

Being Hard of Hearing (HoH)

Differently Abled with an “Invisible Handicap.” It is important to focus on his *diff-ability* or different abilities rather than to construe his condition as a *disability*. As a differently-abled individual, he has a *right to communication access*.

Many people who are hard of hearing, conceal their limitations amazingly well. People who are hard of hearing tend to develop strategies which make them appear as though they hear or understand, even in situations where they don't. This is why being hard of hearing is sometimes known as the *invisible handicap*. One tends to think that because the person is wearing their hearing aids and acts as though there is nothing awry, that the hard of hearing person is not missing out on anything. Although this is a natural assumption, it is grievously incorrect.

Impact of Hearing Loss. A person with a moderate-severe hearing loss may have a hearing threshold—i.e., the point where he *begins to hear*—somewhere equivalent to a loud cocktail party or about 80 decibels. Pushing your lawnmower, you are exposed to about 85 or 90 decibels¹. It is not unusual to find a “sloping” pattern of hearing loss, where an individual's hearing is worst in the higher pitches or frequencies and better in the lower tones.

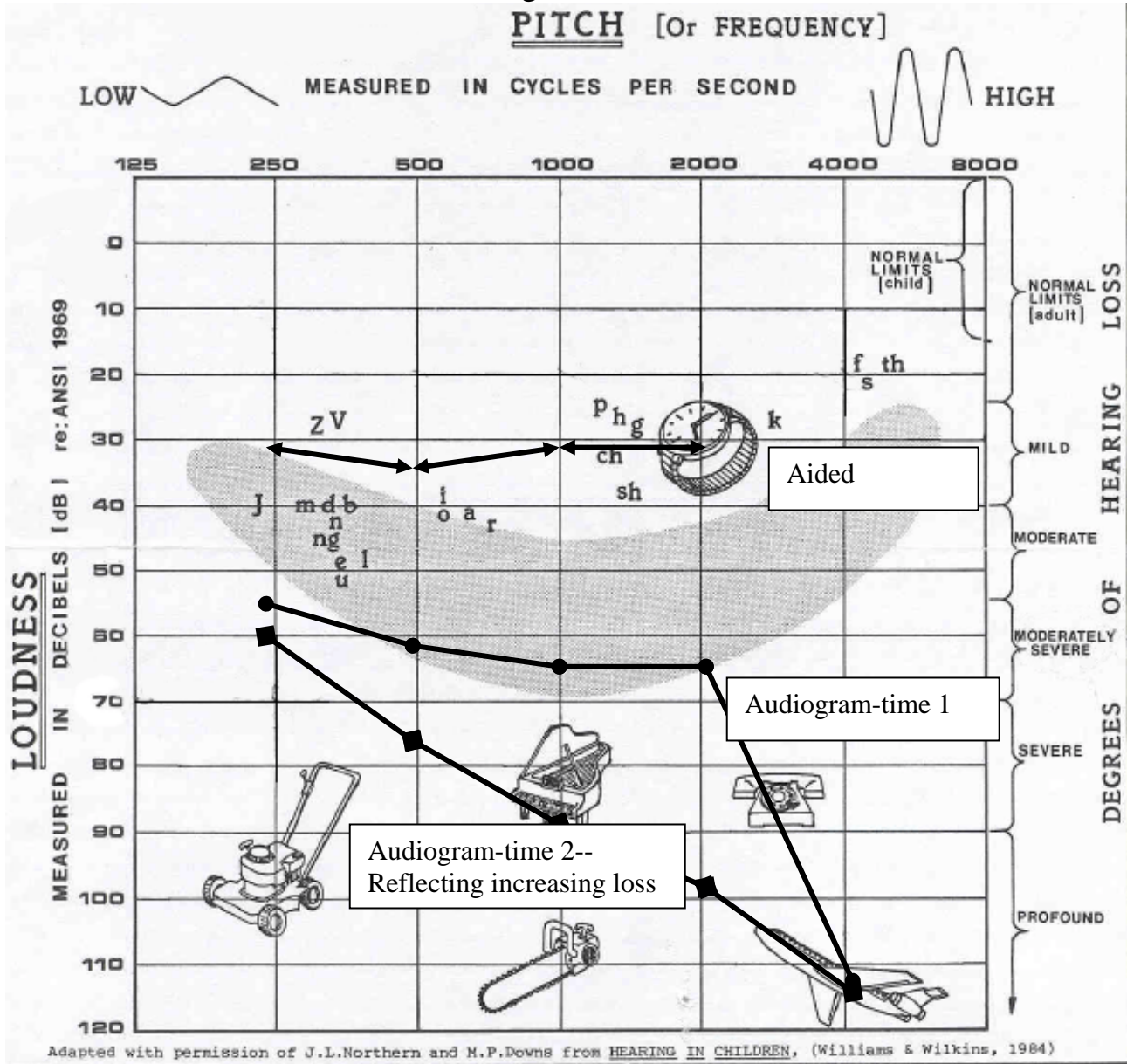
Figure 1 reveals his audiogram superimposed on the approximate frequency and loudness of common sounds. The right side of Figure 1 shows the relative levels of hearing loss categorized into mild, moderate, severe, and profound. As such, the vertical axis of the audiometric chart reflects greater loudness measured by increasing decibels (dB) as the bottom of the chart is approached; the horizontal axis is increasing frequency in Hertz (Hz), where the left side of the chart reflects low tones and the right side reflects high pitches.

