



BEHAVIORAL DEVELOPMENT OF CANINES

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All dogs will not exhibit the same set of social behaviors. Environment and the degree of dependence on humans are likely to have an effect on the inherited aspects. Because of human intervention, it is unlikely that the social system of dogs can operate in an entirely unrestricted way long enough to exhibit all of the complexity and diversity of which canines are capable.

This article address both the physical and behavioral development of pups and is divided into four stages: neonatal, transitional, socialization, and juvenile. Below is a brief description of what can be expected during each of these stages.

NEONATAL:

The two-week period from birth until the eyes are open is known as the neonatal stage. When first born, a pup's brain is sufficiently developed only to control its breathing, heartbeat, balance, and equilibrium. Its eyes and ear canals are closed and it cannot regulate its body temperature. However, most researchers believe pups are born with some sense of taste and smell.

During the neonatal stage, licking and grooming by the mother serves several purposes. First, it acts to imprint the mother and pup and starts the crucial process of bonding. In addition, it serves to mark the pups with the mother's scent enabling her to recognize and locate her pups more easily. Grooming the pups also serves to warn other animals away by her smell, and grooming herself shows the pups where to nurse.

The mother's grooming also serves to stimulate the ano-urethral regions of the pup to prompt them to defecate and urinate. Pups that are separated from the mother before three weeks of age will not only need to be bottle fed, but will also have to have their groin and genitalia massaged with a warm, damp cloth to stimulate urination and defecation, since

they are not able to do this without assistance.

Behaviorally, a neonatal pup will seek warmth and will whimper when it is cold or hungry. Research shows that short periods of human interaction such as daily handling and other physical stimuli during this phase can have marked effects on the behavioral and physical development of a pup. Such effects include accelerated maturation of the nervous system, more rapid hair growth and weight gain, and enhanced development of motor and problem solving skills. Daily handling, including petting or massaging, has also been shown to improve the pup's ability to thrive.

TRANSITIONAL:

The transitional period lasts about a week and is one of rapid physical change. By three weeks, the brain is sufficiently developed to more effectively regulate body temperature and metabolism. This period begins when the eyes open and ends when the ear canals open --- at which time, the pup will begin to respond to loud noises. The pup begins to see, but it will not reach the adult level of sight for several more weeks. A pup's hearing ability fully matures about a week before its sight.

During this one-week transitional period, a pup will begin to crawl backwards as well as forward and to walk clumsily. It will also begin to defecate and urinate outside of the nest and no longer require stimulation to eliminate. During this stage the teeth begin to erupt

through the gums and the pup first shows interest in solid food. Puppies will start play fighting with littermates, and show social behaviors such as growling and tail wagging. This early playing signals the beginning of hierarchy placement.

Pups no longer need stimulation to nurse and the first parent-pup conflict is experienced as the mother begins the weaning process around the third week. This transitional phase can also be the time of the first stress-related fear. If a pup finds itself outside of the nesting area it will cry in distress even though it is warm and dry. Research indicates that fear is probably an inherent behavior. (Grandin & Deesing, 1998). Being outside of the nesting area is analogous to wolf pups leaving the birthing den for the first time.

SOCIALIZATION:

This phase is referred to as the "critical bonding period," or "sensitive period." (Serpell & Jagoe, 1999). It was once believed that pups that did not form bonds to other pups (4-6 weeks) and/or to humans (6 -12 weeks) would never be able to socialize or make good pets. Even though most still believe that bonding is critical during this phase, the specific times are considered to be more flexible --- falling between the third and twelfth weeks with peak times for bonding being between the sixth and eighth weeks.

By the fourth week, a pup can see, smell, and feel. Although the major hormonal influences occur at puberty, male pups have already received a surge of testosterone that will cause them to

behave differently than females. Until now, the pup has only experienced care and dependency. However, future relationships will be directed more towards dominance, subordination, and submission.

How pups treat other pups and are treated by their littermates is just as important to us as it is to them. There are three areas that will be the primary focus in this stage: play; dominance; and submission.

