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# Animal Learning and Training

## Implications for Animal Welfare

Sabrina I.C.A. Brando, BSc

### KEYWORDS

• Animal welfare • Learning • Training • Positive reinforcement

### KEY POINTS

- A definition of animal welfare is the state of the individual as it attempts to cope with its environment.
- Welfare concerns all of the mechanisms for coping, involving physiology, behavior, feelings, and pathologic responses.
- When training programs are not in place the animal's welfare could be impaired.
- Some of the behaviors an animal exhibits can be used to gain insight into how the animal feels about the environment, caretakers, and procedures.
- Many contemporary animal trainers and care specialists focus on building relationships using positive reinforcement.

### ANIMAL WELFARE

The field of animal welfare is rapidly evolving and growing. Green and Mellor<sup>1</sup> write "The literature on animal welfare is diverse and expanding and reveals that ideas about animal welfare have evolved since it became established as a field of scientific investigations about 25–30 years ago.<sup>2–4</sup> Its scientific roots are multi-disciplinary<sup>5</sup> and include fields such as ethology, physiology, pathology, biochemistry, genetics, immunology, immunology, cognitive neural science and veterinary epidemiology.<sup>3,4,6</sup> In addition, scientific thinking about animal welfare has been influenced by societal views on what constitutes acceptable and unacceptable ways of treating animals, views which reflected prevailing and evolving ethical, social, cultural, religious, economic and other values."<sup>3,7,8</sup> In the assessment of animal welfare previously there was a focus on pain, stress, maladaptive behavior, and disease; the focus was on reducing negative animal welfare states. Now the assessment of animal welfare also includes positive welfare states, the presence of feelings of pleasure or contentment; the assessment is based the holistic approach of "considering the whole animal."<sup>9</sup> Mendl

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and colleagues<sup>10</sup> write “Concerns for animal welfare are generally based on the assumption that non-human animals can subjectively experience emotional (affective) states and hence can suffer or experience pleasure.”<sup>11–14</sup>

Broom<sup>15</sup> writes “Health is part of welfare and it refers to what is happening in body systems, including those in the brain, which combat pathogens, tissue damage or physiologic disorder. Health is the state of an individual as it attempts to cope with pathology. With disease challenges, as well as with other challenges, difficult or inadequate adaptation results in poor welfare.” “Poor welfare is often associated with lack of control over interactions with the environment of the individual, ie, with difficulty in adapting. To use animals in a human-orientated environment, and to ensure that the welfare of those animals is good, we need to know about the abilities of animals to adapt. At the individual level, adaptation is the use of regulatory systems, with their behavioral and physiologic components, to help an individual to cope with its environmental conditions.”<sup>16</sup> Broom<sup>17</sup> also writes “A definition of animal welfare is: the state of the individual as it attempts to cope with its environment. Welfare concerns all of the mechanisms for coping: involving physiology, behavior, feelings and pathologic responses. Welfare is a wider term than health but health is an important part of welfare. Animal welfare is a scientific concept that describes a potentially measurable quality of a living animal at a particular time. Behavioral measures are also of particular value in welfare assessment. The fact that an animal avoids an object or event, strongly gives information about its feelings and hence about its welfare. The stronger the avoidance the worse the welfare while the object is present or the event is occurring.”

To ensure high welfare levels for animals, caretakers need to analyze and evaluate the methods used to achieve desired behavior, to understand how learning affects their welfare **Table 1**. Caretakers can use behavioral observations together with physiologic observations as tools to gain insight into how animals experience their environment, staff members, and conspecifics. Caretakers can determine what matters to animals in their care and what are their welfare needs.<sup>10,18</sup> In regard to medical care many animals experience situations considered to be associated with negative welfare states, such as lack of control over environment, lack of choices, fear responses, coercion, and exposure to aversives.

In some cases choosing a negative welfare state is most conducive to supporting health care. For example, an animal may need movement to be limited to ensure healing. However, other commonly experienced procedures have the potential to be modified to promote positive welfare states. For example, routine capture and restraint can be trained using positive reinforcement so that an animal voluntarily participates in the procedure. Health is part of welfare; however, in practice the emphasis is often on

**Table 1**  
**Welfare indicators**

<b>Positive Welfare Indicators</b>	<b>Negative Welfare Indicators</b>
Interest in activities or enrichment	Body damage
Behaviors indicative of comfort or rest	Apathy
Play behaviors	Self-mutilation
Acceptable interactions with caretakers	Learned helplessness
Physical and psychological fitness	High vigilance
Normal sleep patterns	Stereotypic behaviors
Normal grooming and bathing behaviors	Little to no control over the environment
Normal interactions with conspecifics	Extensive huddling or hiding from caretakers
Control and choice over the environment	

health, and often only on physical health. By focusing on welfare, including physical and psychological health, caregivers can provide optimal care for the animals they steward.

