

CANINE BEHAVIORAL DEVELOPMENT

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Experiences during development have a long-lasting effect on temperament and adult behavior, therefore it is important to understand normal and abnormal development to prevent and resolve behavior problems.

COMPLEXITY OF EARLY ENVIRONMENT

EFFECT OF NEONATAL STRESS

SENSITIVE PERIODS OF DEVELOPMENT

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COMPLEXITY OF EARLY ENVIRONMENT

An animal's central nervous system only develops its genetically predetermined functions if exposed to appropriate environmental stimulation, especially early in life. A restricted environment early in life results in an animal with abnormal sensory perception. The animal may not be able to perceive stimuli to which it was not exposed during development. An animal reared in a restrictive environment will also be emotionally unstable. A restricted early environment also may result in reduced learning ability and trainability, thus an interesting, stimulating early environment must be provided. It is also important that the early environment be predictable and consistent. If not, the animal will not only be frustrated and under stress, but it will also learn that its behavior has no impact on what is happening around it. Such animals will be in a state of learned helplessness and are exceedingly hard to train later.

EFFECT OF NEONATAL STRESS

Some degree of stress (e.g., handling, or cold temperature) in a dog's neonatal period may accelerate growth, reduce emotionality later in life, increase social status, and promote resistance to some diseases. Handling sessions from the first days of a puppy's life are recommended because they not only expose the puppy to a mild stress but also facilitate socialization when the puppy gets older. Daily handling from day 3-21 resulted in puppies showing less stress when isolated, and being more comfortable in an unfamiliar environment. In addition to handling sessions, puppies may be removed from the nest (best while someone else walks the mother) on the first 5-10 days of life and placed singly on a cool vinyl floor for a brief time (3 minutes) before being put back into the warm nest. Flashing lights, noises, and motions have also been used as mild stress. The Army's super-dog program used slow, refrigerated centrifuges to apply a mild stress. If done in the first few (3) days after birth when the hypothalamus-pituitary-adrenal (HPA) axis develops, the expected result is reduced behavioral and physiologic reaction to chronic stress, an increased physiologic reaction to acute stress, and reduced emotionality of the adult dog. Chronic stress is caused by unavoidable and long-lasting aversive conditions. Since they are unavoidable, the stress reaction does not result in coping and drains the animal's resources. In humans, such chronic stress causes stomach ulcers and other health impairments. A strong reaction to acute stress, however, is desirable. If an animal is exposed to a sudden, intense and potentially damaging stimulus, it may save its life to mobilize all its resources to escape. Thus a reduced reaction to chronic stress and an increased reaction to acute stress are both beneficial.

Mild early stress also results in increased resistance to some diseases, a more stable and less emotional temperament, and increased learning ability and trainability.

SENSITIVE PERIODS OF DEVELOPMENT

It is well documented that there are "sensitive periods" in the behavioral development of the dog. These are periods of development during which certain experiences are needed to achieve normal development. Lack of these experiences during these sensitive periods may have lifelong irreversible effects. For example, between 4 and 12 weeks of age, a puppy learns how a social partner looks. During this time, the brain develops a sort of filter system in the visual cortex, which becomes sensitized to the shapes of the social partners of the puppy. In the wolf, these would be adult wolves and other pups; in the dog, they include humans and other pets. This filter system ensures that certain neurons in the visual brain are only activated when the puppy sees a social partner. After 12 to 14 weeks, it is difficult to further modify this system so that the puppy will not learn (or only learn with difficulty) to accept previously unknown species as social partners.

The recognition of periods of specific sensitivities in canine behavioral development may be one of the most important discoveries about dogs. By controlling the puppy's environment during its early life, we can influence the emotionality, temperament, sociability, confidence, and learning ability of the dog. Early and appropriate intervention can result in the dog being more adaptable, easier to train, and physically and emotionally healthier.

