Through a Dog's Ear
by Joshua Leeds & Susan Wagner, DVM, MS

Book Review by Carol Peter, CPDT-KA

This book came out of a question posed by Lisa Spector, a classical concert pianist, to Joshua Leeds following a 2003 lecture of his on psychoacoustics for humans. Lisa, an avid dog lover and guardian/trainer of Guide Dogs for the Blind, noticed that when she played her piano at home, even rambunctious 16-week-old puppies would fall into a calm and gentle sleep. She asked, "How about making an album of classical music for dogs?"

As Leeds researched the topic, he came to understand the top two premises of his book and musical design: dogs have very sensitive hearing and you can use sound to improve the health and well-being of dogs, just as you can for humans. The psychoacoustically designed music he produced, played by Lisa Spector, has been demonstrated to calm 70% of dogs in kennels or shelters and 85% of dogs in households. Specifically, they advocate the use of this music to achieve the following benefits:

- Alleviate separation anxiety, visitor excitement, thunderstorm panic or other behavioral challenges
- Make dogs with hyper sensitive nervous systems (and hearing) more comfortable in any house or apartment

This specially-designed music can be particularly beneficial for dogs with a heightened sensitivity to sound, which can cause a phobic response. This hyper-sensitivity is often attributable to dysfunctional auditory processing. Leeds discovered in his research that there are many similarities between human and canine auditory perception, which led him to apply his expertise in psychoacoustics to dogs. Psychoacoustics is a branch of science dealing with hearing, the sensations produced by sounds and the problems of communication—in other words, the study of the perception of sound.

There is an uptick in psychological and physiological dysfunctions in dogs. Perhaps it is related to an ever increasing media-driven, high tech, 24/7 culture. Many homes, which should be a dog's sanctuary, are relentlessly noisy and active. Dogs cannot control the input of sound and may have no escape from it, which leads to problems with auditory processing.

Quote from page 5: "Research has shown that dogs are among the most adaptable of animals. Most dog guardians have thus assumed that it is the dog's job to adjust to whatever environment we offer them—no matter how stressful. In this case, perhaps our dogs' willingness to do anything for us has become their Achilles' heel—the result of their total compliance is that canines are more stressed than ever before."

It is estimated that more than 10 million dogs have separation anxiety—that's one out of every seven. On the other end of the spectrum is aggression. **A major premise of this work is that if we examine our environment to create the best possible sensory space to support behavioral balance and health in our dogs (not to mention ourselves), we may find some of these problems alleviated.**

Sound is a potent energy that can affect the nervous system, and we should not take it for granted. Used well, sound can act as a nutrient to nourish a healthy nervous system. There are several scientific concepts that were used to test various elements of the music to optimize its calming effect on dogs. I'll spare you the jargon, but they are techniques that affect body pulses, such as brain waves, heart rate and breath. These are the tools of a psychoacoustician, such as Leeds. He did some research and discovered that:

- Country music calmed ponies
- Country music best brought cows home
- Classical music made cows produce more milk
- Dolphins swam in exuberant synchrony to Bach
- Classical music improved the growth rate in chickens
- Classical music caused hens to feed more
- Classical music relaxed dogs
- Rock and jazz were often the styles of music that got the least desirable results from the animals

Leeds was intrigued by the work of Dr. Deborah Wells, who conducted a study in 2002 in dog shelters in San Francisco and Northern Ireland. She discovered that classical music created notable relaxation in canines, while heavy metal music resulted in more agitated behavior.

So Leeds set out to produce classical music that is psychoacoustically designed for calming and reducing anxiety. When a nervous system is compromised, overwhelmed or stressed, the ability to process sensory data is diminished. Simple Sound is easy for the nervous system to absorb—enough to charge the nervous system, but not enough to make it tune out. He was intentional in how much information is sent to the brain through the musical design. Classical music forms and patterns are easy to perceive. It allows for passive hearing versus active listening. In designing the music with Lisa Spector, they started with selections that were intrinsically simple in orchestration and arrangement. Then they experimented with the arrangements to adhere to the Simple Sound concept. They varied tempo, frequencies, harmony simplicity or complexity, and repetitions. The goal was to create music as easily processed by the brain as possible. They recorded four albums of varying complexity, tempo, and orchestration. Not knowing what the canine effect would be, Leeds insisted that the music be psychoacoustically relevant to humans as well.

During this time, Leeds was contacted by Susan Wagner, a veterinary neurologist who also integrates the best of Western medicine with complementary energy healing processes. She was looking for music to be used in a research study on the effect of music on dogs with epilepsy. Leeds needed her expertise in the how, what, and why of dog hearing. So they collaborated. Within a year, Dr. Wagner tested they music created by Leeds and Spector on more than 150 dogs in shelters, veterinary clinics, service dog organizations, grooming facilities, and private homes. Her findings took the work of Dr. Wells an important step further, discovering that psychoacoustically designed music was more effective at inducing canine relaxation and sleep and doubled the abatement of canine anxiety behaviors. Also of critical importance is the finding that the same music that calms dogs also helps people relax. The album that had been designed for "industrial-strength people calming" was also the album that produced the most significant benefits for the dogs.

