The highly sensitive dog

making life easier for these wonderful dogs

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Front matter

Cover photo: *The Splendid Miss Tiger Lilly* at 9 or 10 years of age. Many thanks to Danielle Sessler, our wonderful neighbour in Bellevue, Washington, for capturing the camera-shy Ms Lilly on film.

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Is there a canine equivalent to the highly sensitive person (HSP)?

This term, *highly sensitive person,* was first coined by psychologist Dr Elaine Aron and is now called high sensory-processing sensitivity (SPS) in research circles.

Since reading her book *The Highly Sensitive Person,* and answering an emphatic *"yes!"* to pretty much every question on her self-assessment test (a short version is available here), I've assumed that this phenomenon occurs in animals as well.

(Every time I read something to do with humans, I automatically wonder whether it's applicable to animals. One might politely call it an occupational tic; the truth is that I'm more interested in animals than in people :-)

When I read that 15–20% of the human population is considered to be highly sensitive, a roughly equal proportion to have very low sensitivity, and the majority to lie somewhere in between, I immediately thought that this breakdown probably holds true for animals as well.

The research in many different species, from insects to fish to primates, has at least identified animals at both ends of the sensitivity spectrum: high or low sensitivity; "timid/shy" or "bold" personality; "uptight" or "laid back"; and so on.

I would add that, in my experience, some species (*e.g.,* horses) are inherently more sensitive than others; some breeds within a species (*e.g.,* Arabian horses) are inherently more sensitive than others; some family lines (here I won't name names) within a breed are inherently more sensitive than others; and some individuals within those family lines are inherently more sensitive than others.

So, is there such a thing as the highly sensitive dog (HSD)?

If so, what might that look like? What behavioural traits might these dogs share or exhibit more than other dogs that we could recognise as HSD characteristics?

When I read Dr Aron's checklist for parents of highly sensitive children, I was struck by how very well it translates to some dogs I've known, and especially to one I lived with for 15 years who was very sensitive to loud noises such as thundercracks, fireworks, and gunshots until she developed hearing loss in old age. (We'll circle back to this particular profile in a bit.)

That's all well and good, but such checklists are quite subjective. Is there any *objective* evidence for the existence of the 'HSD' or for any specific behaviours we might consider characteristic of such dogs?

Yes, there is.

In 2019, researchers in the Department of Veterinary Biosciences at the University of Helsinki, Finland, published a study which identified a likely genetic basis for two specific types of anxiety in dogs: *noise sensitivity,* and *fearfulness* toward strange people or situations.

Sarviaho, R., Hakosalo, O., Tiira, K. *et al.* Two novel genomic regions associated with fearfulness in dogs overlap human neuropsychiatric loci. *Transl Psychiatry* **9,** 18 (2019). https://doi.org/10.1038/s41398-018-0361-x
[this journal is one of the many scientific publications in the *Nature* stable]

The study was published in the journal *Translational Psychiatry* because of its implications for similar "neuropsychiatric disorders" in people. Their words, not mine.

The human research on HSP or SPS indicates that while HSPs may suffer more from anxiety in this culture that overemphasises the value of the highly *in*sensitive individual, anxiety is not a characteristic of the HSP.

Furthermore, high sensory-processing sensitivity is not considered a neuropsychiatric disorder, but rather a behavioural trait shared by a small but significant proportion of the population.

The Finnish study

In brief, the researchers took blood samples from 330 German Shepherd Dogs and used a canine whole-genome tool to look for specific genetic differences among the following groups, as identified by owner responses to a behavioural questionnaire:

1. Noise Sensitivity (NS) group — dogs who are reactive to loud noises (thunder, fireworks, gunshots); 91 dogs

Reaction to loud noises included one or more of the following: salivation, defaecation, urination, destroying, escaping, panting, hiding, trembling, vocalising, freezing, holding the tail low or between the hind legs, and/or getting excited and barking when hearing thunder, fireworks, or gunshots.

2. Fear Reaction (FR) group — dogs who react fearfully toward strangers or new situations; 80 dogs

Reaction to strange people included one or more of the following: withdrawal, barking or growling (with or without going toward the person), not willing to make contact, staying close to the owner (but not under any command), holding the tail low or between the hind legs, and/or some other behaviour identified by the owner as specific to this situation.

Reaction to new situations or environments included one or more of the following: wanting out of the situation/environment, barking, panting, trembling, holding the tail low or between the hind legs, staying still and not wanting to explore the environment, staying close to the owner (but not under any command), walking low, and/or some other behaviour identified by the owner as specific to this situation.

3. 'Control' group(s) — normal dogs, those who are not noise sensitive (210 dogs) or fearful (193 dogs, 180 of whom were also in the noise-sensitive Control group)

It's worth pointing out that there was some overlap between the NS and FR groups. Of the 91 dogs in the NS group, 34 dogs (37%) were also fearful.

