



Published in final edited form as:

*Compend Contin Educ Vet.* 2010 December ; 32(12): E4.

## Environmental Enrichment for Indoor Cats

**Meghan E. Herron, DVM, DACVB<sup>a</sup> and C. A. Tony Buffington, DVM, PhD, DACVN<sup>b</sup>**

The Ohio State University

### Abstract

Recommendations to cat owners to house their cats indoors confer the responsibility to provide conditions that ensure good health and welfare. Cats maintain their natural behaviors, such as scratching, chewing, and elimination, while living indoors, and they may develop health and behavior problems when deprived of appropriate environmental outlets for these behaviors. This article divides the environment into five basic “systems” to enable identification of features that may benefit from improvement. It also addresses practical means of meeting cats’ needs in each of these systems.

---

The AVMA advises cat owners in urban and suburban areas of the United States to house their cats indoors. With the decision to do so comes the responsibility to provide conditions that sustain good health and welfare for these cats. Cats appear quite capable of living indoors, occasionally even in high population densities,<sup>1</sup> especially when food resources are abundant.<sup>2</sup> However, cats are captives in these environments, akin to zoo animals, and as with zoo animals, cats’ health and welfare may be affected by their surroundings.<sup>3</sup> Cats also retain their natural investigatory and communication behaviors (e.g., scratching, chewing, elimination) when they live indoors. Because of this, they sometimes display undesirable behaviors when deprived of appropriate outlets for their expression.<sup>4</sup> This article describes a clinical approach to the diagnosis and treatment of environments to ensure that they meet the behavioral and welfare needs of indoor cats.

Effective treatment of disease requires accurate assessment and diagnosis, which depend on a pertinent history and physical evaluation. A similar approach can be used for effective environmental enhancement and enrichment. In this domain, taking a pertinent history means identifying features of the cat and environment that may precipitate observed problems. Physical evaluation of an environment involves determining the presence and quality of physical and behavioral resources available to the cat. Pertinent history questions are presented in BOX 1. (A more detailed behavioral history form can be found at: <http://vet.osu.edu/Behavior.htm>.) A “review of systems” questionnaire to be completed by clients is available at <http://www.vetlearn.com/InPractice/ClientHandouts.aspx>. Although this questionnaire is designed to evaluate the environment and investigate problem behaviors, environmental enrichment should not be reserved only for patients presenting with a specific medical or behavioral problem. Information obtained from the questionnaire permits an organized approach to evaluating the cat and its environment.

Aspects of the environment can be organized into five basic “systems”—physical resource, nutritional, elimination, social, and behavioral. Like the physical examination of patients,

---

<sup>a</sup>Dr. Herron discloses that she has received financial benefits from Novartis.

<sup>b</sup>Dr. Buffington discloses that he has received financial benefits from commercial companies, including the Mars Scientific Advisory Council.

methodical investigation of each system can identify any features that may benefit from improvement. Practical means of meeting each of these environmental needs can then be considered.

## The Physical Resource System (Space)

A physical environment that ensures a reasonable level of certainty, consistency, and predictability provides the foundation of enrichment. Creation of a living space that keeps the cat free from fear and distress and that provides a predictable daily routine over which the cat perceives it has some control is the starting point for enhancing feline welfare.<sup>5-7</sup> Indoor cats need unrestricted access to resting areas where stressors such as loud noises, dogs, other cats in the household, outdoor cats approaching the windows, and pursuit by small children are minimized. Cats seem to prefer comfortable resting options, such as pillows or fleece beds.<sup>8</sup> Cats also need perching options throughout the household that offer vantage points that are safe from people and other animals. Because of their heritage as both a predator and a prey species, domestic cats naturally climb for observation and safety.

A group of cats living together indoors may or may not form subgroups or close affiliative social relationships. Owners of multicat households need to provide enough space to permit each cat to keep a social distance of 1 to 3 meters<sup>9</sup> (horizontally as well as vertically) when they share a room. Some cats within the same household rest together and groom/rub each other, whereas most cats use common resting, perching, and hiding locations at different times of the day.<sup>1</sup> Hence, it is important to provide multiple safe, comfortable spaces to avoid competition for these resources.

