

EFFECTS OF GENETIC SELECTION AND EXPERIENCE ON POLICE DOG BEHAVIOR

by

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ABSTRACT

Police dog service requires canines that are balanced in social, play, search and aggression behavior as well as physically healthy. Selecting for one or a limited number of genetic traits, such as extraordinarily high energy and aggression, can result in behavior that is counterproductive to police work. In addition to genes, life experience and training determine adult dog behavior. Dogs with inadequate human socialization, fear reaction, or conflicted training may perform patterned behavior in a controlled environment yet react inappropriately or dangerously to the novelties of street work.

GENETIC SELECTION

Law enforcement agencies need reliable sources for police dog candidates. Adult dogs that are physically or behaviorally deficient, or that have had previous training and experience incompatible with police service, especially as juveniles, will probably be unreliable police dogs.

Candidate selection involves performance testing as the measurement of the individual for particular features. This might be a subjective assessment on overall type, an objective physical measurement, or task performance testing, including obedience and working trials (Willis, 1991). Desirable police dog candidates are physically sound, mature adults that exhibit balanced traits in social behavior, play behavior (retrieve, tug), search (predatory behavior), and aggression. Aggression is actually a complex matrix of genetic traits with variable levels of influence, including predation, dominance, possessiveness, protectiveness, intraspecific aggression, punishment, pain-elicited response, and fear.

While trainers concur that police dog service requires an appropriate level of aggression, agencies must keep in mind that if a breeder selects for one trait, many other traits will be affected. It is often difficult to predict which traits will be changed (Grandin, 2000).

“There is a clear difference between the dominant or assertive *alpha* dog and a fighting dog, such as the pit bull terrier. These animals have been deliberately selected for an ability and eagerness to fight, and to this degree are unlike most other breeds of dog in which, as with the wolf, intraspecific aggression tends to be ritualized more often than serious. It is possible that the behavior patterns of pit bull terriers have been altered by selection to a degree that is not seen in other breeds, even those in which assertive

animals are relatively common. Such alteration of behavior would be a direct result of selection for fighting prowess (Willis, 1999).”

“Fighting breeds appear to have a much higher tolerance of pain, which may be mediated by peculiarities in neurotransmitters or opiate receptor sites. A single anecdotal report of unusual responsiveness to morphine and naloxone in a pit bull (Brown *et al.*, 1987) suggests that there may be physiological differences in the breed, although no definitive studies have been reported in the literature.

“In addition to a lowered threshold for attack and higher pain thresholds in many fighting animals, selection for fighting has apparently resulted in the disruption of normal communication in individuals from recent fighting lineages. Dogs from fighting lineages have been under selective pressures that suppress or eliminate accurate communication of aggressive motivation or intent.

“Public health officials, animal control agencies, and humane societies have been documenting an ‘unrecognized’ epidemic. A growing number of [dog bites man] cases have been brought before the courts. In the U.S., settlements in excess of \$1 million and imprisonment of dog owners on charges of manslaughter have not been uncommon. A significant proportion of fatal and severe bites have been attributed to a relatively small number of breeds including pit bulls and Rottweilers (Lockwood, 1995).”

Police agencies should be aware that malinois have recent pit bull ancestry, in varying percentages depending upon the lines. Some German shepherds abroad have recently been bred with pit pulls and sold for police service in the U.S. under different breed names.

“Any or all of the influences outlined above can help to account for biological predisposition of a dog toward aggression. Additional biological factors that can influence the tendency toward aggression include the animal’s age, sex, reproductive status (intact vs. spayed or neutered) and overall health. However, the likelihood that a particular individual will bite is also strongly influenced by many environmental variables including the training of the animal, the extent of its socialization to people (especially children), the quality of the animal’s supervision and restraint, and the behavior of the victim (Lockwood, 1986).”

Although no definitive studies have been conducted, reports from police officers and trainers indicate incidents of excessive aggression, often without warning, by some police dogs against handlers, handlers’ families, other officers, suspects, and the general public. These dogs have exhibited the inability to self-modulate their behavior, particularly under stress. These dogs have typically disregarded their handler’s verbal commands and physical actions to control their behavior.

SOCIALIZATION WITH HUMANS

Normal, friendly interaction between police dogs and the public, and with fellow officers is necessary to maintain canine sociability and reliability. On duty, the police dog requires normal human interaction during part of the shift to prevent human aversion conditioning. Off duty, in addition to time allocated for resting, feeding and play exercise, the police dog needs normal social interaction with the family (Hart, Bryson, *et al.*, 1994).