### **LEARNING IS ALWAYS OCCURRING**

Animals are learning all the time. They are learning about routine procedures, such as shifting, weighing, and nail clipping. They are also aware of and learning about the frequency, quantity, and time of feeding; cleaning; care staff personalities; show times; and enrichment activities. Because animals are constantly learning, albeit through different mechanisms, animals are almost always “in training.” They learn about the environment, housing conditions, social dynamics, when the areas are cleaned, and when animals will be handled. The animals might learn about shifting, handling, or weighing but not necessarily participate in these procedures on a voluntary basis. When medical, behavior and other care programs are not actively and extensively discussed, planned, and analyzed many things can lead to poor welfare. When animals are not trained to voluntarily participate in their care (to shift into areas, to be on scales, to feel comfortable being handled or when treated) the procedures and outcomes for these animals are often aversive in nature. Water sprays, brooms, stones, loud noises, the threatening posture of a human body, grabbing hands, and nets and gloves have all been used in a coercive manner to move animals; to handle; and to control and restrain animals for husbandry and medical procedures (personal observations).

### **LACK OF A TRAINING PROGRAM AFFECTS WELFARE**

When training programs are not in place animal welfare suffers. For example, access to food is often misused or abused when animals are not trained to voluntarily shift into holding areas. The food is positioned to encourage animals to move to desired areas, such as dens or crates for handling and medical examination. If animals show fear responses to those areas they either have to enter to eat or go without food. This severely reduces the animal’s choices and control over access to food. This often results in pacing, spending excessive amounts of time close to shift doors, or other maladaptive behaviors. The animal may be motivated to eat but will not dare to enter the area because of past experiences of being trapped or captured. If the animal is very hungry then it might run in quickly to access food and immediately exit again. Many animals wait for the caretakers to leave. Caretakers will observe the food is gone when they return. Some animals spend a considerable amount of time in off exhibit holding areas when caretakers are not around (observed by cameras). These animals have learned that capture depends on staff being present. Sometimes animals need to be enclosed inside for enclosure repair, cleaning, or medical examinations. In these situations some caretakers wait long periods of time for the animal to enter the holding area. When the animal finally comes in, the door is shut behind them. This often results in pacing, escape behaviors, or huddling behavior (depending on the individual and species) until the door is opened again and the animal can run out. Most animal care staff and veterinarians confirm that one trial learning is often sufficient for the animal to learn to stay away from those areas or people involved in the capture for considerable amounts of time afterward.

The behaviors an animal exhibits can be used to gain insight into how the animal feels about the environment, the caretakers, and the procedures. Pacing, huddling together, alarm calls, hiding when a person shows up, and not approaching caretakers or veterinarians are all examples of animals that are experiencing reduced welfare. These behaviors should be used as an indicator that the behavior and care program

is not functioning at best practice levels and that changes need to be made to reduce fear and anxiety toward humans, procedures, and the environment.

### **ANIMAL RESPONSE TO HEALTH CARE**

The accounts of animals identifying veterinarians from the crowd, even when dressed up to look like a caretaker or technician, are many. Because of busy schedules many veterinarians do not have time to spend feeding animals, playing with them, or offering enrichment. One of the reasons some veterinary procedures, such as blood sampling, are sometimes transferred to zoo keepers is that often as soon as the veterinarian comes into sight, animals run away, hide, or are no longer cooperative. The animals have learned to associate the veterinarian with unpleasant procedures, anxiety, or pain. The animals often never see the veterinarian outside of these medical procedures, resulting in an association based only on aversives. Animals are often asked to shift into holding areas or crates before the veterinarian arrives to increase the chances of success for the medical examination. Caretakers need to consider that this might facilitate getting the procedure accomplished in the short term but may make shifting for future examinations more difficult. When an animal shifts into a holding area and it is followed-up with aversive experiences, a decrease in the success rate of these behaviors is observed.