Looking at this from the other direction, 34 of the 80 dogs in the FR group (42.5%) were also noise sensitive.

So, as a broad brushstroke, about 40% of the dogs in either group were both noise sensitive *and* fearful toward strangers or new situations.

That's a substantial proportion of these 'reactive' dogs (about 4 in 10), and hopefully it's of some comfort to those whose dogs have more generalised anxiety: you're not alone!

It might also be a bit of a relief for those with noise sensitive or fearful dogs, that things could be worse: some dogs are both.

All 330 dogs lived in Finland, all were at least 1 year old, and all were privately owned (*i.e.,* they were not purpose-bred research dogs). Most dogs were from either working or show lines (a point I want to come back to later).

According to the study authors, the German Shepherd breed was chosen *"for its known large variation in reacting to loud noises, strangers and novel situations (shyness–boldness personality)."*

I take this to mean that they felt the German Shepherd breed was a good representation of the general dog population for this genetic comparison study, as it would be easy to find individuals at both ends of the shyness–boldness spectrum within the same breed.

Whether their findings are applicable to other breeds and to mixed-breed dogs remains to be seen, but it is likely to be the case — particularly in light of the fact that the authors made repeated references to similar findings in humans and to the usefulness of canine models for the study of human neuropsychiatric disorders.

In other words, the authors were assuming that inferences could be made about *humans,* so it's not a stretch to assume that the same conclusions may be applied to other dog breeds and to dogs in general.

Study results

This study was focused on mapping noise sensitivity and fearfulness in dogs to specific chromosomes, and to specific locations, or 'loci' (singular, 'locus'), within the chromosome that have been associated with anxiety and other "neuropsychiatric disorders" in people.

Noise sensitivity

They mapped noise sensitivity to canine chromosome 20 and to a locus that contains several 'candidate' genes associated with neuropsychiatric and hearing-related characteristics, including noise sensitivity/intolerance and age-related hearing loss. (That profile describes my dog to a T!)

For example, one of these 'candidate' genes is the *oxytocin receptor gene*. Oxytocin is a hormone that, together with its receptor, is involved in maternal bonding, other types of social bonding, and related stress behaviours.

In dogs, this receptor is involved in human-directed social behaviour such as greeting, proximity-seeking (wanting to be near us), and friendliness. (Also characteristics of my own noise-sensitive dog, who seldom met a person she didn't love at first sight.)

This study tells us nothing about the expression of this gene in noise-sensitive dogs; it simply suggests we look deeper at this particular gene and others at this locus that are associated with normal behaviour and with established "neuropsychiatric disorders" in people.

It also suggests we look here for a genetic basis to age-related hearing loss.

Fearfulness

Perhaps not surprisingly, fearfulness toward strangers and new situations was much more complex, involving several different chromosomes (most prominently, but by no means exclusively, canine chromosome 7) and several 'candidate' genes, notably those involved in bipolar disorder and schizophrenia in humans.

I think that's an unhelpful and potentially harmful line to draw between the two species, because it risks branding these fearful dogs as "crazy" in the eyes of the general public or as having a "neuropsychiatric disorder" (read *medication deficiency*) in professional circles.

What if these dogs are simply highly sensitive individuals — or to use the scientific term, they have high sensory-processing sensitivity?

If so, then it is probable that they are simply more easily overwhelmed by novel situations, including unfamiliar people, which is a characteristic of the HSP.

Does this high sensitivity make these dogs feel a little "crazy" at times? Probably; it certainly does me (a HSP). But are they "crazy" dogs? Almost certainly not.

(Not to head off down a side track, but we must leave room here for individuals with brain lesions or other medical conditions that affect brain function, such as liver disease. They are not "crazy" dogs, either, but they may show very abnormal behaviour. Such dogs require a thorough diagnostic workup and whatever medical or surgical treatment is indicated as a result.)

So, this study provides objective evidence that there is a genetic component to these behavioural problems in German Shepherd Dogs, and this conclusion probably extends to other dogs as well.

How can this information help us better manage these dogs?

Sticking with the study data for the present, it's worth noting that most of the dogs in the noise sensitivity (NS) group were mildly or moderately noise sensitive; only some were extremely reactive (see Figure 1).

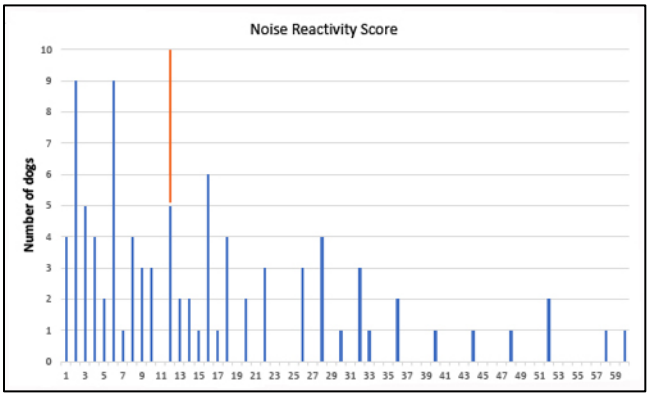

Figure 1. Noise Reactivity scores for the 91 dogs in the Noise Sensitivity (NS) group. The median score (orange line) was 12, on a scale from 1 (slightly reactive) to 60 (extremely reactive).

