ordinary situations. Some of these children are strong, self-confident individuals who know and accept the real limitations of their hearing losses and rise above them. Others, regardless of their linguistic accomplishments, eventually come to an identity crisis, which they must, painfully, resolve. The point is that no matter what we do, there are going to be consequences, some positive, some negative, and mainly unpredictable for a particular child at an early age. Choices will have to be made, but this is a distinguishing characteristic of human beings; life would be much easier if our range of choices were more limited—but it would also be a life less uniquely human.

As professionals we are obligated to practice our skills to the limits of our knowledge and capability. This includes early and appropriate amplification. There are inevitable consequences to these actions, which we have no option but to confront as they emerge. Doing less also has consequences. Whatever we do, it is necessary to keep in mind that when we test and treat a young hearing-impaired child, we are also dealing with the parents—their hopes and their dreams for their child—and, further, that what we do has an impact that transcends time and place. It is the children and their families who must live with the consequences of our early actions.

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REFERENCES


