



SPRING 2017

# COMMUNICATION MATTERS

A NEWSLETTER FOR PARENTS, TEACHERS, EARLY LEARNING PROVIDERS AND CAREGIVERS OF PRESCHOOL-AGED CHILDREN.

### Noise

"I wish they would turn that music down!" "That TV is so loud I can't hear myself think!" "I like the food at this restaurant, but it's so noisy we can't have a conversation."

We live in a noisy world. Most of us are surrounded daily by the sounds of traffic, televisions and crowds. It's harder and harder to escape the background noise of 21st century life.

In this issue of Communication Matters we'll address the effect that noise has on various aspects of modern life, including:

- Early language learning
- Academic learning
- Hearing
- Health





#### What is Noise?

The word noise comes from the Latin word nausea, or "seasickness." Noise is defined as any unwanted sound. Physically, noise is the same as sound; but noise implies that the sound is undesirable and/or carries no useful information. Most of us associate the word "noise" with loud volume, but quiet background noise can also be very distracting.

#### The effect of noise on hearing

Sound is measured in decibels (dB). Audiologists tell us that prolonged exposure to a sound at 85 dB (like the noise of city traffic) can put us at risk of hearing loss, while even a single exposure to sounds above 110 dB (like a rock concert, up to a gunshot or fireworks display) can damage hearing.

The following "Audiogram of Familiar Sounds," adapted from the American Academy of Audiology and put online by the John Tracy Centre in California, shows the typical volume and pitch of many environmental noises. You can see how many everyday sounds are above the 85 dB safety level.



The Audiogram also shows the "speech banana," the banana shape that outlines the different pitches of the sounds we use in English and how loud they are in conversational speech. You'll note that sounds like "f," "s" and "th" are higher pitched and quieter than vowels like "ee" and "u." That's why older people, who tend to lose hearing in the high pitches first, and people who experience noise-induced hearing loss, often miss out on whispered speech and hear vowels more easily than some consonant sounds.

#### The effect of background noise on early language learning

Imagine trying to learn words in a new language.

Now imagine trying to do it while being distracted by background noise.

That's the task that toddlers take on every day as they add to their vocabulary of spoken words.

Recent research at the University of Wisconsin-Madison showed that toddlers had a harder time learning new words when they were in noisy environments. The settings didn't have to be loud like a construction site. A typically noisy home, where the TV was on, music was playing and people were talking was distracting enough to decrease children's success at learning words.

This doesn't mean that homes must be silent. That's counterintuitive, as well as impossible! The researchers do suggest that adults should be aware of the amount of background noise when they're interacting with young children.

#### The effect of noise on academic learning

A 2005 study conducted by the group National Short Courses in Environmental Health looked at the effect of noise on childhood cognition and development. The children in the study were aged 5 to 11 years. This was considered a critical stage in cognitive development, as children undertake the complex academic tasks of learning to attend, problem-solve, read, write and spell.

The researchers also noted that children in this age group have not yet developed coping mechanisms for additional stress. They theorized that these children would be more vulnerable to both the physiological and psychological effects of noise, including:

- Fatigue due to disturbed sleep;
- Difficulty sustaining attention;
- Impaired auditory memory and recall;
- Impaired auditory discrimination (the ability to recognize differences in phonemes (the smallest unit of sound in a language), including identifying words and sounds that are similar and those that are different);
- Impaired speech perception (the ability to hear, interpret and understand the sounds of language).

Results showed that children attending schools near airports were at significantly higher risk of these results, and noted that both children and adults in these schools showed an increased risk of experiencing anxiety. The researchers cited more than 20 additional earlier studies that supported their results, and called for sound levels in schools to be more carefully monitored.

#### The effect of noise on health

You can see from the above information that noise can have negative effects on many aspects of human health. A variety of researchers have studied the effect of noise on areas including:

- Hearing
- Speech perception
- Auditory discrimination
- Auditory attention
- Memory and recall
- Concentration
- Sleep
- Cardiovascular health (increased blood pressure)
- Communication
- Learning

All of these areas have a tremendous impact on mental health. Noise can create annoyance. Researchers have postulated that it increases secretion of stress hormones. It can decrease motivation and an overall sense of well-being.



#### Countering environmental noise

As research continues to study noise, there are steps you can take to minimize its effect on you and your family. Think about these recommendations, some of which were taken from the website of the National Health Service of the UK:

#### I. Use earplugs

The louder the noise and the longer you're exposed to it, the greater the chance of damaging your hearing. Protect your ears with ear protectors – earplugs or earmuffs – and get away from the noise as quickly or as often as you can. If you can't leave the venue, take regular breaks. A 10-minute rest break will give your ears some time to recover.

#### 2. Turn down the music

Don't listen to your personal music player at very high volumes and never to drown out background noise. If the music is uncomfortable for you to listen to, or you can't hear external sounds when you've got your headphones on, then it's too loud. It's also too loud if the person next to you can hear the music from your headphones.

#### 3. Use the 60:60 rule

To enjoy music from your iPod or MP3 player safely, listen to your music at 60% of the maximum volume for no more than 60 minutes a day. If your music player has a 'smart volume' feature, use it. It will help you regulate the volume.

#### 4. Wear headphones

When listening to your personal music player, choose noise-cancelling headphones, or go retro with older muff-type headphones. These block out background noise and allow you to have the volume lower. Ear-bud style headphones and in-the-ear headphones are less effective at drowning out background noise. Try to take regular breaks from your headphones, though, to give your ears a rest.

#### 5. Turn down the dial

Turn down the volume on your TV, radio or hi-fi a notch. Even a small reduction in volume can make a big difference to the risk of damage to your hearing. If you need to raise your voice to be heard above the sound, turn it down.

## 6. Use earplugs when you're listening to live music

They can reduce average sound levels by between 15 and 35 decibels. They're widely available at many live music venues and shouldn't spoil your enjoyment of the music.

### 7. Don't put up with work noise

If you're experiencing noise at work, talk to your human resources (HR) department or your manager and ask for advice on reducing the noise and getting hearing protection.

#### 8. Wear ear protectors

Wear ear protectors (earplugs or earmuffs) if you are using noisy equipment such as power drills, saws, sanders or lawn mowers.

#### 9. Be careful in the car

Listening to music in a confined space increases the risk of hearing damage. Don't listen to music too loud for too long.

#### 10. Have a hearing detox

Give your ears time to recover after they've been exposed to loud noise. According to Action on Hearing Loss, you need at least 16 hours of rest for your ears to recover after spending around two hours in 100dB sound, for example in a club. Reducing this recovery time increases the risk of permanent deafness.

And remember that while you can make educated choices, your young children may not yet be able to do that for themselves. Be extra aware on their behalf, not only of noise levels, but of how precious your communication with them is. Make the most of it by maximizing their opportunities for focused 1:1 time with you!

Communication Matters is published biannually by the Haldimand-Norfolk Preschool Speech and Language program. It has been developed to increase awareness for services available and tips on the prevention of speech, language or hearing disorders in the preschool population. This newsletter is intended for parents, teachers and caregivers of preschool-aged children. You are invited to contact the Health Unit with your articles and ideas.







Simcoe P.O. Box 247, 12 Gilbertson Drive Simcoe, ON N3Y 4L1 519.426.6170 / 905.318.6623

**Caledonia** 282 Argyle Street South Caledonia, ON N3W IK7 905.318.6623