The definitions and naming of developmental periods are a matter of convention and serve to aid one's memory, rather than being absolute biological entities (this becomes clear when one considers the development of kittens, which cannot be structured in the same way as that of puppies). The exact time course of development varies between authors (and between dogs to some degree!). This can be explained by the fact that the periods of sensitivities do not start and end abruptly, but rather, they phase in and out gradually. The following periods in the development of puppies have been recognized:

TABLE 13-1
Periods of Development in Puppies

Period	Age
Fetal period	up to birth
Neonatal period	0 days to 10 days
Transition period	11 days to 21 days
Socialization period	3 to 12 (or 14) weeks
Fear period	Around 8 to 10 weeks
Juvenile period	3 months to puberty
Second fear period(s)?	3 weeks duration between 4 and 11 months?
Adolescent period	Puberty to social maturity

Fetal Period (Up to Birth)

Shortly before parturition, the male fetus produces a burst of testosterone, which has an organizational effect on the brain of the male fetus: it masculinizes and defeminizes the brain. Masculinization results in the organization of typical male behavior such as roaming, urine marking, inter-male aggression, and male sexual behavior. Castration is usually successful in reducing these behaviors but does not entirely eliminate them. The effectiveness of castration in altering these behaviors is individually very variable. Defeminization results in the destruction of the mechanism that results in cyclical sexual behavior in females (intact male dogs do not have an estrus cycle and are always ready to breed) and eliminates the predisposition to show female

sexual behavior. A male dog castrated after birth when given estrogen will show male and not female sexual and social behavior.

The priming of the fetal male brain is irreversible and affects all behavior that is gender-dimorphic, including various types of aggression, even in the castrated dog. Therefore a castrated male dog is still very much male; a spayed female dog is still very much female.

Surprisingly little appears to have been published about the effect of the nutritional status of the gestating bitch on the behavioral development of her puppies. However, it is known that poor blood supply and thus poor oxygen and nutritional supply of the fetus results in retarded or abnormal physical development. It thus can be expected that brain development is also impaired in these cases, affecting behavioral development and learning ability of the puppies.

Puppies can already learn in utero. If a particular flavor is fed to the pregnant bitch such as aniseed, the puppies will show a preference for that taste after birth.

Neonatal Period (0 Days to 10 Days)

From about 1-7 days prepartum, milk can be expressed from the bitch's nipples. Her appetite may decrease 24-48 hours before parturition, and she becomes more restless. These are variable signs and cannot be relied on to determine the timing of parturition. However, once her rectal temperature drops to below 37C, birth can be expected to occur within the next 8-24 hours. During this time, the cervix dilates. A plug of thick mucus may be noticed being excreted at this time. The weak contractions occurring at that time are not visible from outside.

As parturition approaches further, the bitch will spend more time licking her nipples and genital area, and engage in nest building (rearranging bedding, scratching, etc.). Some bitches may now show increased aggressiveness to strangers near their nests.

6-12 hours before parturition, the body temperature rises again to normal. Contractions are now visible. Other signs of labor include changes in respiration rate from panting to slow, deep respiration, increased restlessness, and a decrease in normal activity. The first puppy moves down the uterine horn towards the pelvis. The bitch licks her genital area as she expels a puppy in the amnion sac. She licks and chews through the amnion, chews through the umbilical cord (brachiocephalic breeds are unable to do so), and licks the puppy. Licking the puppy serves several functions: it removes fluids from the puppies nose, stimulates respiration, activity, feeding, urination and defecation, and guides the puppy to the mother (puppies move against pressure). It may also "label" the puppy with the smell of the mother.

The average time between births is 30 min, but this is very variable. Long intervals may be associated with stillbirths since the puppy is deprived of oxygen once the placenta is no longer

attached. Disturbances, such as the presence of strange people, can cause delays of expulsion of the next puppy from 1-6 hours. This delay can occur during rest, active labor or actual delivery with a puppy in the vagina. Excitement produces adrenaline, which inhibits uterine activity.

