

Listening Environments

Listeners with hearing loss have greater difficulties understanding speech in challenging listening environments (e.g. noisy environments) even when wearing assistive devices, such as hearing aids or cochlear implants. Oftentimes, there are three main barriers to improved understanding for anyone with a hearing loss:

1. Distance from the signal of interest (speech, music, etc.)
2. Background noise
3. Reverberation

1. Distance from the sound

Individuals with hearing loss have a reduced hearing range. As the distance from a speaker or signal of interest increases, audibility and intelligibility will decrease. Sitting closer to the sound source, as well as reducing barriers and distractions, will help maximize understanding and reduce listening effort.

2. Background noise

Background noise challenges everyone, especially those with hearing loss. It becomes increasingly harder to hear when background noise is as loud as the sound you want to hear. This is referred to as the signal-to-noise ratio (SNR).¹

When possible, background noise should be eliminated or reduced to maximize understanding. Listeners should position themselves so that the noise is behind them and not coming from the same direction as the sound you want to hear.

Communication partners should face one another and ensure there is good lighting so that understanding can be improved with supporting visual and facial cues.

3. Reverberation

Reverberation is the persistence of sound in a room after the original sound has stopped, like an echo. A room with good acoustics is designed to decrease reverberation, making it easier to hear. The amount of reverberation depends mainly on the size of a room or space and the surface materials used in the room. Large rooms with high ceilings, flat, hard surfaces and open floor plans are difficult listening environments for anyone with hearing loss. Look for an area with softer furnishings that absorb sound; these will reduce reverberation and make listening and understanding easier².

Role of Audiologists

Audiologists identify, diagnose, and provide management options for patients with hearing loss and dizziness. They work closely with physicians, when necessary, as an important part of the management team.

Do you think you or a family member may have a hearing loss? Click on the "Find an Audiologist" link at www.audiology.org to locate and set up an appointment with an Audiologist in your area.

References

1. Crandell CC, Kreisman BM, Smaldino JJ, & Kreisman NV. (2004). Room acoustics intervention efficacy measures. *Seminars in Hearing*, 25(2), 201-206.
2. Swaminathan J, Xia J, Xu B, & Pentony S. (2017). Assessing the effects of hearing loss on speech intelligibility in reverberant environments. *Journal of the Acoustical Society of America*, 141(5), 4030-4031.