The median is the value which splits the group into equal halves, so 50% are at or above this line and the other 50% are at or below this line. Even though it may look like there are more dogs on the right side of this line, 50% of the dogs had Noise Reactivity scores of 12 or less.

In other words, all 91 dogs in the NS group were identified by the behavioural questionnaire as being abnormally reactive to loud noises, but there was a wide range of reactivity within the group, and most were at the lower end of the scale.

(Note: all of the dogs in the Control group scored a solid 0 for their Noise Reactivity score.)

Likewise, most of the dogs in the fear reaction (FR) group were mildly or moderately fearful toward strangers or new situations; only some were extremely reactive (see Figure 2).

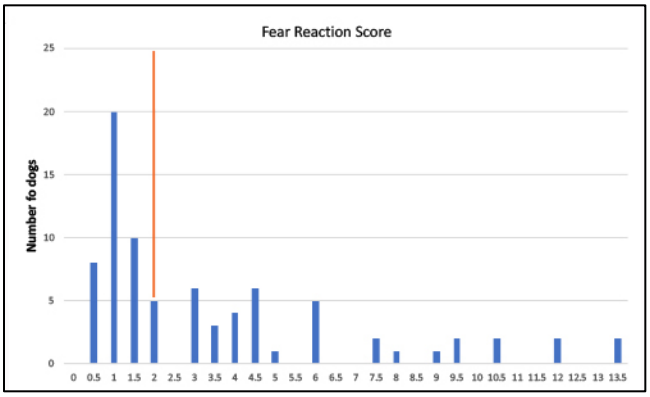

Figure 2. Fear Reaction scores for the 80 dogs in the Fear Reaction group. The median score (orange line) was 2, on a scale from 0.5 (slightly reactive) to 13.5 (extremely reactive).

The scale of the Fear Reaction score is very different from that of the Noise Reactivity score because fewer questions were asked and fewer options were available for response, so the maximum possible FR score was much lower.

In statistical terms, neither of these two groups (NS and FR) were normally distributed, meaning that the reactivity scores did not form the classical bell curve around the average score for the group. These data and their skewed distribution suggest two things:

1. Whether the trigger is loud noises or strange people/situations (or both!), *'reactive' dogs are not a homogeneous or uniform group of "misfits" or "maladapts."* In other words, they are not all the same.

2. Most reactive dogs are likely to respond well to positive training, careful management of their environments, and, when needed, behaviour-modifying therapies. *Even those who are extremely reactive can become much less so with these sensitivity-aware approaches.*

These two points are inter-related, so I'll discuss them together as we head toward practical strategies for managing these dogs.

Let's start with the notion that there's something wrong with these reactive dogs — that they're genetic misfits or they've been poorly brought up or poorly trained.

Our genes are not our destiny

Contrary to popular opinion, our genes are not our destiny. To some extent, we are constrained by our genetic inheritance, but not as much as we've been taught, and not as much as we might suppose by looking only at the genes which code for the relatively immutable physical characteristics such as eye colour or hair colour.

(That said, eye colour can change, particularly with disease; and as anyone over the age of about 30 can attest, hair colour changes over time. But I digress...)

We remain physiologically and psychologically *adaptable* throughout life. This is a characteristic of all living systems, and it's where the rather brutalist saying "adapt or die" originates.

The activity of many — in fact, most — of our genes is very 'fluid' and contextual (depends on the context). Our systems are constantly perceiving and responding to our environments, inside and out, even while we sleep.

Through this ability of our genes to alter their expression according to circumstances, our systems are both *responsive* (short-term) and *adaptive* (long-term) throughout our lifetime.

In practical terms, while you may have a highly sensitive dog, the *expression* of that sensitivity can vary.

It can be *heightened* by negative experiences (including punishment for reactivity), and it can be *lessened* by positive experiences (including praise for remaining calm).

For example, noise-sensitive dogs will still be sensitive to loud noises, but the degree to which they are *distressed* and therefore *react* to loud noises can be lessened.

Eustress *vs.* distress

A useful concept here is the expanded definition of stress as being either *eu*stress ('good' stress) or *di*stress ('bad' stress).

With **eustress**, the stressful event or situation is of a low enough intensity or duration that we are able to respond to it without harm, and as a result we adapt, thereby increasing our capacity to cope with such events or situations in the future.

This type of stress is *adaptive,* so it may be seen as generally positive or beneficial.