Litter size is negatively correlated with birth weight. Parity of the mother doesn't appear to have an effect on litter size or birth weight. Birth weight in females has an effect on puppy behavior, with heavier puppies being more active, inquisitive and competitive than lighter ones. Female puppies tend to be more active and more independent than male puppies.

A puppy is born both blind and deaf but is capable of whining to attract attention from its mother. It is born with the senses of balance (although it is unable to stand), taste, smell, touch, and temperature. Until 3 weeks of age, the puppy is not able to urinate and defecate spontaneously and depends on stimulation (licking) by the mother to fulfill these functions. Its nervous system is poorly developed: for the first 3 days of age it has "flexor dominance" (i.e., it curls up when you pick it up by the head) and from day 4 to day 21, it has "extensor dominance" (i.e., it stretches when you pick it up). Although puppies depend on the mother for thermoregulation, they are born with a sense of temperature and will root against a warm object. Newborn puppies will also move against the grain of the hair of their mother so they will get be guided to the udder. They also turn or move toward the side they are touched on. From about 2 to 3 days of age, a puppy is able to crawl, throwing its head from side to side and using its nose as a sensory touch and temperature probe to orient itself. All of the puppy's behaviors are designed to get it back into the heap of littermates and to the udder.

Already during this early stage, human contact and handling are important as environmental enrichment and for inducing a mild stress. As mentioned, a mild stress can also be imposed by removing the puppy from the nest for a brief period and placing them on a cool surface such as a vinyl floor. This may allow the animal to better cope with stress, be more trainable, and be more emotionally stable later in life.

Puppies may vocalize when hurt, cold, or uncomfortable or when they lose contact with the littermates or the mother. However, most bitches will not react to these vocalizations.

Learning with positive reinforcement is already possible, although the puppies' responses are very limited. Conditioned aversion has also been achieved in very young puppies.

Transition Period (11 Days to 21 Days)

Puppies are born in a very early stage of development. Such animals are called "altricial." In the transitional period, a puppy catches up with those animals that are born in a much more developed state, such as foals or calves, which are examples of "precocial" animals. The puppy

begins to develop its senses, gains control over thermoregulation, and at the end of the transitional period, becomes able to eliminate spontaneously (and the mother stops eating its stool). From this point on, the puppies should have the possibility to leave the nest site to eliminate. Puppies thwarted from doing so may become almost impossible to house train.

The development of vision and hearing makes the puppy more reactive to environmental stimuli. Since the puppy is also able to habituate to stimuli and still profits from environmental complexity for normal neurological development, the provision of sensory, visual, and auditory stimuli is very important. This can be done through handling; placing the puppies for short periods into a playpen with toys, platforms, tunnels, and so on (under supervision!); and playing commercially available recordings of various noises. Puppies will also begin to play-fight and are better able to learn, especially with positive reinforcement.

At around 3 weeks of age, the mother and/or father may start to regurgitate food for the puppies. However probably as a result of domestication, not all dogs will do that. The puppies will solicit food regurgitation by pushing their noses into the corners of the parents' mouths, a behavior that later develops into appeasement behavior. At this time, it is appropriate to begin feeding solid food to puppies.

Socialization Period (4 to 12 or 14 Weeks)

The socialization period has been subdivided into a period of primary socialization, normally to conspecifics (earlier on in the socialization period), and secondary socialization to other species (later in the socialization period). Social play is the most prominent behavioral aspect of this period. During the primary socialization period, a puppy learns to interact appropriately with other puppies, to read canine body language, about bite inhibition, and to fit into a social group. During secondary socialization, the puppy learns to predict actions of members of other species and to interact with them successfully.

A puppy taken early from the litter and raised by hand will form an exclusive relationship with people. If this isolation from its own species continues until after twelve weeks, the dog may become fearful of and aggressive toward other dogs. On the other hand, if the puppy is not socialized to humans during the socialization period, it will most likely always be fearful of and possibly become aggressive toward people.