Some veterinarians are able to find time to interact with animals and build a trusting relationship. These animals learn to associate the veterinarian with pleasant activities, such as feeding, resting, and playing. Something unpleasant rarely happens, and when it does the event is signaled. For example the word “door” can be used to signal when a door opens or shuts, and can then be anticipated by the animal. This reduces high vigilance and makes it more likely the animal will be inclined to participate in species-specific behaviors, social activities, grooming, eating, and so forth.

In the best scenario the animal participates voluntarily in its own care. Unless animals are in rehabilitation or reintroduction programs with special requirements, all animals housed in captivity should not have to live with fear and anxiety toward humans or their environment. How the animal responds to its environment and the way it copes with negative and positive stressors is important for understanding the individual animal's welfare. Not teaching animals to be comfortably handled can result in fear, anxiety, or aggressive behavior. Aggressive behavior often leads to the animal being moved on to another collection, into shelters, or at times euthanasia. Furthermore, many people do not like working with animals that present aggressive behavior or fear responses. This could result in less motivation to provide optimal care for such individuals.

Understanding how different learning mechanisms work can help reduce unnecessary fear, anxiety, extreme vigilance, aggressive behavior, and program-induced stereotypic or other undesired behaviors. This can greatly improve their welfare and the experiences of positive welfare states and reduce the negative experiences often related to involuntary procedures and circumstances.

### **CHANGES IN ANIMAL TRAINING**

Understanding animal learning is an important facet of being an animal care specialist. This applies to veterinarians, curators, zookeepers, and pet owners. Because animals are constantly learning caretakers need to be aware of the effects of their decisions, attitudes, and actions. Veterinarians encounter a great number of animals with behavioral problems. This is observed in companion animals and captive wild animals. Because of this there is a growing need for more and more veterinarians who have an interest in specializing in animal behavior and learning.

The field of animal training has seen beneficial changes. These changes include a transition to the use of methods that focus on positive reinforcement and heightened sensitivity to the animal's body language to avoid creating fear responses and aggressive behaviors. There has been a shift away from coercive methods of training and an emphasis on empowering the animal. This has led to good relationships with animals based on trust. Positive reinforcement has been applied to species varying from mammals and reptiles to birds and fish.<sup>19–23</sup>

Many animal species are trained in a free-contact scenario. The trainer and the animal have full access to one another. In this situation the use of aversives can lead to dangerous situations, particularly when working in close proximity to an animal.<sup>19</sup> Acceptable ways of animal training have been under discussion for many years, especially in the dog training world. Yin writes about the dominance controversy<sup>24</sup>: “Virtually everyone who started as a dog trainer over 15–20 years ago started out using traditional dog training techniques: similar to those used by Cesar Millan (National Geographic's *The Dog Whisperer*). This is how most dogs were trained back then. As a result we have first-hand experience as to why and when such punishment-based techniques might work, the pitfalls, and why and when other techniques work better. Traditional training techniques are based on the idea that we must become the dominant leader and rule our pets the way a wolf would rule a pack.” Many dog trainer associations have opposed traditional dog training methods, and in February 2009 the American Veterinary Society of Animal Behavior has also opposed these punitive methods. The American Veterinary Society of Animal Behavior issued a position statement about the use of punishment for behavior modification in animals, detailing nine possible adverse effects of using punishment when training dogs.<sup>25</sup> Training methods with frequent use of punishers and other aversive methods should be modified by reducing or abolishing the use of punishers in facilities, veterinary clinics, and at home. Punishers do not inform the animal what it is that we would like her or him to do, only what was the incorrect response. The frequent use of punishers can also instill anxiety in regard to learning. Animals may hesitate to respond in fear of making the wrong decision. This response can become slower until the animal may choose not to respond at all.

Focusing on positive reinforcement training allows the caregiver to build trust and a bond with the animals, while at the same time promoting the desired behaviors and creating a stimulating, interesting, and safe learning environment. In traditional animal training many practices that result in poor animal welfare have been used. For example, excessive food deprivation has often been used to motivate the animals. In other cases, gregarious animals were placed in social isolation and received limited human contact because of undesired behavior (personal observations). Many things are done to animals, including grabbing, poking, squeezing, spraying with water hoses, and scaring with loud noises because there is a perceived need to control the animal. Humans have also practiced these methods on animals because they can. This is because often the animals are small enough to be overpowered and handled, or in an enclosure where they can easily be accessed. If the animal could potentially harm a human and there were no protective barriers, it is unlikely a caretaker would think of waving food in front of an animal to gain cooperation and then put it back in the container. If the animal could potentially harm a human and there were no barriers, it is unlikely a caretaker would think of using the spray of water from a hose or throwing stones to get an animal to move to other areas. Most humans would never grab or hold an animal down if it was thought the animal could hurt or kill the handler (except perhaps in a medical emergency). The reasons things have traditionally been done this way are many: because humans have been able to get away

with such practices, often because of time constraints, the perceived ease of using such methods, “because we have always done it this way,” or just because the alternative options have not yet been considered.