Play

Play within the litter helps to establish four important social functions:

1. Play teaches pups communal behavior that creates social bonds with other dogs;
2. Play molds adult social behavior by teaching pups communication skills;
3. Play predicts the future dominance patterns pups will exhibit, establishing which dogs are more dominant and which are more submissive.
4. Play teaches skills such as improved coordination, mental and physical dexterity, problem solving techniques, and bite inhibition.

Dominance and Submission

Since Dogs are social animals, they must develop a hierarchy and establish a pecking order of dominance and submission. To do this, dogs have signals (i.e., body language) that become well developed during the socialization period.

Dominant (agonistic) behaviors are as follows:

- Stalking and chasing;
- Pouncing, ambushing and attacking;
- Standing over a littermate;
- Circling the littermate with a stiff wagging tail;
- Raised hackles;
- Baring teeth, snarling or biting;
- Direct stare with dilated pupil;
- Boxing or Shoulder and hip slams;
- Standing with forepaws on littermate's back;
- Mounting (with or without pelvic thrust);
- Wagging tip of erect tail;
- Erect or completely flattened ears; and
- Taking play fighting to extremes

Though these behaviors may appear cute or amusing to us, they are very serious to the pups, indicating the rules of the pack. In addition, they can have lifelong consequences. Recognizing submissive behaviors is as important as recognizing dominant behaviors.

Signs of submission include the following:

- Tail tucked between its legs (or wrapped around to the side) with head hung low, depressed ears and eyes averted from the aggressor;
- Submissive grin;
- Licking lips;
- Rolling on back;
- Lying on side and lifting the hind leg to expose genitals;
- Urinating or defecating;
- Remaining stationary while aggressor circles or places paws on shoulders; and

- Remaining stationary while aggressor mounts.

Play-fighting is necessary for pups to establish social rank and to learn canine behavior and should not be interfered with unless there is a risk of serious injury.

Young pups will only make contact with strangers for a very short period. This is normal behavior that allows a pup to bond with its own species but protects it later in life from potential predators. As humans, we take advantage of this critical period by inserting ourselves into the dog's world. However the dog has no intention of acting like a human and expects us to conform to his world.

Between six and eight weeks of age, a pup's willingness to approach and make contact with strangers outweighs his natural wariness. This time frame is considered the optimum period to introduce a pup into its new home and surroundings. New studies however suggest a shorter time frame --- 7 ½ - 8 weeks as being the optimum time. (Serpell & Jagoe, 1999; Slabbert & Rassa, 1993; and Fox and Stelzner, 1966.)

During this phase, a pup should be gradually exposed to potentially frightening stimuli such as kids, the postman, vacuum cleaners, spray cans, street noises, loud noises, etc. By the time a pup is 8-12 weeks of age, it should also be introduced to the places, circumstances, and conditions that he is likely to have to face as an adult. Not only do pups form attachments to people during this sensitive stage, but also to places. (NOTE: Pups

should be vaccinated before carrying them to places frequented by other dogs.)

Research has shown that there is a short hypersensitive period between the fifth and eighth week --- a period when distressing psychological or physical stimuli can have long-term effects. (Serpell & Jagoe, 1999; DeHasse, 1994; and Fox and Stelzner, 1966). Before the fifth week, effects of conditioning were found to be unstable and quickly forgotten; after the twelfth week, the effects were overridden by positive affiliative tendencies towards humans established during the socialization period.

Pups that are not socialized to other canines during this phase usually do not make good mothers and are fearful or aggressive towards other dogs once they mature. Those denied play activity show a greater fear of humans, animals, and noises. Pups that are kenneled throughout the socialization period tend to be poor learners and will try to avoid stimulation. They also tend to be fearful of strange environments and either excessively excitable or excessively inhibited. If a pup does not meet people during this phase, he will be antisocial. This is the most sensitive period of a pup's life. If there is any rule to remember at this time, it is that one should never play fight with potentially aggressive or dominant dogs because it creates potentially serious problems for the future.