Although weaning may occur from 4 to 6 weeks of age, a puppy should never be adopted before 7.5 to 8 weeks of age and best not before 10 weeks of age. Although this has not been studied well in dogs, clinical observations indicate that the interaction occurring within the litter at that time and the effect of the mother are too critical to a puppy's development, and early removal

from the litter may result in emotional instability. In one study, puppies taken from the litter earlier (at 6 weeks) had more health and developmental problems, and showed increased stress at separation from the dam. They did not socialize any better to humans than puppies taken away from the mother at a later date and provided human contact on a daily bases while with the dam.

Another reason to leave puppies longer with their mothers is that puppies will learn from their mothers. Puppies of trained working dogs were better at learning a task if they observed their mothers performing this task.

Especially during the latter part of the socialization period, the puppy needs to be socialized to people and any other species that it should easily get along with, and not show any predatory behavior toward. This may include other house pets, but in the case of flock guarding dogs, also sheep.

During the socialization period, every effort should be made to expose the puppy to a wide range of different sights, sounds, and other sensory experiences. Environmental complexity is still very important in assuring normal neurological and emotional development. Also, the sensitive capacities of the puppy have improved and it is easily able to habituate to a variety of environmental stimuli. In a survey it was found that dogs that were exposed to traffic as puppies, were less likely to suffer from sound phobias later in life. A puppy park that contains all kinds of objects and stimuli and where the puppies spend time under supervision is a helpful tool to provide complex sensory experience. A puppy park may contain unusual footing, objects that make noise, a water bath, objects hanging overhead, and so on. Responsible breeders also get puppies used to being kenneled and to car rides.

The puppy can now learn more easily from positive experiences and particularly from 8 weeks of age, also from negative experiences. The puppy should be trained with positive training techniques, so it learns that its behavior can operate on the environment (learning to learn). Training done at this stage is easily retained and probably enhances later trainability. Many of the exercises that are useful for problem prevention (e.g., teaching the off command, food bowl safety, bite inhibition, and so on) are done most easily during this period. Puppy classes can provide this and more in a structured and systematic way.

Fear Period (8 to 10 or More Weeks)

The fear period lies within the socialization period and is included in that period by many authors. It starts at about 8 weeks of age, but the age of onset seems to vary considerably between breeds and individuals. If 5-week-old Beagle puppies were punished (e.g., with an electric shock for approaching a person), they showed fear, but approached that person again

when retested later. If the puppies were between 8 and 9 weeks of age, they retained the fear of that person. Puppies older than 12 weeks are less influenced by a mild shock and may approach the person in spite of the shock. Because of the increased fearfulness and the enhanced learning from bad experiences during the fear period, it is not recommended to ship a puppy at that time. Any aversive experience during that time is to be avoided, since it may have lifelong effects on emotionality, anxiety, fear hyperactivity and reactivity, and aggressiveness. Dogs that have been affected by adverse experiences during the fear period often cannot be rehabilitated. Some dogs that are genetically predisposed to fearfulness may start to show fear during the fear period and remain fearful even in the absence of any trauma.

Juvenile Period (3 Months to Puberty)

The juvenile period is one of rapid physical growth and increasing activity, excitability, and independence. This is a difficult stage to go through (for the owner), in particular if the puppy has not yet been trained at all. Early training pays off during this developmental stage.

Many owners of young puppies do not see the need to take their dog to puppy class. They say their puppy is so well behaved and follows them everywhere voluntarily, and it is the "best dog in the world" without any training. Once the puppy gets around 4 months of age, they are often greatly disappointed. Their once so voluntarily obedient puppy suddenly doesn't seem to care much about them anymore, and it becomes a chore to keep the puppy under control. This is a reason why many dogs are relinquished around 5 to 6 months of age.

A dominance order is now beginning to develop among the puppies. Compared to wolves that have a highly structured social order, the social order among dogs of most breeds always remains one resembling that among wolf puppies. Depending on neotenization of the breed, this social order may be loose and flexible, or it may be more rigid and linear. In a few breeds, social status may depend on gender, with all males being dominant over all females, such as was found to be the case in terriers and Basenjis, two breeds that are less neotenized than most.