Distress, on the other hand, is stress of sufficient intensity or duration that it overwhelms our present capacity to respond. It may cause harm, and in so doing can actually decrease our capacity to respond and to adapt, as we hunker down in 'defence' mode and ride it out the best we can. The next time we encounter this stressful event or situation, we react sooner and with greater intensity, as a defensive mechanism.

This type of stress is *maladaptive,* so it may be seen as generally negative or harmful.

High sensory-processing sensitivity has its positive aspects. For example, highly sensitive dogs generally make wonderful companions. The downside is that they are more easily overwhelmed than less sensitive dogs.

The trick, then, is to manage the stresses that are inevitable in every life and ensure that, most of the time, the stress the dog experiences is eustress (tolerable, adaptive) and not distress (intolerable, maladaptive).

This Finnish study was designed, in some respects, as a canine model for human neuropsychiatric disorders. So, let's turn that back around and take a look at these canine behavioural problems — and their possible solutions — in light of our human experience.

In my view, the essential premise when managing these highly sensitive dogs is this:

Respect your dog's sensitivity, while gently working to reduce *reactivity*.

If, as this and other animal and human studies indicate, high sensory-processing sensitivity is an inherent behavioural trait rather than a disorder, then your dog will remain highly sensitive. However, your dog needn't remain highly *reactive*.

Next, some practical suggestions for helping your highly sensitive dog remain more calm in stressful situations, and over time become less reactive (*i.e.,* adapt).

1. Calm environment

In my experience, the backdrop to managing high sensitivity is a calm environment, particularly a calm home. There can still be periods of activity that are lively and stimulating; in fact, I think there need to be.

Eustress ('good' stress, tolerable stimulation) is beneficial because it's adaptive — and also because it's the stuff of life! Boredom is a kind of slow death for intelligent creatures.

Home just shouldn't be noisy and chaotic, which is to say, overstimulating and at times overwhelming for these highly sensitive dogs. (Such a home is not that good for humans, either!)

What "calm environment" looks like for you and your dog will depend very much on your dog and your circumstances. Your home needn't be like a monastery to serve your highly sensitive dog well.

As a striking example of what's possible, I have a friend who has several dogs, most of whom are highly sensitive (as a "soft" breed and as individuals). These dogs frequently go to group classes at a dog training centre, to dog shows, even some big national events,

and to hospital and hospice facilities as therapy dogs. Oh, and they live on a farm, where big outdoor dogs guard the livestock.

While their home is often lively and stimulating (it's full of dogs, so how could it be otherwise?!), it's seldom noisy or chaotic, and never so for very long.

These dogs thrive because they are all well loved and well respected as individuals, and their person takes care that none of her dogs are overstimulated or overwhelmed for very long. These dogs are also well trained and know what's expected of them. These are all points I'll touch on again later.

Each dog is unique in its genetic inheritance and life history, and so is each person, so you're in the best position to figure out what will work the best for you and your dog.

Incidentally, you may find that changes you make for your dog's sake also benefit you and/or other family members, even if you're not a highly sensitive person yourself (although chances are, if you've read this far, you are :-).

2. Social bonds

Dogs are a highly social species, as are we, so when we keep dogs as pets, particularly a single dog, we become our dog's primary or sole means of social connection and support. In essence, we become the dog's family.

Respecting the social bonds our dogs have with us, and making sure that love and respect flow freely in both directions, is just as important as providing a calm environment, because social isolation is to the psyche what oxygen deprivation is to the body.

A sense of security that's rooted in a sense of *belonging* may be more important to the health and well-being of these highly sensitive dogs than we might like to think with our busy lives.

This Finnish study obliquely referenced social bonds in its finding about the oxytocin receptor gene, but there is much more to be learned here. In the meantime, I think we can safely assume that a calm environment is a rather bleak landscape in the absence of stable, loving social bonds. It'd be a bit like living in a library: that might sound idyllic at first, but before too long…

separation anxiety

Viewed in this light, *separation anxiety* is not a neurosis; it's simply a reaction to social isolation in a highly social species. It's a *distress call,* not a disorder.

It's a deficiency of stable social bonds, of enjoyable company and activities, of trust that those bonds will hold (*i.e.,* you will return) and that nothing overwhelming will happen in the meantime. It's a lack of ability to cope on one's own for any length of time, whether because of past experience with abandonment or neglect, or simply from never having learned or realised that one *can* cope, that it really *is* alright.

In other words, it's a repeated and escalating excess of *alarming alone-ness,* rather than a deficiency of anti-anxiety medication.

Of course, not all dogs left alone all day exhibit separation anxiety — but that's my whole 'thesis': if high sensitivity is a behavioural trait, expressed by a small but significant proportion of the population, then it's best seen and managed as a normal variant, not a neurosis.

(While we're at it, any dog left home alone all day is probably experiencing some degree of social stress. To what extent, and with what outward signs, depends on the dog, and probably on where the dog lands on the sensitivity scale I propose exists in dogs as it does in people.)