Whenever a change in a resource (e.g., food, litter) is contemplated, offering the new resource adjacent to the familiar resource permits the cat to display its preference for one or the other. Preferred resources will be used; others will be avoided. Imposing unfamiliar, undesirable resources on a cat may create an additional stressor in the cat's environment.

One means of providing cats with secure "microenvironments" is to create "safe havens"—refuges from household stressors for each cat in separate rooms or spaces in quiet areas of the home. Free-access crate training (FACT), which teaches the cat that a crate is a safe haven, is an example of this approach.<sup>10</sup> Fresh food and water, clean litterboxes, appropriate scratching substrates, rotating toy options, and comfortable resting and perching sites can be provided in the safe havens.<sup>5</sup> If a room is used as the secure area, an electronic cat door can be installed to allow access only to the individual cat wearing the door-activating collar. In our experience, this option has been helpful when there is social tension between household cats, or dogs in the household from which a cat may need complete escape.

## The Nutritional System (Food and Water)

Although standard diets may adequately satisfy the nutrient needs of domestic cats, their usual presentation may not promote expression of normal hunting (exploratory) behaviors. Meeting nutrient needs in ways that mimic cats' natural preferences provides additional enrichment. Kittens often display strong food preferences based largely on the foods they encountered with their mother, although these are usually readily modified by experience in adulthood. Cats may also show decreased preference for foods that have formed a large part of their diet in the past, the so-called "monotony effect," and display preferences for novel diets.<sup>11</sup> Although some owners perceive their cats to be "finicky eaters," recent evidence suggests that food refusal is a common feline response to environmental threat.<sup>12</sup>

Because cats evolved as solitary hunters of small prey,<sup>13</sup> cats in multicat households may be more comfortable feeding from separate bowls placed out of sight of each other. Locating

food bowls in quiet areas protected from interruption by other animals and away from appliances such as refrigerators, washers, dryers, or furnaces (machinery) that may begin operating unexpectedly keeps the cat from being disturbed while eating, which has long been known to result in abnormal behaviors.<sup>14,15</sup> Cats with free access to food usually prefer to eat several small meals per day as opposed to one or two large meals.<sup>16</sup> However, free access to food removes any opportunity for cats to express their natural predatory instincts,<sup>13</sup> and most cats will hunt for prey when given the option. Failure to provide opportunities for predatory behavior may deprive cats of mental and physical activity, which may contribute to development of obesity and other health problems.<sup>17</sup>

Owners can accommodate their cats' natural eating habits and increase their daily activity by offering food in puzzle toys, such as balls or other devices designed specifically to release dry food or treats when physically manipulated by cats. Other options include hollow toys that can be stuffed with wet food, which require cats to work to remove the contents. Similar food toys have been successfully used in behavior modification programs for dogs.<sup>18,19</sup> Cats may also benefit from an increased moisture content in their diets, which can be accomplished by offering wet food daily and multiple fresh water stations.<sup>20</sup> Running water in the form of a fountain may also be appealing to many cats.

### **The Elimination System (Litterboxes)**

Appropriate litterbox options are another important aspect of a cat's environment. Normal feline elimination involves a sequence of behaviors, including preelimination digging, elimination posturing, and postelimination digging and covering. Large, open boxes, such as plastic storage containers, provide distinct spaces for these normal behaviors. Self-cleaning litterboxes offer increased cleanliness, although cats that find their sound and movement aversive may avoid them. Covered litterboxes may trap odors and prevent cats from having a safe vantage point for the approach of other animals during elimination, making them a less desirable option for many cats. As with feeding containers, litterboxes should be located in a safe, quiet area to ensure that the cat's route to and from the box cannot be blocked by another animal, and away from machinery that could start unexpectedly and disrupt the normal elimination behavior sequence. Litterboxes should also be located away from food and water bowls. In multicat households, a box should be provided for each cat, plus one additional box, out of sight of each other.<sup>5,21</sup> Most cats display a preference for unscented and finely particulate litter material,<sup>22</sup> making clumping litter a desirable option. Plastic liners should be avoided if possible because many cats with intact claws find them aversive.<sup>23</sup> Litterboxes should be scooped daily and the contents fully emptied at least weekly. The box should be washed with mild, unscented soap and water at least monthly—more often (e.g., weekly) for cats displaying elimination problems.