The juvenile period ends with sexual maturity around 5 to 14 months of age, depending on individual and breed. However, attainment of sexual maturity does not imply social maturity.

Further Fear Periods (3-Week Duration, Between 4 and 11 Months)

During the juvenile period, dogs may go through one or several more fear periods, lasting around 2 to 3 weeks each, during which the dog is much more easily scared and learns particularly well from adverse experiences. These additional fear periods have not been scientifically documented. However, many breeders have made the observation that juvenile or adolescent dogs go through stages during which they become much more easily frightened even by familiar things. For

example, a dog that encountered garbage cans twice a week on his daily walk may be suddenly frightened by and not dare go near them and raise the hackles and bark. This behavior should not worry owners too much, since it just needs to be waited out in most cases. Counter-conditioning (making the situation pleasant by offering food or playing with the dog), response substitution (teaching an alternate behavior in that situation and rewarding it), and in severe cases, systematic desensitization (gradually exposing an animal to something and rewarding relaxation) can be used to help the animal to get through this. A normal dog will outgrow this and revert back to being confident very quickly. Aversive training techniques, punishment, and other traumatic experiences could have a long-lasting effect on fearfulness, aggressiveness and emotionality and should be avoided.

Adolescent Period

The adolescent period starts with puberty and ends with attainment of social maturity relative to the breed. When compared to wolves, dogs remain puppyish into adulthood and never become socially mature. The degree of social maturity attained varies between breeds, with herd-guarding dogs remaining very puppyish, followed by retrievers and spaniels, then pointers and stalkers, with heelers and terriers becoming relatively most mature. Breeds that remain socially immature are among other things less predatory, more playful, and enjoy physical contact more; they therefore may have more desirable pet qualities than breeds that become more mature.

PROBLEM PREVENTION

Complex Early Environment

As discussed previously, providing a complex early environment is important in preventing behavior problems. Also, handling and exposing puppies to a mild stress in the first few days of life should be beneficial. Exposure to variable environments during the socialization period is important to reduce fear and aggression. Puppies should be taken on car rides and to other people's homes, ideally before they are taken away from the litter, and certainly once they are with their new owner.

Socialization

Puppy classes that allow for puppy play can provide a safe way of exposing a puppy to other puppies. Under the supervision of an expert, a puppy can learn to interact appropriately with other puppies with minimal risk.

Since dogs are part of human society, socialization to humans is of paramount importance. This includes socialization to people of both genders and all races; those with physical disabilities,

using crutches or being wheelchair-bound; and most of all to children. Especially puppy owners who plan on having children should plan ahead and expose the puppy in a safe way to babies (or at least the smell and sounds of babies), toddlers, and children of all ages because dogs do not appear to generalize from one age group to another. Obviously, all interactions should be pleasant and safe. In any case in which a puppy shows fear, giving it a treat immediately will tilt the balance toward a more positive experience.

Children also need to be educated in how to appropriately interact with a puppy and need to be supervised around the dog at all times. They need to be taught how to pet a dog and especially how to play with a dog. Dogs cannot be expected to put up with everything a child wants to impose on them, and many dogs can be expected to resort to aggression if a child bothers them or excites them too much.

Exposure

Careful exposure to potentially frightening stimuli, making every experience pleasurable with attention, play and treats, is extremely important during the socialization period and beyond. Leash walks where there is traffic may be especially important to reduce the risk of development of noise phobias later on. Puppies should never be forced to approach a frightening stimulus, and frightening stimuli (e.g., a stroller, a shovel, etc.) should never be moved towards the puppy, but perpendicularly. Each time the puppy gets frightened, a treat should be placed in its mouth: fear cannot be reinforced with food, but food makes the situation more pleasurable.

Exposure to various surfaces, unstable surfaces, water, or any other surface a puppy should later be comfortable with, should be practiced. If a puppy does not want to walk on the surface, treats should be placed on it so the puppy can reach the first couple from standing beside the surface, but needs to (voluntarily!) step on the surface to reach the others.