Difficulty Hearing Key Speech Sounds. Familiar sounds with their associated pitch (in frequency or Hertz) and loudness (in decibels) are represented. Soft sounds, such as whispering or wind blowing through leaves on a tree occur between 10 and 18 dB. Waves on the seashore occur at about 40 dB. Shouted conversation is about 70 dB and a vacuum cleaner is about 80 dB. Rock concerts can produce 100 dB or more. A jet engine is about 110 dB and the threshold of pain is 120 dB. Speech sounds are represented on the audiometric chart roughly in the shaded area, in what is referred to as the “speech banana.” Unfortunately, most of speech recognition requires the high frequency range, since consonant sounds are high in pitch. Fricatives (or speech sounds without voice but involving rushing air sound (such as /f/, /th/, /sh/, /s/, /k/, /p/, /h/) are especially hard to hear because they are both high in frequency and soft in loudness (made without voice). Consonants, so important to speech recognition, are also quite soft and often high in frequency. High frequency sounds are also very important for hearing people to be able to localize sounds—to find the direction from which a sound is coming. On the figure the audiogram is of a hard of hearing person is superimposed, both aided (*) and unaided (⊕).² Figure 2 shows the pitches in relationship to a piano keyboard.

¹ Decibels are a logarithmic expression of sound power or pressure. One decibel is roughly equivalent to a person's ability to detect a change in loudness; ten decibels effectively represents a doubling in sound intensity.

² For the sake of simplification, both ears are averaged on the data points on the audiogram, although there can be differences between ears.

Figure 1



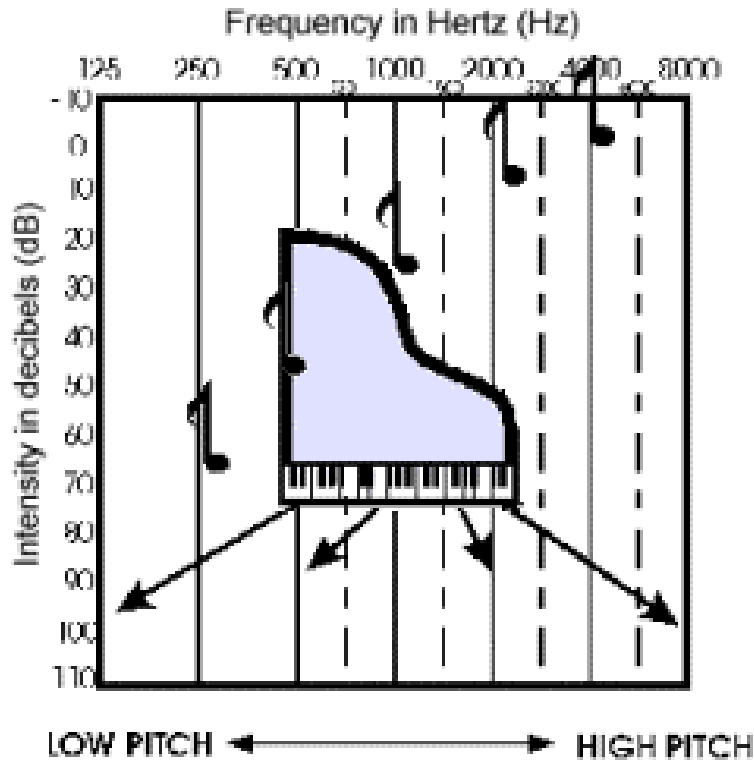
LOUDNESS LEVELS OF COMMON SOUNDS [IN DECIBELS]

10 dB	Breathing	80 dB	Rush Hour Traffic	120 dB	Jet Airport
30 dB	Whisper	90 dB	Food Blender	140 dB	Shotgun Blast
40-60 dB	Conversation	100 dB	Train		
70 dB	Typewriter	110 dB	Chain Saw		

SHADED AREA REPRESENTS RANGE OF CONVERSATIONAL SPEECH

Figure 1: Common sounds and their associated pitch and loudness with person's audiogram superimposed, both aided (↔) and unaided (◆◆). In this example the person's hearing loss has been getting worse and the second plot of their audiogram reflects better hearing a few years prior (●●). Notice that consonants—key speech sounds—are very soft. Fricatives are not only soft, but also very high in frequency, making them among the most difficult to hear. Even with the best hearing aids available, one can see just how much this individual misses.. The person has no access to sounds at frequencies above 4000 Hz.

