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Socialization, Flight Zones, and Senses Effects on Behavior

Our topics for this week are:

- Socialization with humans
- Flight zones and points of balance to move animals
- Smell and behavior

SOCIALIZATION WITH HUMANS

Handling animals gently beginning when their eyes open is believed, by some animal handlers, to have a profound beneficial effect in handling the animals with less stress later in life. The process is often referred to as imprinting, although true imprinting is bonding with a mother, acceptance of the proximity of members of the same species.

Critical periods for socializing animals for less fear toward humans is lengthened by the degree of species domestication and is later and longer in predators than prey animals. Dogs, the longest domesticated species, have the longest period of critical socialization: up to four months of age. In contrast, wolves must be handled in the first 14 days of life to have lasting effects on their social behavior with humans. The period for domestic cats is up to seven weeks of age.

There is a risk with prey animals becoming socialized with humans. If done improperly in a manner that startles or induces fear, the young animal may develop and retain a fear of being around humans. Exaggerated efforts to imprint large prey animals such as horses, cattle, and llamas may cause them to lose their respect for humans, and thereby, cause them to be more dangerous as they mature.

More important than imprinting of newborns is the routine handling and grooming of the mothers of young animals, particularly in the first five days of the young animal's life after its eyes have opened, and that the mother responds to humans in a relaxed manner. The young foal, calf, pig, or animal will be profoundly affected for life by how the mother responds to being handled by humans.

FLIGHT ZONE AND POINT OF BALANCE

Members of all species have invisible borders, ***flight zones***, around them in the presence of possible danger. For example, the typical person without training to handle venomous snakes have a zone around them, that if approached by a poisonous snake, the person will flee when the snake invades that person's invisible flight zone. The diameter of an animal's flight zone for humans varies by the animal species involved, its breed, the amount of prior exposure to humans, the quality of prior contact with humans, and the age of the animal when exposed to humans.

Flight zones are beneficial for handlers when moving groups of animals. The least stressful means of moving cattle forward is to calmly and quietly approach their flight zone behind their ***point of balance***, also called the drive line, which is an imaginary line just behind

the shoulder. The movement produced is like moving a positive pole of a magnet toward the positive pole of another. The approaching magnet at some point repels the other. On the other hand, if an animal is confined or physically restrained with a human in their flight zone, an effort to escape may occur, such as struggling, climbing or jumping fences, rearing, and kicking. Flight zones are larger for more dominant individuals. The zone is flexible and will shrink if the animal is very thirsty and must go into closer proximity to a human than usual to get to water.

Fight or flight arousal of prey animals is increased by hunger, sexual arousal, loud noises (barking, stock whips), sight of dogs, beating or electric prods, and unfamiliar objects or people. Familiarity with animals to be handled should be fostered in advance of need whenever possible. Handlers should walk among young livestock to habituate them to seeing and being near people. Range cattle in southern states often have a wider flight zone than northern range cattle due to northern cattle being fed hay in proximity to handlers during winter thereby shrinking their flight zone. In addition to humans, desensitization of cattle, sheep, or goats should include desensitization to horses and dogs, if either will be used in herding.

Invading a flight zone does not always result in flight of the animal. Some may be willing to fight and some may have tonic immobility, i.e., they freeze with fear. ***Freezing*** is more common in prey animals. In those, freezing may be a dissociative state used to feign death and then attempt to escape or a resolution of impending death. One reason why some dogs or cats are quieter after they are caged or kenneled without an owner present is freezing from fear. Less severe dissociative behaviors that can be induced by fear are intense grooming in cats and repetitive yawning in dogs. Dogs and horses may exhibit an "adrenaline shake off" from a relief of fear.

SENSES AND BEHAVIOR

OLFACTORY (Smell)

The sense of smell is more acute in all domestic animals than in humans. Animals monitor the odor of urine, feces, sweat, breath, and special skin organs, such as anal glands in dogs, to identify others, assess their status in a reproductive cycle, and determine their social rank.

Animals are sometimes said to be able to smell fear in handlers who are unconfident. In the case of humans, animals "smelling" fear is probably detection of purposeless or unconfident, hesitant body language. However, within the same species and same social group, animals can identify more submissive animals by smell. Because of this, handlers should always handle the most dominant animal in a group first, such as the largest boar in a herd of swine, or the smell of subordinate members on the handler may make the dominant member harder to handle. Cologne or other pungent cosmetic odors can also cause animals to resist handling and restraint.

