

Behaviour and Socialization of the Wild Timber-Wolf

M. W. FOX

*Roscoe B. Jackson Memorial Laboratory, Hamilton Station,
P.O. Box 257, Bar Harbor, Maine, U.S.A.*

Abstract—A review article dealing with the social behaviour patterns of the wild timber-wolf, an ancestor of the domesticated dog. Investigation of these patterns may help to understand more clearly the behaviour of the dog and the influence of selection and domestication. Such behaviour patterns as flight distance, approach and avoidance behaviour, fear biting and the extinction of fear responses are discussed.

INTRODUCTION

THIS review article has been written to bring to the attention of veterinary surgeons some interesting experiments and observational data collected at the University of Chicago by Dr. Benson E. Ginsburg, principal investigator in these studies. By comparing the social behaviour patterns of their wild ancestors, the behaviour of the dog and influences of selection and domestication may be more fully understood. Attempts to tame wild adult timber-wolves by different methods have revealed several intriguing results and give us a clearer meaning of phenomena such as flight distance; approach and avoidance behaviour; fear biting; and extinction of fear responses by establishing positive psycho-social relationships.

SOCIALIZATION IN DOGS

Freedman *et al.* (1961), working with dogs, found that if pups did not have contact with human beings until they were older than 14 weeks of age (i.e. these pups were reared in complete isolation from humans) they were impossible to socialize or domesticate, and were literally wild and unapproachable. Social contact was made among other litters at selected ages and it was found that maximal socialization was obtained between 6–8 weeks of age. During postnatal development, therefore, there is a period during which human contact is effective in establishing a social bond, which is formed most strongly and permanently at 6–8 weeks of age. Before and after this period socialization is less stable, and at 14 weeks is impossible to establish. This phenomenon resembles 'imprinting' (Hess, 1958) in other animals, and is an innate behavioural mechanism that ensures that the animal is socialized early in life with its own species. Socialization with other species may occur during this sensitive period between 6–8 weeks and is the best time for domesticating puppies in the household environment. After this sensitive period when approach behaviour is

strong (i.e. 'friendliness'), inhibition occurs with the development of avoidance behaviour (i.e. fearfulness) which under natural conditions would keep the pup with its litter mates to whom it has already been socialized and at a safe distance from strange animals who may possibly be predators. Russian work employing Pavlovian conditioning techniques supports these behaviour studies in that the dog develops through a period critical to the formation of primary social relationships, where approach and later avoidance behaviour patterns operate (Mirzakamirova *et al.*, 1958). Scott (1962) has reviewed the ethological importance of this critical period of socialization, and it is remarkable how experience during this time can influence the later behaviour of the animal.

SOCIALIZATION IN TIMBER-WOLVES

With this knowledge of the importance of early experience modifying social behaviour in later life, Dr. Ginsburg undertook the impossible task of attempting to socialize wild adult timber-wolves. These animals were trapped in their natural habitats in North America and were kept in excellent health throughout the experimental period. Social studies were also done on two groups of captive wolves, and a brief review of these observations will be given first.

Several behaviour patterns of the wolf are present in the dog, while the effects of domestication and selective breeding on this latter species have, however, reduced other behaviour patterns such as pack-group co-ordinated (allelomimetic) activities and social hierarchy relationships. In the pack, activities are controlled by a single dominant male wolf. The most subordinate female of one pack studied was a social outcast, i.e. social contacts with pack members were minimal for this animal. However, after the breeding season, during which time she did not mate, she served as a dog nurse for the litter of another female, and concomitantly regained status in the group. During this time she was no longer persecuted when she strayed from her allotted territory. Sexual behaviour among males was also unusual in that the dominant male copulated less frequently than subordinate males. A female in season was observed soliciting sexual attention from a non-responsive dominant male. When a subordinate male advanced toward her, he was interrupted by dominant and juvenile males. After many abortive attempts, this subordinate male eventually copulated, but was attacked by the dominant wolf while tied. After mating, the subordinate male placed himself physically between the female and the dominant male and his mate chased other females away from the male.

Submissive postures, including slinking with the ears laid back and tail tucked between legs and lying on the back, were observed. Bowing and exposure of the neck to a more dominant adversary was not seen in these groups.

COMPARATIVE STUDIES

Comparative studies of wolves, coyotes, dingoes and dogs have revealed that the domestic dog appears to be a wolf with no behavioural capacities added, but with many behaviour patterns modified or reduced. Almost all of the behaviour seen in dogs is also seen in wolves, but in addition has fuller significance in wolves (Ginsburg and Slatis, 1962). While vocalization and postural attitudes in coyotes, dingoes and wolves have consistent meaning, threat behaviour of the dog was less predictable,

so that a trained observer in the experimental studies was able to interact more safely with a wild Canid. A challenge from the latter is unmistakable, while a challenge from a domesticated dog has little predictive value unless the individual dog is well known.