Puppies should also be accustomed to car rides (already by the breeder, since most puppies will be picked up by their buyers by car), train rides, possibly boat rides etc. They can be taken to fairs, train stations, amusement parks, play areas, but exposure always has to start at a safe distance, and stimuli should only be approached slowly, and as long as the puppy voluntarily moves forward. Play and treats will help with this.

If a puppy shows strong fear of an object, sound or situation, the help of a qualified trainer or behaviorist should be sought. They can help setting up a desensitization program that will gradually get a puppy used to the stimulus without stress. Forcing a puppy into a situation or to approach a frightening stimulus is inhumane and often counter-productive.

Managing for Success

Problem prevention includes managing the puppy for success (arranging the environment so that the puppy cannot do the wrong thing and automatically chooses to do the right thing). If appropriate behaviors are successful from the puppy's point of view from the beginning, it will repeat these and not try other behaviors (and if we have set- the environment up correctly, if it ever tries other behaviors, these are not successful). This includes puppy-proofing the house and appropriate confinement and supervision.

For example, a puppy will chew on any object it finds. It is therefore important to remove all objects it should not chew on (and make the ones that can't be removed unattractive by applying an unsavory taste) and provide enough interesting chew toys. To keep the toys interesting, they can be exchanged with others every day. Toys that are filled with food are attractive to the puppy at any time. The same principle is utilized for house training a puppy (see later section).

Crate Training

Crate training is another tool for preventing behavior problems, including aggression. Lots of dogs become aggressive or anxious when confined in a crate. Teaching the puppy that the crate is a wonderful place to be can easily prevent these problems. A puppy will like its crate if it finds a hidden treat each time it enters and/or has a toy in the cage, especially one that contains some food and if the puppy gets fed in the cage. Giving a treat through the door after closing the cage door and giving a treat when approaching the cage can also prevent aggression in these situations.

Crate training is also important because a dog will need to be crate-confined at some time in its life, whether for transportation, after surgery, or for house training.

House Training

Where to eliminate is one of the most important things for a puppy to learn, since many young dogs are relinquished because they are not house trained. House training is usually easily achieved if from the beginning, the puppy is taken outside at times when elimination is most likely (i.e., after rest, feeding and drinking, or exercise and play) and frequently enough in-between. The puppy should always be taken to the same area outside and be rewarded once it has eliminated. The puppy should be observed at all times for signs of impending elimination. If it shows any sign of being about to eliminate, it should be distracted and immediately taken outside. The owner needs to stay outside with the puppy until it has eliminated, then reward the puppy immediately before taking it back into the house. At times when the puppy cannot be supervised, it should be confined (see section on crate training). The cage should just be big

enough for the puppy to stand and lie comfortably. Cages with a movable partition are especially useful for house training. Long confinement should be avoided. A 3-month-old puppy may be able to wait for up to 4 hours, a 4-month-old for about 5 hours; however, such long times of confinement should be the exception. If a puppy does eliminate in the cage and is forced to lie in the excrements, it may lose all ability to be house trained.

Exercise

Exercise off the property will satisfy the puppy's innate motivation to explore new things, help with exposure and desensitization to stimuli, and facilitate socialization. Exercise off the property also decreases arousal and reactivity and reduces anxiety and the risk of owner-directed aggression. This necessitates training the puppy to walk on leash and to come when called.

Environment Enrichment

Interactive toys and games, food-dispensing toys, rotating the toys so they maintain novelty, and appropriate play serve to enrich the environment and provide mental stimulation. Obedience training has a similar effect. Furthermore, humane obedience training (lure training, clicker training) provides predictable, consistent, and stress-free interaction and an opportunity for the dog to act on the environment with predictable outcome. If we are consistent in training, the dog has a lot of control over the situation (i.e., over our behavior and the rewards). In clicker training, they literally can make us click. Predictability and controllability of the environment will make dogs feel more secure and relaxed, reduce anxiety, and decrease the chance for owner-directed aggression.