Dogs

Dogs have the keenest sense of smell of any domestic animal. They can detect odors that are 10,000 to 100,000 times fainter than what the human nose can detect. Some communications among dogs are by emitted pheromones from their body by secretions of saliva, urine, feces, and anal sacs.

Dogs can be trained to detect explosives, corpses, drugs, among other odoriferous objects

by using their extraordinary ability to smell. Dogs' olfactory membrane is of up to 150 sq cm, compared to cats with 14 sq cm and humans with 4 sq cm.
The olfactory area of the dog's brain is 14 times as large and 100 times more sensitive than humans. Humans have six million olfactory receptors in their nasal passages, while dogs have 300 million receptors. Dogs are capable of detecting airborne particles in tens of parts per billion to 500 parts per trillion.

Cats
Cats have scent glands under the chin, corners of the mouth, side of the forehead, and between their toes. They also emit odors by urine and feces. Urine spraying and odor from their front pads, which is left when scratching objects, are used to mark a cat's territory. The small cheek glands, near the corners of their mouths, are used to leave odors after rubbing on objects, including people, that they perceive as their territory. Facial pheromone has been synthesized and is used as a form of aromatherapy. Cats' olfactory epithelium is 14 times more developed than humans.

Reptiles and Birds
Reptiles become excited at the smell of food. If the smell is on a handler's hands, the odor can entice a reptile to bite a hand.

The respiratory system of birds does not provide many of the protections of the respiratory system of mammals against airborne insults. Birds are particularly sensitive to odors and some can be lethal to birds. Canaries have been used to monitor for harmful gasses in mines.

Horses
Horse herd members defecate where they smell their dominant herd members defecate. These toilet areas are sacrificed from grazing, except when in desperation. They also use fecal smell to find their way home or to join other horses.

Cattle
Cattle have an excellent sense of smell they use to trace the trail of their calves and to differentiate plants to eat. They can tell which is the most dominant animal and members of the herd by their odors.

Vomeronasal Organ
The vomeronasal, also called Jacobson's, organ is located in the roof of the mouth. It consists of two sacs that are connected to the nasal cavity by fine ducts. When domestic mammals smell sexual odors, many will lift their upper lip and open their mouth, a procedure called the ***flehmen response***. The purpose of the flehmen response is to increase the opening of the ducts which carry the smell to the nasal cavity and the olfactory membrane. This enhances the detection of the odor.

Male horses do a flehmen response when smelling urine from mares in estrus. Cats "gape" (mouth open with tongue placed behind upper incisors) when smelling other cats' urine.

Cattle will collect odors in moisture droplets on their muzzle which are licked off with the tongue and detected by the vomeronasal organ. Snakes smell using their forked tongue to collect particles in the air. The tongue then pulls the particles into the mouth where they are dipped into the vomeronasal pits in the roof of the mouth.

AROMATHERAPY FOR HANDLING ANIMALS

Pheromones are chemicals used for communication by smell. Natural pheromones are well established important communicators of individual identity and reproductive status in many, if not all, species. Synthetic pheromones and essential oils have been proposed to be effective means of calming dogs and cats. Aromatherapy is a form of alternative therapy similar to nutraceuticals that is not required to prove efficacy to be marketed. Claims of efficacy are usually based on anecdotal statements or small studies without sufficient controls and independent evaluations that are required of pharmaceuticals. Aromatherapy may be more of a means of nonthreatening distraction than a mind-altering drug. Those that appear to affect cat behavior have a short duration of effects, less than 30 minutes.

Catnip

Nepetalactone is a volative oil from the catnip plant (*Nepeta cataria*), a member of the mint family. It is an attractant for about three out of four cats. The playful activity it evokes in cats temporarily causes distraction from other nonthreatening stimuli.

Feline Synthetic Facial Pheromone

Facial glands in cats produce a pheromone involved in bunting, facial rubbing to mark possession. A synthetic facial pheromone of cats in an alcohol solution is a popular aromatherapy intended to calm cats.

Dog Appeasing Pheromone

Dog appeasing pheromone (DAP) is a pheromone produced by the skin of the mammary gland of dogs after giving birth and during the nursing period. DAP is believed to aid in bonding pups to the mother. Synthetic DAP is an aromatherapy purported to calm adult dogs.

Lavender and Chamomile Oil

Oils from the plants, lavender and chamomile, are proposed to have a calming effect on small animals.

Now, let's recap the key points to remember from today's episode:

- All immature animals have critical socialization periods
- It is important to maintain animals' natural respect for humans for safety and the ability to control their movements
- The sense of smell can significantly affect animal behavior

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Additional information is also available at www.betteranimalhandling.com

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.

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