The Link between Feline House Soiling and Intercat Agression: Treating them Both
Debra Horwitz, DVM, DACVB
Veterinary Behavior Consultations
St. Louis, MO

The two most common problems in companion felines are house soiling (elimination of urine and stool outside of the litter box) and intercat aggression. While either can occur in a household with only one cat, often the problem occurs in a multiple cat home. An understanding of feline social behavior and communication, elimination problem behavior and feline aggression and can help with diagnosis and treatment of these two interlinked conditions.

The basis of feline social behavior
While cats were generally considered asocial, they are capable of and do live in groups. These social groups tend to be matrilineal with related females (mothers, daughters, aunts) and juvenile male cats. Within these groups, individual cats will form attachments to certain individuals and actively avoid others. These groups form around abundant food resources; dairy barns, fishing wharfs, garbage collection sites and parks provisioned by humans. Social groups formed of free roaming cats may change members with mature males and occasionally mature females leaving the group. This is in contrast to the human household where the humans artificially create social groupings and the cats do not have the ability to leave should they find the situation unpleasant.

Bradshaw and Hall did a preliminary study observing the affiliative (friendly) behavior between 25 pairs of cats who had lived together for at least a year who boarded at a cattery. Related pairs are commonly found in physical contact with one another when compared to non-related pairs of cats. Unrelated cats tended to feed separately, while littermate pairs often ate from the same bowl or side by side. Littermate pairs also groomed and rubbed one another more frequently than non-littermates. While it is not possible to infer a great deal from a small study in an unfamiliar environment, this does begin to mimic relationships seen in free ranging cats.

Other studies have attempted to assess whether or not cats have some sort of social ranking system for determining access to resources. An early study by Bernstein and Strack which included 14 cats within one household, seemed to indicate that space within the household was not shared equally with certain individuals having greater access to resources than others do. While this is not necessarily evidence of a social ranking pattern, Knowles also found some correlations between agonistic interactions away from food and ability to control interactions at the food bowl. Others have suggested that agonistic social interactions have more to do with perception of personal space than social dominance but neither ascertain is supported in all cases. Another possible theory is that cats fight to increase individual distance between them, and is not about territory at all.

Elimination problem behavior
Feline toileting in the wrong location (away from the litter box) and marking are the most common feline behavioral problems of cats. House soiling can often be precipitated by medical problems, a good physical examination and urinalyses are essential for all patients that are house soiling. Inappropriate elimination can also be a symptom of other medical abnormalities, such as hyperthyroidism, diabetes mellitus or liver disease. Studies have indicated a correlation between underlying social issues between household cats and urine marking and exploring relationships between cats is prudent to establish a diagnosis.

History for toileting and marking problems
A complete and thorough behavioral history is essential to determine what is going on and help formulate a treatment plan. Essential points include:

- Establishing the duration and progression of the problem behavior. Is this a new behavior, or a chronic one?
- What type of elimination is deposited outside of the litter box; urine, stool or both?
- Location of the elimination, i.e. vertical deposition of urine or horizontal deposition.
- Information on the litter box is useful and essential. Litter box size, covered box vs. uncovered box, litter type, number of boxes and rate of cleaning, box location must all be discussed.
- A diagram of the locations of inappropriate elimination
- The frequency of urination or defecation outside the litter box
- When (time of day) the owners find the elimination outside of the litter box.
- What substrate (material) does the cat eliminates on; different substrates for urine and stool?
- Information about the household routine and any changes in the home.
- How many other pets are in the household especially additional cats?
- Social relationship between cats in the household, including any overt signs of aggression (hissing, growling, chasing) and covert signs of aggression (blocking, staring, supplanting from spaces)
- All previous treatment attempts, behavioral, medical and pharmacological.
Diagnosis
The major diagnostic categories for feline inappropriate elimination include location preference, substrate preference, litter aversion, location aversion, and marking. Non-litter box use can also be influenced by stress, anxiety, and litter box factors such as size, cleanliness and placement. The use of a diagnostic category will help in the formulation of a treatment plan.

Aggression between household cats
Fights can occur between cats that have lived together for some time perhaps due to a change in social status or a traumatic event, fights may be the sequel to redirected aggressive behavior or another anxiety producing event, aggression may occur with the introduction of another cat, or due to illness or social changes within the home. Fear, anxiety and territorial responses all contribute to intercat aggression within a household. In all situations, contributory medical factors must be ruled out, identified and treated.