Many contemporary animal trainers and care specialists focus on building relationships using positive reinforcement. They are not only concerned with the correct application of behavioral learning principles but they also pay attention to and consider the effect of human body language, posture, and communication of the animals in their care.<sup>26</sup>

## UNDERSTANDING PRINCIPLES OF LEARNING

Although there are many processes through which animals can learn, this article focuses mainly on classical and operant conditioning with an emphasis on positive reinforcement as it applies to daily husbandry and medical care procedures. “Classical conditioning is a process of behavior modification in which a subject learns to respond in a desired manner such that a neutral stimulus is repeatedly presented in association with a stimulus (the unconditioned stimulus) that elicits a natural response (the unconditioned response) until the neutral stimulus alone elicits the same response (now called the conditioned response). For example, in Pavlov’s experiments, food is the unconditioned stimulus that produces salivation, a reflex or unconditioned response. The bell is the conditioned stimulus, which eventually produces salivation in the absence of food. This salivation is the conditioned response.”<sup>27</sup>

In a veterinary example an ophthalmoscope used to investigate the eyes of an animal and a bottle of eye drops are the unconditioned stimuli. The bright light used with the ophthalmoscope and drops applied to the eyes make the rat close its eyes (unconditioned response). Over time the bright light becomes associated with the ophthalmoscope and the drops become associated with the bottle. Eventually the presence of the ophthalmoscope or the bottle can elicit closing of the eyes as if the light or the drops were there (conditioned response). In this example the animal may start to squint when the veterinarian picks up the ophthalmoscope or bottle of eye drops. These at first unconditioned stimuli became conditioned stimuli, eliciting the same response (squinting or closing of the eyes) as if the bright light or the drops were there. Classical conditioning has taken place when such reactions are observed. In this example it is important to note that although training may not have been intentionally occurring the animal has learned a specific response to the stimuli. In addition to the resulting behavior, there are also underlying emotional states associated with the process, such as fear, anxiety, or pleasure. Veterinary professionals who are aware of how their actions influence animal behavior and emotional states are better prepared to improve welfare states in regard to medical procedures.

This also applies to other principles of learning. Understanding how positive and negative reinforcement, and positive and negative punishment are used to influence behavior can make a veterinary professional more cognizant of his or her actions. Learning processes in which an aversive is applied to decrease behavior (positive punishment) or removed to increase behavior (negative reinforcement) are generally considered options only when less intrusive choices (positive reinforcement and negative punishment) are not successful. The animal training community has shown that positive reinforcement can be used successfully for voluntary participation in medical procedures in several species. Some examples include training animals to cooperate in nail clipping, crate training, blood sampling, radiographs, and accepting oral medications. Positive reinforcement trainers are highly aware of aversives experiences and how they affect behavior and the relationship between the trainer and the animal and therefore rarely consider the use of aversives as an option in training. This same

sensitivity applied in the veterinary setting can lead to more successful medical procedures with little or no stress. For additional information see the articles on the application of science-based training technology and a framework for solving behavior problems elsewhere in this issue.

To better understand what learning principles are in play veterinary professionals need to identify if a behavior has been increased, maintained, or decreased. They also need to identify what consequences resulted from the presentation of the observed behavior. Was an aversive removed? Was an item of value (eg, a preferred food item) presented and consumed? Careful scrutiny of behavior change and the process help veterinary professionals refine practices and focus on the use of positive reinforcement-based methods

Not understanding and recognizing these principles can have serious impact on the care and welfare of animals. Animals that learn fear responses and aggressive behavior toward humans because of heavy-handed treatment procedures may be difficult or dangerous to treat. These patterns can be broken by understanding how the learning process works and adjusting handling strategies to train the patient to cooperate voluntarily. Cooperation can make medical care easier, and it can also influence emotional states. Understanding and recognizing positive and negative welfare, and matching behavior to internal states, is essential to improve animal welfare.