In play, one should avoid overstimulating the puppy. It is a good idea, to interrupt play once in a while and request the puppy to calm down (e.g., ask it to sit). As a reward for calming down, play may continue. Play always needs to be under the human's control, and it always must be possible to interrupt rough play (most easily by ignoring the puppy for a while).

If one wants to play tug-o-war with the puppy, this game should be played only with a designated object, so the puppy is less likely to pull on pant legs, etc. The game should be interrupted from time to time by asking the puppy to release (off-command, see below), sit, and then allowing the game to resume. At no time during playing should the human partner become angry or punish the puppy to avoid causing an approach-withdrawal conflict in the puppy.

Consistent Rules

We do not have to dominate our puppies. Our relationship with dogs is unlikely one of dominance and submissiveness. However, it is necessary to control the contingencies on the

dog's behavior, which means to ensure that behaviors we desire pay off for the dog and those that are undesirable do not pay off. The establishment and strict observance of rules is extremely important. If rules are not consistent, the puppy can never figure them out and cannot function within them to achieve success. This situation would be similar to visiting with friends who play a card game that you do not know. They ask you to participate and explain the rules to you. You go along with it and after some time, think you have the winning hand, put your cards down, and claim that you have won. Then, of course, your friends add another rule. After two or three times of this, you become frustrated and angry (aggression as a conflict behavior!) and refuse to participate any longer. This is how dogs must feel if we have no rules or constantly change them. They may compensate for this either by developing survival behaviors that yield short-term predictable consequences (such as aggression) or by developing learned helplessness (i.e., they learn that their behavior has no effect on what happens around them). Enforcing strict rules therefore has nothing to do with dominance but rather with giving the dog a chance to operate successfully within his environment and achieving predictable outcomes. A highly trainable dog is especially keen on operating on his environment and will be in a state of compromised welfare if a consistent rule structure is not maintained.

Desirable behavior should be consistently rewarded (once a behavior is well trained, an intermittent reinforcement schedule can be used). Undesirable behavior should be ignored (a behavior that is not rewarded [i.e., not successful] will go into extinction). Of course, a behavior that is self-rewarding, such as going through the trash or ripping up a kitchen towel, does not go into extinction when ignored. Such behavior needs to be prevented by setting up the environment accordingly or by supervising and by engaging the puppy in an alternative, appropriate behavior (such as chewing on a chew toy).

Training to Control

In addition to providing consistent interaction, training to basic commands, such as come, sit, down, go to your bed, and so on, also provides the owner with the possibility to control the dog and to diffuse potentially dangerous situations (such as the dog showing aggression to visiting children or chasing a car). For example, if a dog is on the couch and growls when the owner approaches and the owner can send the dog to his bed on command, the growling is hardly a problem for the owner. Furthermore, the dog learns a behavior that gets him out of the situation without harm and to avoid the need to defend himself.

Leash Training

An important thing to teach a puppy is to walk on leash without pulling. Since dogs that do not walk properly on leash are often not exercised at all, not walking on leash contributes to anxiety

and thus to behavior problems. There are many ways to teach a puppy to walk on leash, and they do not need to include aversive techniques. One easy way is to simply stop every time the puppy pulls.

Preventing Jumping Up on People

To stop a puppy from jumping up on people, people can simply take a step back each time the puppy attempts to jump up, so it lands on its feet again (a behavior that is not successful is not maintained). If the puppy knows the sit command, it can then be told to sit and be rewarded. If the puppy goes up to a person and spontaneously sits, it needs to get attention; when it jumps up, it needs to be ignored.