History taking
History taking should collect information regarding the daily routine, pet-owner interactions and how resources are allocated within the home. All participants in the aggressive behavior must be identified. Detailed descriptions of several selected aggressive episodes will help to identify triggers, participants, owner responses and possible treatment options. Aggressive behaviors include blocking access to territory, staring, chasing, hissing, growling, biting and attacks, facial expressions and body postures. Identify any treatment options already tried and discuss implementation and effect they may have had on the problem behavior. Examine the ongoing behaviors of the cats involved noting signs of anxiety, fear and defensive behaviors (hiding, inappetence, lack of evidence of grooming) to determine the effect of treatment and resolution on these signs. Examine litter box use by all cats within the home since social issues often contribute to non-litter box usage or urine marking behaviors.

Diagnosis
After a behavioral history is taken, attempt to reach a diagnosis. Common diagnostic categories include territorial aggression, social status aggression, redirected aggression, fear aggression, defensive aggression, irritable aggression, defensive aggression, offensive aggression and intermale aggression.

Factors that lead to house soiling due to aggression
Chasing and overt aggressive threats such as growling, hissing, biting may be evident. However, threats between cats can be covert including blocking access to locations, staring or supplanting. In territorial disputes, one cat (the aggressor) will usually chase another (the victim). These chases are accompanied by vocalizations such as hissing, growling and yowling. This may result in one cat living in a restricted area to keep away from the aggressor. Therefore, it may be necessary to create separate areas for food, resting places and litter boxes for each cat in order to create harmony.

Essential elements in treatment of house soiling linked to aggression between cats
Within a multiple cat household, there should be multiple litter boxes, food bowls, water bowls and resting areas. These should not be clustered together, but placed throughout the environment keeping in mind how the various cats access the space available to them. Some cats may only have access to certain household areas and if resources are not within those areas anxiety and house soiling may result.

When multiple cats share litter boxes the size and cleanliness of those boxes may become an issue. Research has indicated that when given a choice, cats prefer clumping litter materials to clay materials and larger size boxes. Litter boxes must be scooped out daily, and totally emptied, washed and refilled every 10-14 days.

In order to create harmony, it may be necessary to keep fighting cats separated unless supervised or using structured introductions. Introductions can be accomplished using food or play and the goal is to associate pleasant things with the presence of each cat. It also might be helpful for the aggressor to wear an approved cat collar with a large bell that will forewarn the victim of their approach allowing the victim to escape.

Re-introducing fighting cats
- Immediately after a fight, create separate spaces for isolation of fighting cats where they can stay while the owner works on introductions. This must be a secure area with a door that latches completely and/or locks. In the room the cat must have a feeding/watering site; a litter box; perches at different vertical heights, hiding spots, scratching posts/pads, toys, etc. Make sure to remove all items of value or those that might be dangerous to the cat (e.g. plants, electric cords, strings) and any target items that may encourage inappropriate elimination (e.g. plush bath mats).
- A pheromone diffuser, Feliway®, should be placed in the isolation areas and in the other parts of the home.
- To facilitate re-introductions identify favored activities/treats for all cats involved in the problem behavior.
- In some cases nutraceuticals (Anxitane, Zylkene, Royal Canin Calm Diet, Hill’s stress multi-care) can be useful interventions and do not require pilling the cats.
• Encourage play through the door. One option is to create a dumbbell toy under the door that separates the cats by tying two toys together with heavy string and place one toy on each side of the closed door.
• Facilitate scent transfer between cats. Use a common piece of material to pet each cat every day; wiping the towel against the cheek area and the base of the tail alternating from one cat to the other.
• Do not allow overt persistent aggression such as hissing and growling at the barrier door. If this occurs, create a neutral zone by closing another door or creating separation using baby gates in hallways.
• The next step is to progress to short (<5 minutes) visual introductions. Cats are contained in some manner (in crates, on harnesses/leashes; behind doors with windows) so they can’t make physical contact but they can see each other. Try to engage cats in a favored activity in their respective locations during these visual opportunities. Perform these 2-3 times daily until all cats appear relaxed and there is no aggressive posturing. If there is aggressive posturing, the cats must be separated to avoid intimidation.
• Once the cats are relaxed when they visualize each other, food introductions outside of the isolation area can begin.