### **The Social System (Social Contact)**

The social system of pet cats includes all animals that share their home space. These may be perceived as threats (dogs, humans), competitors for resources (other cats), or prey (small birds, fish, and "pocket pets"). Owners should be advised to let the cat determine the timing and duration of contact with nonprey species to enhance the cat's perception of control. Some cats may prefer to be petted and groomed, whereas others may prefer play interactions with owners.<sup>24</sup>

In multicat households, cats also interact with each other. Because cats housed in groups do not appear to develop distinct dominance hierarchies or conflict resolution strategies to the extent that some other species do, they may attempt to circumvent antagonistic encounters by avoiding others or decreasing their activity.<sup>1</sup> Unrelated cats housed together in groups appear to spend less time interacting with conspecifics than related ones do.<sup>25</sup> Cats without

close affiliative relationships prefer to have their own separate food and water sources, litterboxes, and resting areas to avoid unwanted interactions and competition for resources.<sup>1</sup> Published guidelines for introducing new cats into a home are available and may be recommended to clients who wish to add a cat to their household.<sup>26</sup> In our experience, intercat conflict is common when multiple cats are housed indoors together and/or when health problems are present. Conflict among cats can develop because of threats to their perception of their overall status or rank in the home, from other animals in the home, or from outside cats.

Signs of conflict between cats can be open or silent. Signs of open conflict are easy to recognize; the cats may stalk each other, hiss, and turn sideways with legs straight and hair erect (piloerection) to make themselves look larger. If neither cat backs down, the displays may increase to swatting, wrestling, and biting. Silent conflict may be present when the threatened cat spends increasing amounts of time away from the family, stays in areas of the house that others do not use, or attempts to interact with family members only when the assertive cat is elsewhere. Cats become socially mature and start to take some control of social groups and their activities between 2 and 5 years of age. This may lead to open conflict between males, between females, or between males and females. The cats involved in the conflict may never be “best friends,” but they usually can live together without showing signs of conflict or conflict-related disease. In severe cases, a behaviorist may be consulted for assistance in desensitizing and counterconditioning of cats in conflict so they can share the same spaces more comfortably.

## The Behavioral System (Body Care and Activity)

An enriched indoor environment allows cats to express their natural behaviors, including scratching, chewing, and playing. Many of these behaviors, although normal, can be considered undesirable by cat owners when they are displayed on valued household items such as plants, furniture, and decorations. Owner frustration may be avoided by providing appealing, appropriate items as an outlet for these behaviors. Scratching behavior maintains claw health and is a form of visual and pheromonal marking.<sup>4</sup> Preferred substrates for scratching vary. Substrates such as sisal-covered posts or real bark-covered logs may appeal to some cats because they allow the cat to hook its claws in the material. Cats tend to scratch on prominent vertical objects in areas where they spend much of their time. They also scratch more often when stretching after periods of rest or sleep.<sup>27</sup> Hence, scratching posts should be placed in frequently visited areas of the home and in proximity to preferred resting places.

Undesirable chewing can be avoided by offering a variety of cat-safe plants and grasses.<sup>28</sup> Live planted greens and fresh catnip are two appealing options. Owners can rub the designated “cat plants” with tuna juice or wet cat food to encourage investigation and chewing. Other plants should be clearly separated from areas where the cat spends most of its social, resting, and feeding time and/or marked with bitter-tasting sprays to make them less appealing. Toxic plants should be removed from the household or kept in a secure room to which the cat does not have access. Other chewing options include moistened rawhide chews, dried fish, and beef or poultry jerky.