Despite obvious structural differences in the ears of dogs and humans, the process of hearing is the same. Both dogs and humans process sound in the cerebral cortex. There are differences, though. Humans hear sounds between 20 – 20,000 Hz. Dogs hear a much wider frequency range—at least twice as high, from 40,000 Hz all the way up to 55,000 Hz, depending on the breed. Dogs' ability to move their ears (like radar dishes) enables them to tune in to sounds we can't even perceive.

Research on humans has shown that many common human behavioral and physiological issues may have an auditory component: attention and focus issues, anxiety, depression, and sensory integration issues. Given dogs' sympathetic response to psychoacoustically designed music for humans, the authors believe that dogs are at as much risk of sensory over-stimulation as humans are. And dogs can't express their stress in anyway other than behaviorally. So we need to consider this sensory over-stimulation as a potential cause of behavioral problems. The human physical effects of too much sound are diminished immune and nervous system function, contributing to susceptibility to disease. In addition, research confirms that chronic exposure to noise produces significantly higher levels of adrenaline and cortisol, which, over time essentially corrodes the body's infrastructure.

Quote on page 24: "Given our dogs' increased sensitivity to sound and lack of control over their environment, perhaps human sound has a greater effect upon our dog pals than we ever imagined. The canine stress response is hard-wired, just like ours; one can only imagine what effect such constant adrenaline and cortisol release might be having on our dogs' minds and bodies."

The Monks of New Skete in Cambridge, New York support themselves by breeding, raising and training dogs at their monastery. In their book *How to be Your Dog's Best Friend*, they tell a story that illustrates the issue of sound and dogs. A woman with pre-schoolers brought her Irish Setter to the monks describing a constant shaking which was worse when the dog was around her kids. After two days in the relative quiet of the monastery, the dog was no longer shaking. The dog had lived for nearly two years with constant noise and sensory stimulation, never having any time to herself in quiet surroundings. Just providing some relief from that sensory over-stimulation had a remarkable and rapid beneficial effect.

Humans respond to irritating or emotionally draining sounds one of two ways: either becoming agitated and confused; or tuning them out, making it hard to get back the perception of those frequencies and shutting off a vital source of energy. There hasn't been sufficient research in this area on animals, but Dr. Temple Grandin's book *Animals in Translation: Using the Mysteries of Autism to Decode Animal Behavior* reports the following. "Any novel, high-pitched sounds will cause cattle to balk, because they activate the part of the animal's brain that responds to distress calls. An *intermittent* high-pitched sound is that much worse. Intermittent sounds will drive anyone crazy; they're much more upsetting than a constant loud din, whether it's high-pitched or not. You can't relax, because you are waiting for the next sound. And you can't turn this response off, either, because intermittent sounds activate your *orienting response*. People aren't so aware of this response in themselves, but if you live around animals you know it well. Anytime an animal of any species hears a sudden sound, something they weren't expecting, they stop what they are doing and orient to the source of the sound. I think the orienting response is the beginning of consciousness, because the animal has to make a conscious decision about what to do about that sound. If he's a prey animal, should he run? If he is a predator, does he need to chase something?" What happens when sound stimuli come too quickly or if the sounds are unrecognizable to the dog? The authors pose the question of what might a physiological effect of such confusion be on an animal that is hard-wired to make snap decisions and act quickly.

What to do with this research:

Consider the following in determining potential contributors to and solutions for behavioral or physiological problems in dogs:

- Does the human sonic environment support or destabilize a dog's well-being?
  - Spend 30 minutes sitting quietly in one place with a notepad in hand and take an inventory of all the sounds in an environment and identify if they are recognizable (humans talking, dogs barking) or unrecognizable (especially to a dog); constant or intermittent; loud or soft; fast tempo or slow. Identify which ones may have the potential to cause problems for dogs. Take note of any of the dogs' reactions that you might attribute to noise.
- What is the compounded effect of modern human life and the accompanying sounds of people on dogs? Will over-stimulation cause physiological or psychological damage to the resident dogs?
  - Will dogs react to the over-stimulation by becoming agitated and confused or by blocking it out and becoming "dumbed down" to some sensory inputs?
  - Observation is the best approach to identifying a dog's reaction to the sonic environment. However, there may be unobservable physiological effects as well.
- How can we use sound in a way that can restore some balance to a dog's nervous system for their optimum behavioral and physiological health?
  - As the responsible guardians for dogs, we have an obligation to be aware of the sonic environment and manage it as best we can for an optimal effect.
  - Manage against over-stimulation, as well as under-stimulation (especially for home-alone dogs).
  - Keep the volume on the low side—below 85 dB.
  - Don't use a radio or TV for sound, because sounds coming from those devices may actually be anxiety-producing. You don't know or have control over what will be broadcast. You'd be better off playing a CD—especially music that is designed for calming effects—than risking the random sounds of broadcast radio or TV. Put it on a timer.
  - Select classical music that has been proven to have a calming effect on dogs—not rock or rap or grunge or even jazz.

For more information on these concepts visit ThroughADogsEar.com.