Some vendors and trainers have advocated, or required by contract with agencies, rigorous separation of the police dog from contact with the public, family members, or both. Dogs that cannot safely participate in normal interactions with humans are a liability to the handler, the family, the law enforcement agency, and the community.

FEAR BEHAVIOR

Neural reactivity is a heritable trait. Fear reactions reside in the amygdala, the brain's fear center, and are difficult or impossible to change. Animals rarely *get over* an initial fear reaction to a new experience (Grandin, 2000).

A large scientific literature brings into focus the impact of fear and anxiety in the organization of a variety of fundamental behaviors. Fear and anxiety behaviors compete with, and exert an inhibitory effect on, behavioral patterns motivated by other systems (Heird *et al.*, 1986). For instance, in domestic canines, fear-related reactions may affect learning in dogs. In spite of their captivity, thousands of generations after natural selection has relaxed, domestic animals continue to exhibit antipredator (prey) strategies and express fear-related reactions similar to those of free-living populations of wild animals (Broom, 1981).

According to Gray (1979), fear-producing stimuli can be classified into five subdivisions:

- 1) Dangers the animal has learned to avoid, such as electric shock
- 2) Stimuli that will evoke an unlearned (genetic) fear response, such as a hissing hose (snake).
- 3) Novel stimuli, one of the most potent experimental conditions that cause negative emotions of fear and anxiety, such as a suspect attacking a police dog or sudden loud noise.
- 4) Physical characteristics linked to the presentation of the event, such as sudden or fast-moving stimuli.
- 5) Stimuli [perceived to] arise from conspecifics, such as alarm calls or screams.

The emotional states of fear and anxiety in animals can only be inferred indirectly from observable and measurable behaviors emitted by the individual. Depending on the specific characteristics of the real or potential threat, behavioral activities associated with negative emotions and responses vary greatly. The behavioral patterns of animals can even be contradictory. For example, active defense reactions (attack, threat), active avoidance reactions (flight, hiding, escape), or movement inhibition (immobility) can all be viewed as expressing a state of fear or anxiety (Boissy, 1998).

Fear-producing stimuli may also affect other patterns of behavior. Archer (1979) observed that the effects vary and depend on the emotional intensity of the threatening event. When the level of fear is low, the activity in which the animal is engaged may be enhanced. In contrast, when fear is intense, behavior can be disturbed or totally inhibited. Intermediate degrees of fear usually lead to a conflict between the expression of fear and the activity in which the individual is engaged. Conflict between an intense emotional state and a positive motivation may result in displacement activity. Conflict between

motivations may also provoke an intermediate activity characterized by the alternation between the expression of two types of behavior (Boissy, 1998).

Analyzing fear and aggression in a police dog candidate, or a dog already in service, may be difficult if the canine's genetic and developmental histories are not available. The dog that exhibits normal behavior when engaged in familiar, patterned activity may become fearful when challenged by the stress of law enforcement. That fear may be expressed overtly, or disguised as aggression or displacement activity. If the fear manifests, for example, as a conflict between motivations, such as the *revere* (bark and hold) in an intense emotional state (assisting an arrest), the dog's behavior will be unreliable

TRAINING CONFLICTS

Initial police dog training requires a comprehensive program to build an effective officer-dog partnership (Hart, Bryson, *et al*, 1994).

Departments that must allocate initial training time attempting to develop basic behavior compatible with police service, or that must spend maintenance training remediating or reinforcing basic police dog concepts have little or no time to advance their capabilities in elective areas, such as evidence search or tracking. As with other animals, including humans, adult dog behavior is shaped primarily by juvenile experiences and resists change.

Police dog candidates should be trained from puppyhood to respond to handler commands—socialization, play, and search commands as well as obedience and, later, the suspect apprehension commands. The young dog's behavior shaping program should include realistic exercises conducted according to a variable schedule of reinforcement. Heeling on a calm, level playing field is different, for example, from responding to the officer's commands in the distracting, obstructive environment of the real world.

Motivated by positive reinforcement in constantly changing circumstances, the dog learns to focus on the handler's commands as behavior cues instead of relying on patterned behavior that leaves him, in unusual circumstances, clueless. This evolves into a dog that will respond to directional signals while searching and to verbal commands during an arrest.

Bite and hold originated as a training term to describe the dog maintaining a firm, secure grip on the training equipment. The term was not meant to describe the police dog generally. Law enforcement requires that dogs bite calmly, not munch repeatedly or rip like sharks. Even *bark and hold* trained dogs are taught to bite and hold onto the person. *Bark and hold* means hold at bay. These two meanings of *hold* are sometimes confused. This confusion has created the misperception that dogs trained to bark and hold will not bite suspects and are therefore safer or a more reasonable use of force. Neither is true.