Figure 2—Piano Keyboard Pitch Relative to Frequencies on Audiogram



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Hearing Aids. It is important to recognize that hearing aids *partially compensate for* but **do not correct** hearing loss. In the example above, hearing aids adjust the hearing threshold to around 25 to 30 decibels, whereas the normal hearing threshold is somewhere between 5 and 20 decibels. Even with hearing aids this individual cannot hear the wind rustling through the trees or other soft sounds. The boost in volume notwithstanding, even the best hearing aids do not help the person to hear normally. Without hearing aids, in the example above, the individual is essentially deaf. There is damage to the inner ear such that sounds are not only hard to detect but are distorted. There are different kinds of hearing loss, some involving the little bones in the ear, some involving the neural pathways, some involving the “cochlea,” which converts mechanical energy of sound waves into electrical or nerve impulses. While hearing aids can help some, it is important to recognize that there are many people who cannot be helped by hearing aids who are considered deaf.

While hearing aids cannot correct hearing, they can help compensate somewhat. Hearing aid technology has come a long way in the last decade or two but are often quite costly. Some higher quality hearing aids use what is analogous to a multi-channel graphic equalizer, which is customized to the individual’s particular hearing loss. Some have directional microphones, which help reduce noise interference from behind. Some have sophisticated signal processing which is constantly sampling and analyzing the sound environment looking for non-essential sounds which can be *filtered out* or *turned down* in order to produce a better “signal-to-noise” ratio. In other words, his aids are designed to screen out extraneous sounds such as fans, hum from lights, ventilation noise, the whir of motors, etc. in favor of speech sounds. A person with

normal hearing often is unaware of these ambient noises as our powerful perceptual resources are able to do the filtering for us. Take a moment right now to listen to the cacophony of sounds that you normally don't hear unless you are listening for them. These noises wreak havoc on people who are hard of hearing.

Fatigue. People who are hard of hearing, often must exert considerable effort to pay attention and get meaning during conversations and lectures. An rough analogous exercise would be to imagine missing every third word in a conversation. Consider the mental work required just to fill in the gaps in communication, detracting from the opportunity to process what is said and relate it to experience. Those who are hard of hearing become more easily fatigued than others in a listening environment.

Stigma. Toward countering the stigma associated with persons with these conditions, the preferred term is "hard-of-hearing" as opposed to more derogatory terms such as, "hearing *impaired*" or "hearing *loss*." Compounding this stigma is that associated with the behavioral health conditions (such as mental illness or substance use disorder). Look for a future communiqué that will talk about this latter stigma.

Accommodations. *Accommodations* with respect to hearing loss refer to ways to improve *access* to information. Below are just a few ways to accommodate those who are hard of hearing.

Example Accommodations for Hard-of-Hearing Persons

- Ensure that the right to communication access is upheld—using many accommodations below.
- Be *empathic* but never *sympathetic*—respect the person and try to *hear* things from the person’s perspective.
- Don’t single an individual out or embarrass.
- Facilitate speech-reading by facing the person when speaking with adequate light on your face; and avoid backlighting. Speech-reading is a talent where the person gleans understanding not only from the individual’s lips and mouth but from facial expression and gesture.
- Speak with adequate but not overly exaggerated volume.
- Help accommodate seating such that extraneous noise is to the back, to make best use of directional microphones on hearing aids.
- Position yourself close enough to and face the person so they can take advantage of speech-reading.
- Cue the person visually to indicate that someone is talking during class discussions or during intercom messages. Point to respondents or speakers in class, auditoriums, or on the athletic field. Point at the intercom system when messages are coming over.
- Repeat information that has been expressed by a person out of view or delivered over an intercom.
- Use the captioning feature for movies and television programs.
- Gain the person’s attention before issuing a lesson, instructions, or assignment.
- Be cognizant of environmental noise (e.g., construction outside the window, etc.).
- Don’t ask, “Did you hear me?” in a classroom setting. Rather ask all students to repeat back or paraphrase assignments to ensure understanding.
- Be alert to confused or puzzled looks from the individual who is hard of hearing.
- Be alert to attempts to compensate for or conceal hearing condition by the person attempting to *appear* as though they understood or comprehended what was said (this is a habit which develops all too easily, especially in youth who are hard of hearing).
- Check for understanding by having students restate the directions.
- Use visual media liberally—for example post assignments and projects.
- Especially for children, provide manipulatives for multi-sensory, hands-on instruction or activities.
- Use visual supplements: overhead projector, chalkboard, pictures, and Power Point.
- Provide handout overviews or notes liberally.
- State the “topic” to be discussed in a shorthand way before continuing the discussion—this is the same grammatical strategy employed by American Sign Language (ASL) since the Deaf or Hard of Hearing person must quickly orient to the topic which the speaker is addressing.
- For children, **pre-teach** important vocabulary and concepts, teach, and then **summarize**.
- Make use of technological resources whenever possible: FM systems, captioning, etc.
- In school settings, frequently consult the Teacher for the Deaf and Hard of Hearing about strategies and effectiveness of teaching methods.
- Try to avoid having noisy equipment between the person and the speaker (e.g., fans, blowers, etc.).