Details of counter conditioning and desensitization
The focus is on counter conditioning and desensitization exercises to re-introduce the cats to one another. The goal is to allow the cats to be together without any aggressive behavior (growling, hissing, chasing, staring etc.). Introductions are done slowly, using food to facilitate calm, non-anxious behavior (counter-conditioning). The cats need to be far apart or on either side of a closed door, so that they are relaxed (desensitization). Each cat is offered a delectable food treat that they will eat. For safety and control, it is often advisable that each cat wears a harness and leash or is in carriers. If the cats will not eat, then they are too anxious and probably too close together and should be moved further apart. If the cats still will not eat, then separate them until the next feeding. If the cats do eat at that time, they remain together while they eat and then separated. The next feeding is at the same distance. If things go well at that session, the next time the dishes can be moved closer together, but only 6-8 inches. If the cats are comfortable, sometimes they are left out but leashed far apart and under supervision so that they can groom, and then separated again. Two feedings without the expression of any aggressive or anxious behavior are done at the same distance before the bowls are moved closer together. Clients should be cautioned that this is a slow process and not to rush. Allowing the cats to interact in an aggressive manner sets the program back and makes resolution more difficult. Keep cats separated except for introductions and always supervised when they are together.
It also may be helpful to switch litter pans between the cats to aid in familiarization. Another technique that may help is to rub the cats with towels and switch from one cat to the other to mix their scents. Crates or some other see through barrier can also be used for introductions to allow the cats to see one another, but not get too close.

Drug therapy
For some cases, the addition of psychotropic medication and pheromones can be helpful in resolving the urine spraying and the aggression. The drugs that are presently being used are not approved for use in cats and therefore are extra label drug usage. Prior to use, all animals should have physical examinations, laboratory screenings for liver and kidney function and in some cases, electrocardiograms. Signed consent and release forms are advisable. Owners should be informed of potential side effects and plan to be home to monitor their pet for the first 1-2 days of treatment. Several classes of drugs have been used to treat aggression in cats. Medications for urine spraying are detailed in another proceedings paper for this conference.
Fluoxetine and Paroxetine are selective serotonin re-uptake inhibitors used to treat aggression in cats. Selective serotonin reuptake inhibitors may take several weeks to become effective. Common side effects include constipation, urinary retention, anorexia, gastrointestinal signs, tremors, irritability and lethargy. Starting at a low dose for 1-2 weeks and gradually increasing the dose can minimize side effects. Toxicity due to serotonin syndrome is possible when more than one antidepressant is used and this should be avoided.
• Fluoxetine 0.5-1.0 mg/kg every 24 hours;
• Paroxetine 0.25-0.5 mg/kg every 24 hours.
Clomipramine and Amitriptyline HCL are tricyclic antidepressants used in the treatment of aggression in cats. Clomipramine is a serotonin re-uptake inhibitor while amitriptyline and also inhibits both the reuptake of norepinephrine and serotonin. Most tricyclic antidepressants have some anti-histamine actions and can interfere with thyroid medications. Clomipramine and amitriptyline must be given daily to be effective and can take 2-4 weeks to facilitate a change in behavior. Common side effects include tachycardia, urinary retention, and sedation, G.I.T. upset, mydriasis and a dry mouth. Amitriptyline is very bitter and therefore administration may be extremely difficult. Because of potential increases in heart rate, exercise caution in patients with cardiac disease and an EKG prior to use may be prudent.
• Clomipramine 0.25-0.5 mg/kg, PO every 24 hours.
• Amitriptyline 0.5-1.0 mg/kg PO q 12-24 hours.
Medication is generally used for 6-12 weeks and if the behaviors have changed the animal is weaned off the medication by decreasing the dose 25% every 2-4 weeks while watching for a return of any aggressive indicators such as growling, hissing or chasing. If aggressive behaviors return, the pet is maintained at the same dose for several weeks to see if the animal stabilizes before attempting to decrease the dose again.

Conclusion
In all house-soiling cases consider the interactions between the cats. Questions targeting the use of space, which cats spend time together sleeping and grooming and placement of resources throughout the home will help determine if these areas also must be targeted in the treatment plan. Without treating the social problems, house soiling is likely to continue and be unresolved.

References
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