JUVENILE STAGE:

The juvenile period begins at

approximately the twelfth week and lasts until maturity (two years of age). By the juvenile stage, a pup has been influenced by genetic inheritance in combination with the events that took place during the first three phases of his life. While learning continues throughout the pup's life, the juvenile stage is when the basis for all behavior patterns and future learning is established. It is also the time that behavioral problems can emerge.

Learning

Types of learning that occurs in the juvenile stage are observation, classical conditioning, and operant conditioning.

Observation is the most common form of learning. A pup watching another animal do something and then performing the action has learned to do the action through observation.

Classical conditioning is also referred to as stimulus-reaction or behavior-reward. This type of learning is involuntary and the response is automatic. Pavlov's famous dog experiments epitomize classical stimulation. Pavlov rang a bell before each meal; the dog soon realized that each time the bell rang, food was going to be produced. Soon the dog began to salivating immediately upon the ringing of the bell.

Operant conditioning, the third form of learning, is also called the action-reaction/response-reward. Technically speaking, in operant training there is a controller --- an individual who rewards the response the controller wants the pup to do. If the controller asks

the pup to sit and then provides a treat, then the word "sit" will be implemented into the conditioning.

A pup will use these three forms of learning as the basis for his future behavior.

Pre-Puberty

A pup's ability to form strong or significant emotional ties to new individuals begins to diminish early in the juvenile stage. At about the middle of the juvenile stage (i.e., at 10 months old) growth will begin to level off, but emotional and psychological changes continue until the pups reach maturity (2-4 years).

Previous influences from the transitional and socialization phase will play an important part in this phase of the pup's life. For instance, competition for food is limited to littermates when the pups are five weeks of age. By the time they are 16 weeks old, the pups must take their place at the bottom of the hierarchy and are limited to what is left after the dominant members eat.

Regardless of the pup's rank with littermates, he must now show submission to the dominant members of the family pack. Pups that are indulged and hand fed during this time can associate the behavior as dominance over their owners. Indulging and hand feeding after other family members have eaten is a good way to lessen food aggression along with a "work to eat" program.

Clinical studies have revealed that dogs can develop a phobic behavior and show signs of anxiety toward their surroundings and toward familiar humans with which the dog has little contact during pre-puberty, even though

they were well socialized and experienced sensorial enrichment between three weeks and four months (Fogle, 1990; Fox, 1978; Dehasse, 1990).

Studies demonstrate that there is a phylogenetic and/or epigenetic tendency for pre-puberty sensitization (Dehasse, 1990; Fox, 1978). In one noted experiment, dogs remained attached to the trainer until they reached maturity at which time they became less tolerant (Fox, 1978). At maturity, the dogs became less tolerant of contact with or proximity of the trainer.

Age of puberty, temperament, emotivity, sociability, etc., can vary among breeds and individuals. There is a correlation between canine wariness and the onset of puberty. During the juvenile stage, it is not uncommon to see the appearance of wariness toward strangers and the unknown, and can develop as early as 6 to 18 months in wolves and some dogs and as late as two years in other dog breeds.

The most plausible explanation would be that most dogs (and wolves) are born with a biological "preparedness" to learn to fear certain evolutionarily relevant or prepotent stimuli (Shull-Selcer & Stagg, 1991; Serpell & Jagoe, 1999). Socialization during the later part of the socialization period and early juvenile period plays a major part in determining which fears are acquired.

Puberty

As a pup reaches puberty, he will view the relationship between humans and himself as inter-action between pack mem-

bers. The remainder of secondary sexual characteristics will develop during puberty. Needless to say, this can be a time of drastic behavioral changes and when animals often choose to challenge the human pack members for leadership of the group.

Intra-specific socialization is followed by several crucial periods of hierarchical development (Dehasse, 1990; Fox, 1978). The following can occur in successive phases and end in problem behaviors such as food aggression, territorial aggression, dominance aggression, and socio-sexual aggression at puberty, and maturity.

Hierarchy for food begins to be established among pups at five weeks and is established among pups between three and twelve months, then with adults around 4 ½ months. This is the first phase of social aggressiveness. Animals that are dominant eat first and are allowed the first choice of food.