Separation anxiety is completely understandable (even foreseeable) when the highly sensitive dog is entirely dependent on us, when *we* are the dog's entire social support system, and we're absent for most of the day, tired and distracted when we get home, and rushing to get out the door in the morning. And if we add children to the mix, *well…!*

Incidentally, leaving a radio on while you're gone is not particularly useful. Dogs don't seem to identify voices coming from a radio as being human — or, at least, not *their* humans, the people they know and love. And few dogs really appreciate music.

(I once got an inkling of what I think dogs, or at least *my* dog, might find beautiful: *order;* everyone and everything in its place and doing what it's supposed to be doing. Miss Lilly and I were sitting on our front steps one beautiful spring morning. I was loving the feel of the sun on my face and the riot of bluebells in the garden beds alongside the house. Miss Lilly seemed to be enjoying the fact that no-one was encroaching on her yard and that everything was just as it should be; "dog is in her heaven, and all is right with the world." I simply can't imagine that she would have found music anything other than 'white noise'. Perhaps Bach…? *Nah*.)

So for dogs, the radio is likely to be just more noise. Most of the time they'll simply tune it out if the volume is low, so it's fairly benign. However, it's not a good thing if you're

relying on the radio instead of making more difficult but vastly more meaningful changes in your dog's daily life (*e.g.,* more time spent with you).

Putting your dog in day care, even if just an informal arrangement such as staying with a neighbour or friend, would be better than leaving the dog home alone with the radio on "for company."

talk to your dog

I always made a point of talking to my dog. (I'm currently in the strange, airless limbo of a dogless state, which is why I keep using the past tense when I talk about my dog.) I talk to other dogs as well, in complete sentences, and no "baby talk."

When I had to go out and leave her at home, I'd tell Miss Lilly where I was going, why I had to go out, and approximately how long I'd be gone or when I'd be back. I would also tell her when guests were coming over, how many there'd be, how long they'd be staying, and so on. Same for when we went anywhere in the car (which she never liked).

I know she didn't understand most of the words, but that wasn't the point; she always seemed to understand what lay beneath them.

(I would also make sure I held a picture in my mind or ran a little mental movie of what I was saying; but that's a story for another time.)

Being a highly social species, dogs are highly adept at nonverbal communication among their social group — a skill most humans have long since abandoned or left to wither in favour of words.

Your dog reads you like a book, so don't try to bluff your way through with words or gestures that don't match how you're really feeling. Just be honest with your dog (if no-one else ;-).

It's pointless trying to be any other way with a dog; and with a highly sensitive dog, the dissonance between what you *think* you're conveying and what you're actually *projecting* can be very unsettling.

Talking to your dog will help *you* get clear about what you want or what's happening, which is important because we spend so much of our lives scattered ("multi-tasking") and unfocused, churning over the past, fretting about the future, and never quite in the present or never here for very long.

How can communication be clear and effective when the message is so garbled?

So, talking to our dogs about what we expect of them, what's planned for the day or simply for the next hour or two, what we do or don't like about what they just did, *etc.* helps *us* get clear, which then helps our *dogs* feel more secure.

From the dog's perspective, home feels like a safer place when you know what's going on and what's expected of you. Distracted people are stressful to be around for these highly sensitive dogs (and for us highly sensitive people as well!).

While we're at it, make sure to include and consider your dog during human gatherings that occur in your dog's home or that you participate in elsewhere with your dog (*e.g.,* picnics, hikes). It really bugs me to see people ignore or only briefly and superficially acknowledge a dog's greeting whenever there's another human around.

We so readily default to verbal communication and ignore all else, including our dogs. We quite literally talk over the dog's head and ignore the genuine, heartfelt, and necessary social interaction the dog is trying to have with us, which almost always takes longer than the perfunctory greeting we may give each other or the brief pat on the head we may give a dog.

Perhaps it's just because I prefer the company of dogs to most humans, but I make it a point to acknowledge the dog's greeting and stay with it until the dog has said all he wants to say and then moves on to the next person or the next thing that takes his interest.

Talk to your dog — and *listen attentively* when the dog 'talks' back.

One other strategy related to social bonds is the use of dog-appeasing pheromone products (plug-in diffuser, spray, infused collar, *etc.*). They release a synthetic form of the natural hormone the mother dog exudes which helps keep her pups calm and well bonded with her. These products can work well in concert with the other strategies discussed here, although on their own they're unlikely to be adequate — and they are *not a substitute for forming and preserving stable, loving social bonds with your dog*.

In short, respect and *relish* the social bonds between your dog and you, prioritise a sense of safety and belonging (in both directions), and be consistent and reliable so that your dog learns to trust the bonds you two have created, even when you're not there.

This happy, lively, *loving* relationship is the foundation of the next strategy for helping your dog cope better with the various stresses of life.