The sport of schutzhund *bark and hold*, also called the *find and bark*, *find and hold*, *detect and hold*, *detect and bark*, *circle and bark*, *search and bark*, *reasonable force*, *minimum force*, *harass and delay*, *detain and distract*, or *revere*, basically refers to the sport dog's behavior upon locating a person. The dog is supposed to bark at the person, or exhibit behaviors that include barking, until permitted to bite. Permission to

bite comes from 1) the person's behavior, such as overt movement, or 2) handler command. Police tactics contraindicate this procedure, as do basic principles of behavior. The sport technique puts the dog in prolonged conflict with his instincts or drives.

Once a conditioned stimulus is established, such as barking, it becomes a reinforcer (Pryor, 1984). The bark is a sign of excitement (Mackenzie, 1996) that for most dogs is self-reinforcing. Barking behavior is recognized as a vocal alarm, the natural precursor to biting. Linking barking and biting in sequence creates a strong behavior chain.

A common flaw in stimulus-controlled behavior is anticipation: Once the cue is learned, the subject becomes so eager to offer the behavior that it acts before the cue has actually been given (Pryor, 1984). Once the bark and hold behavior is chained with the bite, the dog anticipates the bite and jumps the chain, or short-circuits the barking, in order to make the preferred physical contact.

If trained to find and bark, the high-energy, high-aggression type dog apprehending a suspect will be alert to every opportunity to go from barking to biting. These dogs often nudge or nip suspects to induce a response, circle the suspect to induce movement, or react to the stare challenge, which dogs innately regard as an invitation to attack.

During an apprehension, the dog with fear-based responses will either flee (self-eliminating for police dogs) or try to bite as quickly as possible and resist release because the familiar act of biting provides security. For this type dog, barking and holding a person at bay is more challenging than the physical contact. The dog whose aggression stems from fear is unreliable.

Even the dog with balanced genetic instincts or drives constantly pushes the envelope of the bark and hold in order to achieve the bite. It is difficult to maintain the integrity of the chain to ensure reliable police dog performance.

These common reactions show why the bark and hold behavior sequence is not appropriate for police service. Corrective measures are limited to timeouts (impractical for police work) or negative reinforcement that typically has short-term effect. The dog's behavior is unpredictable and therefore unreliable. Ironically, withholding the bite acts as a powerful reinforcer in this behavior chain.

Street experience tends to increase the unreliability of the find and bark behavior chain, because real suspects do not behave in ways that reinforce the desired behavior. In fact, typical suspect behavior, such as movement, eye contact, sound, or a combination of these responses, tends to incite the dog's biting reaction, thereby further shortening the behavior chain.

Rescue dogs, such as urban disaster dogs, that are required to perform a bark alert should never be permitted to chain the barking with biting, even in a different context. Accidental bites have occurred with schutzhund dogs trained for rescue, where the stimulus of the emergency situation elicited biting a person at the scene.

Dog sports like schutzhund are very high maintenance routines, requiring constant reinforcement of patterned behavior. Criminals are not playing a game and do not act according to a set of rules. On the street if conflict arises between patterned behavior training and police work, the dog must pay attention to his handler and obey the handler's commands. Frequently, the sport-trained dog disregards his handler.

Police officers are often forced to make split-second judgments about the amount and type of force that is necessary in a particular situation, in circumstances that are tense, uncertain and rapidly evolving. The police officer is responsible for making the decision about deploying the dog as well as directing and controlling him. There are situations where the officer calls the dog off a moving suspect, for example, a frightened but compliant suspect, without allowing the dog to bite. There are situations where the officer directs the dog to apprehend a suspect who is not moving but who still presents a threat to the officer or others. The officer decides, not the dog.

Law enforcement agencies and most law abiding citizens have regarded police dogs as valuable detection and enforcement partners since the early 1900s. In the 1960s – ‘80s, law enforcement dog trainers evolved police dog training from the European sport dog model to the present, more reliable *police dog* model where the officer directs and controls his canine for reasonable deterrent effect, detection efficiency, and safety. The courts have concurred, and a significant body of law enforcement experts with substantial field experience have testified to that effect (Bryson, 2001). The United States Police Canine Association advocates handler controlled police dogs.

These training and deployment issues are not trivial. They have created uncertainty in officer response on the street and in court. The *find and bark* used with police operations has created interagency conflict and public misunderstanding. Dog vendors exert economic pressure on law enforcement agencies to use sport-trained dogs for police work. In 2001, the U.S. Department of Justice recommended that agencies “adopt a ‘find and bark’ policy (requiring a dog to bark, rather than bite).”

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