The "Off" Command (Leave-It and Drop-It)

Another useful command to prevent aggression over items is the "off" command (or the leave-it and drop-it commands), which teaches the puppy to let go or step back from something (many trainers use two commands, "leave-it" and "drop-it"; however, this author prefers the use of one command to simplify it for the dog and to possibly achieve better generalization). The "off" command is easily taught by holding a treat in your hand, letting the puppy sniff and nuzzle, waiting until the puppy backs off, and then immediately giving the puppy a treat from the other hand. Once the puppy reliably just touches the hand and then backs off, the "off" command can be issued just before the puppy backs off. This command easily generalizes to other situations such as scratching at the door, jumping up at a person, having a forbidden or potentially harmful object in the mouth, and so on. It teaches the puppy to happily give up an object since that behavior reliably pays off and eliminates the motivation to defend an object.

Bite Inhibition

Puppies may play very rough. Normally, they learn to inhibit their bite from playing with their littermates. If a puppy plays too rough, its playmate will no longer play along. However, many puppies are removed from their litters before learning this lesson, so puppies need to be taught to inhibit their bite to prevent bite injuries later. This is done by abruptly stopping play and ignoring the puppy for awhile. Most authors recommend yelping first. However, in our experience, this is unnecessary and in some cases may further excite the puppy. Gradually, the human becomes more and more sensitive, until they stop play whenever the puppy touches their skin with their teeth. Note that no aversive treatment is necessary or advisable in teaching bite inhibition.

Desensitization and Counter-Conditioning to Handling

Since fear may be closely associated with aggression, fear should be prevented by desensitizing the puppy to all frightening interactions, especially to being picked up, being restrained, having the feet handled and the toe nails clipped, and so on. Some frightening situations can instead simply be paired with a pleasant experience. In fact, every time a puppy shows fear, a treat should be placed in its mouth.

This latter suggestion may seem counterintuitive, since one might think that giving a food treat when a puppy is fearful might reinforce fear. Think for a moment of being trapped in a stalled elevator. You are getting more and more frightened since no help arrives for some time. Now another person in the elevator brings out a box of donuts and offers one to everybody. How would that affect your fear? What in fact happens is that classical conditioning, being a more primitive type of learning, takes precedence over operant conditioning. You associate being in the elevator with the pleasant experience of getting a donut (rather than your fear being reinforced with a donut) and your fear diminishes.

A fear response is designed to solicit group support or find shelter from the danger. Physical contact or picking the dog up and so on is therefore likely to reinforce a fear reaction and should be avoided.

If a puppy gets a treat every time it is grabbed by the collar, it will quickly learn to enjoy being grabbed by the collar and not be fearful. If a puppy learns that each time you reach all the way into its mouth you deposit peanut butter there, it will happily let you pill it, which is a procedure that lots of dogs will not allow. Similarly, if you sit beside the puppy's food bowl and add food or treats to the bowl while the puppy eats, the puppy will love having you near the food bowl. These simple procedures go a long way to prevent aggression in situations in which dogs commonly are aggressive.

Alone Training: Preventing Separation Anxiety

A puppy can also be desensitized to being alone by placing it into its cage for increasingly longer times (with a toy that contains treats). Initially, this is done while the owner remains in the home. Then the exercise is repeated, starting again at very short times, with the owner actually leaving. Another aspect of preventing separation anxiety is to ignore the puppy for some time before leaving, so the puppy is not motivated to interact with the owner at these times and thus less frustrated when the owner leaves.

AVERSIVE TECHNIQUES

No aversive techniques or punishments are to be used when teaching puppies, since puppies will learn first and foremost to associate the situation with the unpleasant experience (classical conditioning takes precedence over operant conditioning). Thus the puppy will easily learn to associate their owner or another person with an aversive experience. Owners would also only rarely be able to administer punishment consistently (each time, within ½ second of the behavior, and at the right intensity) and thus to the puppy the aversive stimulus occurs randomly and unpredictably. Inconsistent and inappropriate attempts at punishment teach the puppy that it cannot control or avoid aversive stimuli through correct behavior and increase anxiety and often aggression.

PUPPY TESTS

Puppy tests are of little value to determine if a puppy is at risk for becoming aggressive later in life.

SUGGESTED READINGS

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