3. Positive training

This one is about providing opportunities for your dog to experience new or otherwise stressful things incrementally (stepwise), in a safe and supportive environment, with lots of praise for calm behaviour.

Put another way, the goal is to work with the *adaptability* of the system to gradually increase your dog's capacity to cope with the ordinary stresses of life and with the occasional overwhelming ones as well.

It's important to stay within the current limits of what's tolerated, while gently nudging up against the boundaries to gradually expand them. (It's essentially the same principle as that used in sensible physical fitness training.)

As I mentioned earlier, most of the dogs in the Finnish study were from working or show lines — two very different but both very demanding and stressful disciplines for dogs. This study didn't examine the effects the humans (breeder, owner, trainer, handler) may have had on the dog's early development, socialisation, and response to stimuli — *i.e.,* on *learned* behaviour related to loud noises or strange people/situations. That wasn't its purpose, so I don't fault the researchers.

It's just that upbringing and experience matter — a lot, as it turns out.

positive stimuli have greater benefits in HSPs

Two central themes are prevalent in the recent research on the highly sensitive person (HSP), or high sensory-processing sensitivity in people. The first is the 'differential susceptibility' in HSPs compared with less sensitive people.

Simply put, while HSPs may suffer more than less sensitive people in response to *negative* stimuli (whether physical or mental/emotional), they benefit to a much greater degree from *positive* stimuli.

That's probably because HSPs process information more deeply than less sensitive people do, so positive stimuli have a greater calming and uplifting effect in HSPs. I wonder, too, whether positive stimuli might also have a greater *adaptive* effect.

If the same is true in dogs, then *even small improvements* — in the dog's home life, the strength and stability of social bonds, the use of positive training that emphasises praise for good behaviour (rather than punishment for bad behaviour) — are likely to yield *much better results in highly sensitive dogs* than in less sensitive dogs.

In other words, there's a bigger payoff for every positive change you can make to your dog's environment and daily experience. Now, *that's* worth celebrating!

it matters how *we* react when our dogs react

The second theme of the HSP research is how important the parent's, and particularly the mother's, influence is on the highly sensitive child, for bad and for good.

I don't subscribe to the practice of infantilising dogs by using such terms as "pet parents" for their owners (legal term) or guardians (better but still not great). However, I think we can draw a parallel here:

Because we are socially bonded with our dogs and they are reliant on us for their physical needs and psychological well-being, how we behave around and especially toward our dogs — particularly *how we react when our dogs react* — makes a huge difference to how intensely our dogs react to negative stimuli, whether that be loud noises, strange people or situations, or any other specific trigger your highly sensitive dog may have.

For example, I became highly reactive when I first realised that my dog (adopted as a stray at 12–18 months of age) was dog-aggressive in certain situations. I never did figure out why she was fine with some dogs but not with others, so I became very nervous and reactive about any and all encounters with dogs we didn't know. Some went well, others didn't, but in every case my *anticipation* of trouble didn't help matters, and my *reactiveness* only served to amplify the problem in the moment and make such problems more likely in the future.

In one important study of HSPs, mindfulness — the simple practice of keeping your attention on the present moment — significantly reduced anxiety in HSPs who were chronically overwhelmed.

It certainly works for me in my personal life. In my professional life, I think I accidentally bumbled into adopting this approach when working with nervous horses. If there's one species that'll give you instant feedback on your state of mind, it's the horse! So, I can attest to the usefulness of this simple practice with horses, donkeys, dogs, cats, sheep, goats, cows, chickens — you name it.

I'm speaking to myself as well here when I say that the way to help your highly sensitive dog remain or become more calm is to focus on the present yourself. Calm yourself if needed, then talk calmly and positively to your dog, encouraging and even *celebrating* calm or less reactive behaviour.

Dogs are smart, and they love to be praised just as we do, so our dogs are highly motivated to please us. Make it clear that it really pleases you when your dog remains calm in situations that have been problematic in the past. Start looking for calm (or less reactive) behaviour, and it'll show up more and more.

Remember how much more responsive HSPs are to positive stimuli, and become a positive stimulus for your dog by using lots of praise for calm behaviour. Be consistent, and over time your dog will become less reactive.

In short, consistently praise calm behaviour, gently discourage reactive behaviour (*e.g.,* barking or growling unnecessarily) — and while we're at it, avoid using food as a reward! Food is food, and praise is praise; your dog doesn't confuse the two, and neither should you. And speaking of food…

4. Diet matters!

As goes the gut, so goes the brain. A disordered gut immediately affects mood and sensitivity (*e.g.,* irritable bowel, irritable person), so pay particular attention to diet in your highly sensitive dog. This topic deserves its own book, so I'll just cover the most essential aspects here.

In particular, cut way down or cut out all *starchy* foods, especially grains and potatoes. The most common grains used in pet food are wheat, corn, oats, barley, and rice. They may appear on the label or in the food itself as whole grains or as flour/meal.