Animal trainers are also careful to observe the animals they work with and keep track of changes in behavior, preferences, and learning. Changes can occur depending on such variables as life stages, seasons, the weather, pain, and social dynamics, which can work alone or together. Good trainers adapt when necessary, and are sensitive to the animal's needs. Good trainers also understand how the different mechanisms and tools work together or effects caused by incorrect application.

Ramirez proposes that "training is teaching."<sup>28</sup> By teaching animals to participate in their daily health and husbandry care the stress that is related to these procedures<sup>29-34</sup> can be significantly reduced. Positive reinforcement can be used to reduce fear responses and aggressive behavior. Positive reinforcement can be used to train animals to be cooperative in their care and provide a stimulating environment in which they can experience positive welfare states.

## FEAR RESPONSES AND ANIMAL WELFARE

Reducing fear responses is important to animal welfare. Desensitization and counter-conditioning are the tools of choice to address fear responses and provide positive welfare states. Stafford<sup>35</sup> writes "According to the training glossary of the International Marine Animal Trainers' Association (IMATA), desensitization is a "process of using time or experience to change an animal's perception of a stimulus from a value, ... to neutral or no value." When trainers think of desensitization, they are usually concerned with reducing the aversive value of a stimulus, such as eliminating a dog's fearful reactions to thunderstorms by providing reinforcing consequences for calm responses. However, it is important to remember that desensitization also cuts the other way. For example, leaving the same few dog toys out day after day can reduce the reinforcement value of those toys. Similarly, using a clicker repeatedly, tooting all day long on a whistle, or shouting "good boy" over and over again to mark precise behavior approximations (what the Breland's<sup>36</sup> first called "bridging a behavior") without following those signals with meaningful reinforcement can weaken (ie, desensitize) the effectiveness of those bridging stimuli. Because a strong bridge (in whatever form) is needed to accurately and precisely reward improvements in the behaviors one wants to teach, including reducing fearful and anxious responses, it is vital that one not

inadvertently desensitize animals to this key training tool through its overuse and underreinforcement.

Counterconditioning is “pairing one stimulus that evokes one response with another that evokes an opposite response, so that the first stimulus comes to evoke the second response.”<sup>37</sup> For example, if a dog is afraid of the nail clippers, the dog can be fed its favorite food as the veterinarian approaches with the nail clippers. “The goal is to replace the animal’s apprehension with the pleasure elicited by the food. Counter conditioning must be done gradually, however; if the process is rushed, the favorite food may take on the fear association instead.”<sup>37</sup> A clear video is available.<sup>38</sup>

By teaching animals to participate in their daily care they gain more control and choice over their environment. Caregivers can offer the animal the opportunity to participate and collaborate, rather than imposing procedures on them. This can decrease the fear and stress related to procedures and can also increase the motivation of animals to participate in pretrained procedures. Concern for mental and physical well-being includes understanding learning principles and addressing fear responses, and can ultimately lead to an increase in the welfare standard of the animals in one’s care.

## THE HUMAN-ANIMAL RELATIONSHIP

“We should work with animals as if gates and doors weren’t there; as if they could leave any moment they wanted. If they then decide to stay and be with you, then you can say you have a good bond and the animal is truly interested in being with you” (J. McBain, personal communication, 2008).

Veterinarians, curators, zookeepers, and pet owners are all “trainers.” Whether aware of it or not, each is training the animals in their care, influencing behavior, and affecting the human-animal relationship. An animal can learn that a human’s presence results in desired consequences or undesired consequences. This affects how an animal responds to each individual it encounters. This means the decisions made in regard to how medical care is provided can have consequences. Some consequences have lasting effect. Doing something to an animal that is unpleasant just one time, such as a short restraint procedure, can be enough to teach the animal to mistrust a handler for a long time. Although an emergency may require such action, it is important to consider or accept the consequences before proceeding. Best care practices require refining some of the traditional methods used to provide medical care. With the knowledge that many animals respond with fear or aggressive behavior to capture and restraint, at the very least animal care programs should include a strategy for reducing stress for these procedures either through training or arranging the environment so that the process is as stress-free as possible. Although it is possible to get animals to cooperate by other means, such as using positive punishment or other coercive methods, this does not result in good welfare states. It is important to attend to the animal’s medical needs but the process with which it is done is equally important to maintaining a trusting relationship with the animal. Even when restricted for time, veterinary professionals have options. For example, not all restraint procedures require a strong hold for the duration of the treatment. Negative reinforcement in which the handler relaxes restraint when the animal is calm can teach the animal to present calm behavior during restraint procedures. These refinements can be incorporated readily, are easy for an animal to learn, and improve animal welfare when less intrusive options are not possible.

