

Storm and Noise Phobias

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Storm and noise phobias originate from natural behaviors: Being outside in a severe storm is dangerous, whereas seeking shelter is adaptive. The fear that animals normally experience when exposed to severe weather facilitates their engaging in the behavior of seeking shelter. Likewise, loud noises may indicate danger (e.g., predators, falling trees or rocks). Therefore, being alert to and avoiding sources of loud sounds are also adaptive behaviors.

Behavior problems develop when an animal learns, specifically through classical conditioning, to overreact to stimuli associated with severe storms or to sounds that do not represent a threat. In classical conditioning, a neutral stimulus (in this case, a stimulus that should not normally cause fear) becomes a conditioned stimulus (i.e., a stimulus that causes fear) through association with unconditioned stimuli that naturally cause fear responses (e.g., thunder and lightning). Pets exposed to firecrackers may likewise become fearful of quieter popping or crackling sounds. Fear of storm-related stimuli is not limited to the sound of thunder. Many storm-phobic pets react adversely to flashing lights, the sight or sound of leaves rustling in the wind, the sound or feel of rain, changes in barometric pressure, changes in the levels of negative ions in the air, and a variety of other stimuli.

When afraid, many storm- or noise-phobic pets seek an interior closet or bathtub, whereas others exhibit more intense reactions, including panting, pacing, whining, howling, trembling, hypersalivation, urination, defecation, and digging and chewing at (or even running through) barriers. Often, affected dogs seek proximity to their owners and may paw at them or attempt to climb onto their laps. During storms, most storm-phobic cats do not seek their owners but instead hide under a piece of furniture or in a closet. However, some cats do seek their owners during storms. Pets that seek shelter may not be less afraid than pets that leap through glass windows; the former simply have less violent and obvious ways of behaviorally manifesting their fear. Behavioral fear responses are often more intense when owners are absent.

TREATMENT

The treatment of storm and noise phobias involves a combination of management, behavior modification, and medication. Numerous steps can be taken to help manage the problem. "White noise" such as music or television can sometimes be helpful. If the pet seems to be calmer in a certain place (e.g., an interior closet or bathroom, under a piece of furniture) that somewhat isolates it from the stimulus, this behavior should be allowed. Plugging a D.A.P. (dog appeasing pheromone) Diffuser (Veterinary Products Laboratories) into an electrical socket in or near the area where the pet seeks shelter during storms or using the D.A.P. Collar or Spray can be helpful. Pets that typically

spend much of their time outside but become frightened by storms or noise (e.g., fireworks) and seek the best shelter possible should be allowed to find a secure area indoors. Pets that seek their owners should be allowed to stay near them, but owners should not attempt to comfort them in response to care-soliciting behavior. Because both operant and classical learning processes occur during episodes of storm or noise phobia, petting and cuddling by owners in response to care-soliciting behavior can result in pets learning to engage in these behaviors anytime the stimulus occurs, even if their actual fear is waning. One patient engaged in intense care-soliciting behavior in the examination room when an audio recording of a storm was played in the owner's presence but was relaxed and inquisitive when the recording was played in the owner's absence. Despite the possibility of this phenomenon developing, most pets, exhibiting fear of storms and loud noises are genuinely fearful, and appropriate treatment is essential to their well-being.

Medication

In pets with a severe fear of storms, medication is often essential for improvement. If the pet lives in an area where severe storms are infrequent and is not commonly exposed to stimuli similar to those associated with storms, administration of a benzodiazepine 30 to 60 minutes before stormy weather may be adequate (Table 1). Pets living in areas where mild to severe storms are frequent and where the pet is often exposed to stimuli associated with storms may require maintenance medication (Table 2), even when storms are not incipient. It may be necessary to experiment with several different medications before the best one or combination is identified. To date, the use of any medication for the treatment of storm and noise phobias in dogs and cats constitutes extra-label use. When prescribing these medications, clinicians should ensure that owners are aware of this and the potential side effects. Patients should be maintained on the drugs listed in Table 2 for at least 1 month before efficacy can be determined. Although some patients exhibit rapid improvement in only a few days, many that ultimately respond well do not begin improving until they have received medication for 1 month or longer. Antipsychotics, such as ace-prornazine, are generally not appropriate in treating storm phobia because they are strong sedatives but do not have true anxiolytic effects. They may be useful in small doses as a supplement to medications with true anxiolytic effects if the behavior is so violent that the patient risks harming itself (e.g., breaking through closed windows).

Table 1. Fast-Acting Medications That May Be Helpful in Cases of Storm or Noise Phobia

Medication	Cats (mg/kg PO)	Dogs (mg/kg PO)
Alprazolam	0.0125-0.25	q8h 0.02-0.1 q4h
Clorazepate	0.5-2 q12h	0.5-2 q4h
Diazepam	0.1-1 q4h	0.5-2 q4h
Lorazepam	0.03-0.08 q12h	0.02-0.5 q8h
Oxazepam	0.2-1 q12h	0.04-0.5 q6h

Medications should be given as needed but no more frequently than indicated.

