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**Expert Advice: Health & Wellness**

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Have you or your children ever sung the wrong lyrics to songs? Our national anthem sung with the words, "Oh Canada, we stand on cars and freeze," or a Christmas carol containing the line "later on we'll perspire as we dream by the fire". These are examples of phoneme or word recognition, and I'm sure many

of you have hilarious examples of people simply getting it oh-so-wrong.

However, what is funny on a 'one-off' type of situation loses its humour when word recognition is so impaired that it occurs on a daily basis. These daily occurrences can result in problems ranging from frustration and embarrassment to a lack of confidence in meeting new people all the way up to the more severe social isolation.

Roughly 90% of the new patients that I see for hearing evaluations note that they have problems hearing in background noise. The concern is not just the "background" of the music getting too loud to interpret the "signal" of the lyrics of the music, but difficulty with understanding speech in restaurants, speech at a social gathering, or really noisy environments like a bar or Rider game. Although this difficulty can be a sign of a clinically significant hearing loss requiring hearing aids, it can also be seen in individuals with normal or near normal hearing in both the young and elderly alike. Technically speaking, when we talk about background noise we are really talking about auditory processing and how the two most complex organs of the body, the cochlea and the brain interact. In its simplest depiction the cochlea is a snail like structure ½ the size of a dime that has 20,000 hair cells that are each finely tuned for different frequencies within it - like keys on a piano. It is such a complex organ that the slightest change in how it functions affects your abilities to understand in background noise. Changes in how it functions can occur from genetics, aging, noise exposure, and or medical conditions. Neuroscience continues to study auditory processing and how the brain handles noise but the end result is that everyone can benefit from better knowledge of the way our ears and brain handles hearing in background noise. This understanding helps those with normal

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hearing develop the proper management for auditory disorders through different training programs. Those with hearing loss may find their solution in the advent of newer and better technology in hearing aids. In order to identify your ability to cope in background noise, we need to specifically test for it.

To test for one's ability to hear in background noise we must go beyond the basic "beep test" since patients with normal or near normal hearing can have difficulty in noise. There are three tests that I do in my standard hearing evaluation that is sensitive to auditory changes that relate to difficulties hearing in noise. The first is otoacoustic emission, the second is extended high frequency testing and the last is my most real-world test, the speech in noise test. The first two tests require specialized equipment but the final test, the speech in noise test, has to be my favourite as it is most relevant to the situation and more easily understood. The patient is expected to repeat sentences of increasing background noise and when they are no longer able to understand the sentence 100%, we are able to determine to what degree the individual is affected by a noisy environment. The quantitative score that is received is the signal to noise ratio, or the point where the patient must hear the signal (or person we are speaking to) versus the noise that is not the focus. Communication strategies for those with normal hearing include proper eye contact, body placement with the back against a wall, use of good lighting, use of facial expressions and gestures, and avoiding conversation with food or gum in the mouth.

If you have hearing loss, different manufacturers have developed hearing aids with various concepts to deal with background noise such as frequency compression, extended bandwidth, or receiver-in-the-ear hearing aids. Speech enhancement and background noise suppression that provides improved signal to noise ratios are also concepts that have been marketed this past year. For those with hearing aids, consider new technology hearing aids. They are not all as expensive as you may have heard and the continued research in auditory processing is leading to major improvements. As always, when in doubt, check with your audiologist for any concerns regarding your hearing health.