When working with animals it can be helpful to consider how the animal perceives the humans it encounters. This can be measured by looking at its behavioral responses toward humans. Does the animal orient toward people, move toward or

away from people? Is the animal eager to participate in interactions with a human? How does the animal behave when people are absent? How does the animal respond to specific individuals? Does behavior change when certain individuals come or go? An animal that associates desired consequences with human presence is likely to seek interaction. This can be helpful to building cooperation in medical care.

However, it is also important for many species to be independent or maintain social dynamics with conspecifics. This means finding a balance between the reinforcing value of humans and other aspects of the animal's life. Technology, such as pressure plates, timers, and infrared sensors, are being used to create and automate enriching environments. Animal behavior can trigger desired consequences without the need for a trainer to be present or perceived. The implications for this are particularly important for those animals with strong fear responses or aggressive behavior toward humans or animals that may be destined for release in the wild. A paper dealing with choice and control opportunities in animal training and enrichment is in preparation to further explain this growing technology and its application. (Brando S. Choice and control opportunities in animal training and enrichment. Submitted for publication).

A trusting relationship can help facilitate animals to cooperate in their own medical care. Other key factors include providing an environment in which the animal is motivated to participate, is safe, and is enriched by the experience. It is also important to recognize when an animal does not want to participate. "To develop and maintain an animal's positive attitude toward learning....this means that the trainer cares about the overall learning experience of the animal...."<sup>39</sup> When an animal does not want to participate it is the trainer's responsibility to evaluate the situation. Rather than blaming the animal, the trainer looks into the factors that may be contributing to the lack of collaboration. This might include medical issues, discomfort with the environment, social dynamics, lack of interest in reinforcers, mistrust of staff members, or the particular situation. It is important to focus on positive methods and trust-building interactions, even in periods of noncooperation.

Building a trusting relationship with an animal may take time but it can have a positive impact on animal welfare.<sup>40</sup> It also requires consistency and clarity in behavior and signals used to communicate with animals. These signals include those that inform the animal about upcoming procedures or request participation in voluntary husbandry or medical behaviors. If handlers do not have the opportunity to train animals to enter a crate on a voluntary basis and have to resort to catching the animal on a regular basis, handlers may want to consider having a distinct signal for catching versus noncatching events. For example, an orange jumpsuit could signal a capture will take place; it might not fully reduce the anxiety during the capture events, but in the absence of the orange suit animals know that capture will not happen. This can help reduce anxiety toward caregivers outside the capture situations (personal observation).

"The development of these relationships is enriching to both personnel and animals inasmuch as people who care about their animals are committed to promoting and ensuring the well-being of those animals."<sup>40,41</sup> Staats and colleagues<sup>42</sup> propose that the "cognitive intent to act in ways directed toward the well-being" of the animal (which they define as commitment) has a significant role in the relationship that develops between a person and an animal." This commitment, the authors suggest, is measured by sustaining the relationship despite personal effort, time, money, and patience. This does not necessarily mean investing lots of time; sometimes just several minutes a day make a positive difference.<sup>43</sup>

Caregivers often expect a lot from an animal; go there, stay here, be calm, do not aggress, keep your mouth open, and so forth. Sometimes situations and environments are difficult. Animals might not always get or do what they want, go where they want,

or be with whom they want, but they need to have some control over what happens to them. It is important to ask how much control and how many choices do the animals have in their day to day life. Caregivers who are serious about animal welfare and creating environments that promote positive welfare states need to ask and then act on these questions.

## SUMMARY

Animals are always learning. An understanding of learning theories can help caregivers address, treat, and prevent many of the behavioral problems seen in captivity. Positive reinforcement training gives animal caretakers opportunities to teach animals to voluntarily participate in their care and to interact with their environment. Understanding how animals learn can allow caregivers to use such procedures as desensitization and counterconditioning to reduce fear and anxiety. This can lead to trusting relationships between caregiver and animal and allows for positive experiences for staff members and animals. Animal behavior and learning are important aspects of a holistic approach to animal welfare. An understanding of the role they play in animal welfare is fundamental to ensure that caregivers provide the best in animal care practices.

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