Territorial aggression is one of the most common behavioral problems in Dogs. Most dogs, like wolves, will show aggression towards intruders entering their home range. The home range usually means the immediate vicinity of the owner's home, but can also include areas where the dog is regularly walked. Hostility in wolf pups towards intruders appears around 16-20 weeks, which coincides with the sudden heightened sensitivity to novel or fear-evoking stimuli and is also about the time when young wolves start moving away from the familiar den and rendezvous sites.

Dominance aggression towards humans is more common with intact males and spayed females (Fogle, 1990). This type of aggression can be described as the tendency of some dogs to react aggressively to apparent challenge. Circumstances usually include situations in which the owner is treated as a competitor for resources such as food, space, sleeping position, etc. or the owner exhibits a dominant gesture such as retaining, holding, petting, pushing past, staring, or leaning over the animal.

Dominance aggression usually occurs in homes with kindly non-authoritarian owners who often allow the dog to have its own way, or that treat their dogs as equals. The problem with these kindly gestures is that the animal views the human as weak and will challenge for a higher pack rank. In order to avoid dominance aggression, owners should establish a firm leadership position by making the dog do something for them before they do something for the dog (action-reaction-reward). Some dog breeds may establish dominance relationship as early as wolves, while others may never develop stable dominance relationships regardless of circumstances.

Socio-sexual aggression occurs in stages: The first stage is at pre-puberty and coincides with that of food aggression set out above. Pre-pubescent dogs emit pheromones that will activate demonstrations of authority by the group's dominant dog. The second stage deals with sexual, social, and zonal-spatial issues, and coincides with the production of sexual steroids (puberty) and territorial aggression. Young

dogs will begin to develop an attraction for the opposite sex as well as the areas occupied by the dominant members of his family group. The dominant member reacts by pushing the adolescent to the fringe of the group.

Sexual pheromones are awakened at puberty and the adolescent will exhibit the first signs of courting. The same sexed dominant member will openly reject this behavior because he/she is the only one in the pack who is allowed to openly exhibit its sexuality. Again, the adolescent is pushed from the preferred areas occupied by the dominant pack members. The adolescent loses the right to receive greetings, licking, and other social attentions given by the other dogs.

Maturity:

The third stage occurs at maturity and is much like the second and is much like the second stage. The most distin-

ing difference between behaviors exhibited in the earlier phase and those exhibited now is that at maturity, all of the weapons, strengths, and passions of a mature adult are in place.

Dogs view aggression as competition for pack rank. The sex of the animal, age, size, hormonal status, territory, personal distance, dominance/subordination hierarchy, and what was learned in previous encounters can all have an influence on aggression. Therefore, aggression is both inherent and learned. A dog's natural predisposition to move up in the social hierarchy, along with the overlapping of phases, often makes pinpointing the exact cause of aggressive tendencies hard to diagnose.

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Summary of Behavioral Development

1-2 WEEKS	Brain is only developed enough to control breathing, heartbeat, balance and equilibrium; Pup needs stimulation to nurse, and eliminate; Pup can smell and taste.
3 WEEKS	Brain is sufficiently developed to control regulation of body temperature and metabolism; Pup no longer needs stimulation to nurse or eliminate; The eyes and ears canals are open and pup is able to see and hear (maturity of sight and hearing will take several weeks); Teeth begin to erupt through the gums; Pup is able to crawl forward and backward, and walk clumsily; Pup begins to urinate and defecate outside of the nest; Shows interest in solid food; Play-fighting with littermates begins; Time of first stress related fear.
4-6 WEEKS	Pups learn social behaviors with other pups and should begin socialization with humans; Pups are weaned by the mother.
5-8 WEEKS	Hypersensitive period when distressing psychological or physical stimuli can have long term effects.
12TH WEEK	Pups ability to form significant emotional ties to new individuals begins to diminish.
16-20 WEEKS	Heightened sensitivity to novel or fear evoking stimuli.
4-4 1/2 MONTHS	Sheds baby teeth.
10TH MONTH	Physical growth begins to level off. Heightened pre-puberty wariness can occur.
10-18 MONTHS	Puberty can cause males and some females to challenge for higher rank within the family pack.