Appropriate outlets for play behaviors are an essential aspect of any enrichment program. Play behaviors in cats are closely related to the natural predatory sequence of stalking, chasing, pouncing, and biting.<sup>29</sup> Cats also enjoy playing with items they can pick up, toss in the air, and pounce on. A safe way for an owner to supplement the need for play is to use toys that keep distance between the cat and the owner’s body. Encouraging play and biting behaviors with hands and feet may teach the cat that it is rewarding to stalk, pounce on, and

bite the owner, leading to play-related aggression problems.<sup>15</sup> Examples of appropriate toys include wand toys; battery-operated, self-propelling toys that mimic prey; balls inside a box or bathtub; catnip-filled toys; and light-beam pointer games. A general rule among behaviorists about light-beam games is that they should always be followed by the presentation of a treat or toy to reward the cat for the extensive “hunt” and to prevent frustration. Toys should be rotated every few days to maintain novelty and interest. Window perches for wildlife observation and cat-oriented DVD programs also may provide useful forms of play enrichment and entertainment.

## Conclusion

Cats have a variety of unique behaviors and needs; thorough investigation into the physical and social environment is crucial to an accurate diagnosis of the quality of the environment and formulation of an effective treatment plan to correct any deficiencies. The objective is never to “blame” the client, but to identify areas of improvement that the client believes can be changed. Further information about environmental enrichment for indoor cats is available at <http://indoorpet.osu.edu/>.

## References

- Bernstein PL, Strack M. A game of cat and house: spatial patterns and behavior of 14 domestic cats (*Felis catus*) in the home. *Anthrozoos*. 1996; 9:25–39.
- Crowell-Davis SL, Curtis TM, Knowles RJ. Social organization in the cat: a modern understanding. *J Feline Med Surg*. 2004; 6:19–28. [PubMed: 15123163]
- Buffington CAT. External and internal influences on disease risk in cats. *JAVMA*. 2002; 220:994–1002. [PubMed: 12420776]
- Landsberg, GM.; Hunthausen, W.; Ackerman, L. Feline destructive behaviors. In: Landsberg, GM.; Hunthausen, W.; Ackerman, L., editors. *Handbook of Behavior Problems of the Dog and Cat*. 2nd ed.. Philadelphia: Elsevier; 2003. p. 341-347.
- Overall KL, Rodan I, Beaver BV, et al. Feline behavior guidelines from the American Association of Feline Practitioners. *JAVMA*. 2005; 227:70–84. [PubMed: 16013540]
- Broom, DM.; Johnson, KG. *Stress and Animal Welfare*. London: Chapman and Hall; 1993.
- Carlstead K, Brown J, Strawn W. Behavioral and physiological correlates of stress in laboratory cats. *Appl Anim Behav Sci*. 1993; 38:143–158.
- Crouse SJ, Atwill ER, Lagana M, et al. Soft surfaces: a factor in feline psychological well-being. *Contemp Top Lab Anim*. 1995; 34:94–97.
- Barry KJ, Crowell-Davis SL. Gender differences in the social behavior of the neutered indoor-only domestic cat. *Appl Anim Behav Sci*. 1999; 64:193–211.
- Milani MM. Crate training as a feline stress reliever. *Feline Pract*. 2000; 28:8–9.
- Bradshaw JW. The evolutionary basis for the feeding behavior of domestic dogs (*Canis familiaris*) and cats (*Felis catus*). *J Nutr*. 2006; 136:1927S–1931S. [PubMed: 16772461]
- Stella JL, Lord LK, Buffington CAT. Sickness behaviors in domestic cats. *JAVMA*. 2010 in press.
- Morris JG. Idiosyncratic nutrient requirements of cats appear to be diet-induced evolutionary adaptations. *Nutr Res Rev*. 2002; 15:153–168. [PubMed: 19087402]
- Wolpe J. Experimental neuroses as learned behaviour. *Br J Psychol*. 1952; 43:243–268.
- Masserman JH. Experimental neuroses. *Sci Am*. 1950; 182:38–43.
- Bradshaw, JWS.; Thorne, CJ. Feeding behavior. In: Thorne, CJ., editor. *Waltham Book of Dog and Cat Behaviour*. Oxford: Pergamon; 1992. p. 115-129.
- Rochlitz I. A review of the housing requirements of domestic cats (*Felis silvestris catus*) kept in the home. *Appl Anim Behav Sci*. 2005; 93:97–109.
- Schwartz S. Separation anxiety syndrome in dogs and cats. *JAVMA*. 2003; 222:1526–1532. [PubMed: 12784957]