All of these grains are high in starch, and all should be limited or cut out completely because fermentation of starch by the dog's gut microbes can create a "leaky gut" that leads to chronic inflammation and irritability.

Also limit the amounts of sweet potatoes and legumes (peas and beans, including soy). Although they're not as starchy as grains and potatoes, they do contain quite a bit of starch, and legumes contain some other components that can adversely affect gut health.

While it may be difficult at first, base the dog's diet on a wide variety of meats and veggies (avoiding the starchy ones). These days, there are some very good fresh-frozen raw dog foods available in pet stores, feed/produce stores, and directly from the manufacturer, so they're a good place to start.

If you're inclined to be making your dog's food yourself, please consider reading **Feeding Miss Lilly, *revised edition***, the book I wrote on how I fed my own dog.

In the short-term, avoid any foods you know from experience cause flare-ups of digestive, skin, anal sac, or ear problems in your dog. In time, you may be able to feed these items occasionally without issue, but until your dog is on an even keel, it's generally best to avoid them.

Also avoid highly processed foods (which include kibble and canned food), other than as the occasional naughty treat or for emergencies (*e.g.,* keep a can of dog food in the cupboard for whenever you run out of good food). Foods containing synthetic colouring, flavour enhancers with no nutritional value, and the gel-like thickener carrageenan are also best avoided, as they too can cause irritability.

Lastly, give the gut microbes several days to adapt by making big dietary changes *gradually*. Respect the gut microbes or pay the price (which ain't pretty!).

5. Limit triggers

This one is mostly for *noise-sensitive dogs,* although any highly sensitive dog can benefit from the strategies that are aimed at calming an overwrought nervous system.

As a long-term plan, limiting triggers such as strange people or new situations only serves to make your dog's — and, by extension, *your* — world smaller and more "dangerous." Those anxious or fearful dogs tend to do best with positive training aimed at expanding their tolerance, and therefore their horizons.

An important distinction here is that noise-sensitive dogs may be dealing with more sensitive auditory systems (hearing) than dogs who are not abnormally reactive to loud noises. Whether the underpinnings are structural or functional (or both), protecting the auditory system from potentially damaging frequencies or intensities of sound can help with the dog's reactivity to loud noises, and it may delay the onset or slow the pace of age-related hearing loss in these dogs. (I say "may" because the Finnish study only *posits* a genetic connection between noise sensitivity and age-related hearing loss in dogs.)

Here are some things that may be useful in noise-sensitive dogs before or during thunderstorms, fireworks, and other noisy events:

Ear plugs, such as a cotton ball in each ear

Lightly smear one side of the cotton ball with Vaseline or some other oily or waxy ointment, so that it forms a better seal and makes it easier for you to remove the cotton ball later. If your dog objects, don't force the issue; just draw a line through this one.

Bear in mind that dogs and humans have differently shaped ear canals, so use an ear plug that can easily be removed with your fingertips. (For example, the mouldable silicone ear plugs for humans are not ideal because they can easily get stuck in the dog's

ear canal.) A few different companies make ear muffs (like noise-dampening head phones) for dogs, but not all dogs enjoy wearing such equipment.

The goal is not to obliterate all sounds; just to lessen the *intensity* of the short-sharp sounds (thunder claps, explosions from fireworks or gunshots, pneumatic nail guns, *etc.*) that are so disturbing to noise-sensitive dogs.

Basement or other 'quiet' room

Again, the goal is simply to lessen the *intensity* of the offending sounds. Combined with positive training (*e.g.,* praise for remaining calm or being less reactive than usual), sound attenuation with ear plugs and/or a 'quiet' room (underground basement or a room with sound insulation installed) may help a great deal.

Body wrap, such as a 'Thunder Shirt' (snugly fitted vest) or home-made wrap

This is the solution that worked the best for my own very noise-sensitive dog. Rather than buying one of the vests, I dug out a couple of old stable bandages (leg wraps for horses) and wrapped them around her body as snugly as I could (see photos).

Above: Applying a home-made 'thunder wrap' (a pair of old stable bandages, wrapped snugly around Miss Lilly's body).

Notice from the set of her ears that she's already a little anxious. While hard to see in this photo, she is also panting. That was classic *Miss Lilly is Anxious.*

The other dog in this photo couldn't care less that a storm was rumbling in the distance. This is classic noise sensitivity alongside normal reactivity.

Above: Securing the first of two bandages by tucking the end under the preceding layer.

Above: Applying a second bandage over the first, as one bandage was not quite long enough for Miss Lilly's body.

Above: The completed 'thunder wrap.' The second bandage allowed me to wrap her chest more snugly and extend the wrap down over her belly.

... and now you can see her worried expression. Miss Lilly loved people, including the friend of ours who took these photos. This facial expression and tense hindlimb stance (a subtle crouch) is her barely-controlled noise sensitivity in real time. She was also shaking slightly by this point.