Behavior Modification

Behavior modification consists primarily of desensitization and counterconditioning. To use these techniques, clinicians must be able to replicate, in a controlled fashion, a stimulus to which the pet shows fear. For example, if the patient exhibits a fear response to an audio recording of rain when it is played at full volume, the recording should be played at home at a very low volume that does not induce a fear response. At the same time, emotional and behavioral states that are incompatible with fear must be induced (i.e., via counterconditioning). The best method of counterconditioning depends on the patient. Although many pets do well with being fed highly palatable treats (e.g., small dried fish for cats; bits of hot dog or cheese for dogs), others do better with play, petting, or massage. Although many potentially useful audio recordings are commercially available, some pets respond only to sounds unique to their area, making it necessary for the owner to make a recording of local sounds that cause a problem (e.g., storms, firing ranges). Animals living in mountainous regions where loud sounds echo off nearby mountainsides seem particularly likely to respond only to sounds in their area.

Not all storm-phobic pets respond entirely or even primarily to the sounds of rain and thunder. Some appear to respond more to other stimuli that the owner may not be able to mimic. It is not feasible to desensitize a pet to changes in barometric pressure in a controlled fashion. However, the use of benzodiazepines during real but uncontrolled shifts in barometric pressure appears to be helpful in some cases. Although some research suggests that animals do not learn well when receiving benzodiazepines, a review of this literature indicates that the effect of these drugs is highly variable and that some types of learning occur even when an animal is under the influence of benzodiazepines. Repeated use of benzodiazepines alone during real storms may result in steady improvement. One storm-phobic dog that was treated with only alprazolam initially showed a loss of fear 20 to 40 minutes after receiving an oral dose, which is consistent with absorption of the medication. The medication was administered via a particular "ritual" in which the owner went to the room where the medication was kept, got the medication out of the bottle, and gave it to the dog. After a series of treatments, the dog began exhibiting a loss of fear almost immediately after the medication was given, even though it could not possibly be directly affecting the dog's emotional state. The medication was eventually switched to vitamin pills, which were given via the same routine, and the dog still experienced relaxation and loss of fear. The dog had been classically conditioned to have a relaxation response when given a pill at the end of a particular sequence of interactions with the owner.

In other cases, owners can mimic stimuli other than sounds. Negative-ion generators can be placed in the house and run either sporadically, causing desensitization, or continuously, causing flooding. If the pet is sensitive to light changes and flashing lights, desensitization can be conducted by turning lights on and off in a room that the pet can see but is not in. When the pet is able to relax while aware of lights going on and off in

another room, the pet should be taken into the room. The pet can then be exposed to more intense light changes, such as a strobe light or camera flash. Fearful pets should initially be exposed to these lights at a distance. As these pets become desensitized, they should gradually be moved closer to the lights. For pets that are fearful of tree branches waving in the wind, owners can start desensitization by gently moving a tree branch manually or taking the pet outside when there is a gentle breeze and using a counterconditioner appropriate for the pet. For pets fearful of the sound of gunshots or firecrackers, audio recordings can be made or purchased and used in a fashion similar to that for recordings of storm sounds. Desensitization to other stimuli can be conducted as long as the owner can develop some means of mimicking the stimulus in a controlled manner.

Table 2. Maintenance Medications That May Be Helpful in Cases of Storm or Noise Phobia

Medication	Cats (mg/kg PO)	Dogs (mg/kg PO)
Buspirone	0.5-1 q!2h	.0.5-2 q8-24h
Clomipramine	0.25-1.3 q24h	.1-3 q!2h
Fluoxetine	0.5-1.5 q24h	1-2 q24h
Paroxetine	0.5-1.5 q24h	1-1.5 q24h
Sertraline	0.5-1.5 q24h	0.5-4 q24h

Medications can be given in conjunction with the fast-acting medications listed in Table 1 but generally should not be used in combination with each other.

Goals and Expectations

When clinicians treat storm or noise phobia, it is important to discuss goals and expectations with owners. As discussed, fear of very loud noises and severe storms is normal, especially when animals have little shelter. A reasonable goal is for increasingly severe storms to be required to elicit a fear response while the pet gradually shows less or no fear of mild storms, rain showers, dark skies, and other nonsevere stimuli that have historically elicited an intense fear response. As the pet improves, the fear response exhibited during even moderately severe events should be increasingly less' intense. Eventually, a pet that historically whined loudly, shook violently, paced, scratched at doors, and tried to climb onto its owner's lap may only occasionally whine quietly and seek the company of its owner. This is an improvement, even though the pet still has storm phobia.

CONCLUSION

Although fear of storm-related stimuli and noises can be very distressing for pets and owners, pets with storm and noise phobias are often responsive to appropriate treatment. In one study, over 90% of patients treated with a specific protocol showed improvement, and one dog with severe storm phobia after surviving a tornado and being pulled from the debris was completely cured. In individual cases in which the treatment can be

adjusted according to the patient's response, higher rates of total resolution are likely.

1. Crowell-Davis SL, Seibert LM, Sung W, et al: Use of clomipramine, alprazolam and behavior modification for treatment of storm phobia in dogs. JAVMA 222:744-748,2003.