19. Frank D. Animal behavior case of the month. Separation anxiety. *JAVMA*. 2005; 227:890–892. [PubMed: 16190587]
20. Markwell PJ, Buffington CT, Smith BHE. The effect of diet on lower urinary tract diseases in cats. *J Nutr*. 1998; 128:2753S–2757S. [PubMed: 9868257]
21. Neilson J. Thinking outside the box: feline elimination. *J Feline Med Surg*. 2004; 6:5–11. [PubMed: 15123161]
22. Horwitz DF. Behavioral and environmental factors associated with elimination behavior problems in cats: a retrospective study. *Appl Anim Behav Sci*. 1997; 52:129–137.
23. Landsberg, GM.; Hunthausen, W.; Ackerman, L. Feline housesoiling. In: Landsberg, GM.; Hunthausen, W.; Ackerman, L., editors. *Handbook of Behavior Problems of the Dog and Cat*. 2nd ed.. Philadelphia: Elsevier; 2003. p. 365-384.
24. Turner, DC. The human-cat relationship. In: Turner, DC.; Bateson, P., editors. *The Domestic Cat: The Biology of Its Behaviour*. 2nd ed.. Cambridge: Cambridge University Press; 2000. p. 194-206.
25. Bradshaw JWS, Hall SL. Affiliative behaviour of related and unrelated pairs of cats in catteries: a preliminary report. *Appl Anim Behav Sci*. 1999; 63:251–255.
26. Bohnenkamp, G. *From the Cat's Point of View*. San Francisco: Perfect Paws, Inc; 1991.
27. Houpt, KA. Communication. In: Houpt, KA., editor. *Domestic Animal Behavior*. 4th ed.. Ames, Iowa: Blackwell; 2005. p. 21-30.
28. Houpt, KA. Ingestive behavior: food and water intake. In: Houpt, KA., editor. *Domestic Animal Behavior*. 4th ed.. Ames, IA: Blackwell; 2005. p. 329-334.
29. Landsberg, GM.; Hunthausen, W.; Ackerman, L. Feline aggression. In: Landsberg, GM.; Hunthausen, W.; Ackerman, L., editors. *Handbook of Behavior Problems of the Dog and Cat*. 2nd ed.. Philadelphia: Elsevier; 2003. p. 427-452.

**Box 1. Cat and Environment History: Environmental Assessment****General**

- How old was the cat when it was obtained? How long has it been in the household?
- What was the cat's early environmental experience? Is there any history of trauma or significant environmental change?
- Describe the details of the cat's social interactions with people and animals in the household.
- How often and for how long is the owner away from home?
- How often does the household receive visitors? What is the cat's response to such visits?
- What is the cat's exposure to outdoor cats? What is the cat's response to these encounters?
- Does the cat consistently use the litterbox for elimination? If not, where and when do the eliminations outside of the box occur?

**Problem-Specific**

- At what age did the problem begin?
- Was anything unusual going on in the cat's environment before the onset of the problem?
- How has the problem progressed over time? Has the frequency or the intensity of the problem changed? If so, how and when?
- Describe dates and details of recent incidents of the problem.