But a short while later, she was lying calmly at my feet while our friend and I enjoyed the changing light. (I love a good storm!)

I would do this before dark on a night when fireworks were scheduled and also when a thunderstorm was forecast or already on the horizon.

I'd leave it on her until the noisy event was over; sometimes it stayed on all night, although often by morning she was wearing it as skirt. It didn't matter, because as soon as the wrap was on, she'd settle down and even curl up and sleep through the storm or an entire 4th of July extravaganza. Amazing, given how noise-sensitive she was!

This quick, simple, inexpensive, washable, reusable wrap worked very well for us, even when I didn't manage to get it on her until she was already pacing and panting because she'd heard the storm coming long before I did, or because some idiot had been exercising his "2nd-amendment rights"... (We were living in rural North Carolina when these photos were taken.)

That raises an important point about any and all methods for calming your dog: they work better when started *before* the stressful event rather than after the event is well under way. All is not lost if you miss that window of opportunity, but make the most of it when you can.

Wrapping the body snugly, particularly the chest, is a technique that is used in humans for calming the nervous system. There's even a line of 'calmwear' (sensory calming clothing and bedding) originally designed for autistic children.

The premise is that applying uniform pressure to the body surface and underlying muscles reduces sensory input to the sympathetic trunk — a main highway, as it were, which connects the spinal nerves up and down the body, alongside the spine.

These nerves belong to the sympathetic branch of the autonomic nervous system, which is best known for mediating the 'fight or flight' response to danger, whether real or perceived.

In highly sensitive individuals, the sympathetic branch of the nervous system is chronically on high-alert unless careful attention has been paid to creating and maintaining a calm environment, stable and loving social bonds, positive training (in people, self-training such as mindfulness), and a healthy diet.

A third f-word that's often added to that response is 'freeze'. Animals (and people) may also freeze or remain still in the face of overwhelming stress, neither fighting nor 'flying' (fleeing).

You may have noticed that *"freezing," "staying still,"* and *"staying close to the owner"* are behaviours used in the Finnish study as being common reactions in noise-sensitive or fearful dogs. Not all overwhelmed dogs act out; sometimes they act 'in', which is also a trait of HSPs.

6. (Phyto)Pharmaceutical help

I've left this one until last because I think it carries the greatest potential for misuse.

There is a place for sedative herbs and anti-anxiety medications, but neither category — plant-based (phyto-) or conventional pharmaceuticals — should be used in place of strategies 1 to 5. In addition, their need is greatly reduced when these other strategies are implemented with care.

medication

Medication use falls under the veterinary-client-patient relationship, so I'll say no more about it here, other than to make one comment about fluoxetine ('Prozac'). *Please resist the temptation to go this route unless the only alternative is to rehome the dog*.

Fluoxetine is not a magic pill. It's only a partial solution, at best. Its therapeutic effect takes awhile to ramp up; its side effects (insomnia, restlessness, agitation, hyperactivity, and panic attacks, not to mention vomiting, diarrhoea, and seizures) can be worse than the behaviour itself; it's expensive; and getting the dog off it can be very difficult.

No medication, including this one, is a good substitute for addressing the underlying reason for the unwanted behaviour.

herbs

There are many different herbs with calming properties, and too many commercial products to list. I'll add flower essences and essential oils here, although one could argue that they are distinctly different from herbal medicine.

Sometimes these plant-based therapies are helpful, other times not. Typically, they're insufficient when they're used as the first or only line of treatment.

One notable exception is a group of herbs called adaptogens. In brief, adaptogenic herbs act as very mild biochemical stressors that stimulate a broadly adaptive response (hence the name, *adapt-o-gen*). If you're interested in learning more about these fascinating herbs, I've written a few articles about them, including one on working dogs and one on senior dogs.

Here are my favourite adaptogenic herbs: Siberian ginseng (*Eleutherococcus senticosus*), Asian or American ginseng (*Panax* species), rhodiola (*Rhodiola rosea*), schizandra (*Schisandra chinensis*), and maral root (*Rhaponticum [Leuzea] carthamoides*). Of these, rhodiola may be the most interesting for these dogs because of its moderating effects on cortisol production by the adrenal glands. (Cortisol is a principal 'stress' hormone.)

Adaptogenic herbs are a good place to end, because they encapsulate my approach to dealing with highly sensitive animals (of *all* species):

Change what you can, and help the animal cope better with the rest.

I hope you'll be reassured to know that you won't be able to change everything, and you won't always get it right on the first try; none of us do — and you don't even need to. Just change what you can, and help your dog cope better with the rest. In almost all cases, that really is enough.

Oh, and take the time to *enjoy* your lovely dog and how much richer your life is because s/he is in it. These highly sensitive dogs are simply *wonderful!*

~ the end ~