In these groups of wild Canidae, wolves are the most gregarious in nature and were easiest to tame and are gregarious toward humans. Coyotes and dingoes are less gregarious and tend to be one-mannish under confinement. Most Canids wean their offspring early, while the wolf continues to feed regurgitated food to the young until they are 6–8 months old. The effects of tranquillization using librium also differs between coyotes and wolves. In wolves, there is no effect on wolf-with-wolf interactions, but with a handler the wolf is less fearful and more likely to challenge and snap at the experimenter. In coyotes, tranquillization reduces the threats and dominant gestures of a dominant animal, thus changing the social relationship within the coyote group, and also permits easy approach by the experimenter who is not threatened in the usual manner (Ginsburg and Slatis, 1962). These observations are of interest in the problems of pre-operative or pre-transportation sedation of zoo animals, where unpredictable results may be obtained, dependent on the species variable and tranquillizing agent employed.

SOCIALIZATION OF WILD CANIDAE TO HUMANS

A group of coyotes and wolves born in captivity and reared under varying schedules of socialization to humans was studied (Ginsburg *et al.*, 1962). All animals showed residual wildness in the form of low thresholds and extreme reactions (fear and shyness) to novel situations. Threat and attack were more common when the animals were in close confinement in small cages, and withdrawal occurred when there was space to avoid the investigator. Effects of socialization were largely extinguished if not reinforced at frequent intervals as the subjects matured. Fully socialized wolves were gregarious to humans. If an untamed wolf was caged with a tame one, some allelomimetic approach behaviour occurred. Socialized wolves appeared very intelligent, for they explored their environment thoroughly and exhibited a high degree of manipulative ability in that they could open gate latches and turn on light switches and water faucets in the animal quarters.

As stated previously, tranquillization had little effect on shortening reaction distance, increasing latency to attack, and decreasing threat behaviour to the experimenter. It was thought, however, that under test conditions, sedated animals gave greater confidence to the investigators.

Socialization with wild adult animals was achieved after long passive-active human-wolf interactions respectively. Upon arrival the wolf was caged and had free visual access to its environment, in that it was able to observe other animals, humans, and daily routine activities. At an appropriate time when avoidance behaviour was still dominant to aggressive behaviour, the experimenter entered the cage of the wolf. It was found that the best results were obtained if the experimenter sat down and relaxed (read a book) and wore overalls tainted with the odours of other wolves. Eventually approach investigatory behaviour was seen; the wolf moved slowly and hesitantly toward the experimenter. Fear responses were at this time at a critical point, for during approach, the flight distance was being reduced by the exploratory

drive of the subject. As wolves are primarily gregarious animals, this eventual extinction of fear responses in a social situation is facilitated. During this critical period, the reactions of the experimenter were crucial. Any sudden movement by him would cause unpredictable responses in the wolf, for the ambivalency of response was maximal at this time; fear biting, aggressive snapping, seizing of the experimenter's head and 'pinning' to the ground (active dominance) or withdrawal avoidance behaviour to the far corner of the pen, therefore increasing the flight distance, and regression to the original fear-avoidance reactions, could occur. Naturally, before the experiment was undertaken, the individual concerned in the project was of a certain constitutional type who was able to inhibit his own emotional reactions, i.e. avoid any sudden movements that might disturb the subject, and, as stated earlier, better results were obtained when the subject was tranquillized, giving the experimenter greater confidence in the critical situation. Also, as the expressions of different emotional types of behaviour were predictable in the wolf, the exact time to avoid contact or to make contact with the subject could be ascertained with safety and certainty by the trained observer.

Once the wolf approached the passive human, approach behaviour increased on subsequent trials until eventually bodily contact was made. The wolf would rub its back across the experimenter and lick his hands and clothing. Physical bodily contact and non-aggressive approach behaviour marked the establishment of a psycho-social relationship between man and wolf which was reinforced by daily social interactions and contact between subject and experimenter. The ambivalency of behaviour seen earlier disappeared, and responsiveness could be predicted in the behaviour patterns of the wolf prior to and during the experiment, which expressed precisely how the subject would react.

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Résumé—Article rendant compte des types de comportement social du loup des bois, ancêtre du chien domestique. Il se peut que l'étude de ces types aide à comprendre plus clairement le comportement du chien et l'influence de la sélection et de la domestication. On y discute certains types de comportement tels que la fuite, l'approche, l'esquive, l'acte de mordre sous l'effet de la peur, et la disparition des réponses à la peur.

Zusammenfassung—Ein kritischer Artikel, der sich mit den sozialen Verhaltensformen des wilden *Canis occidentalis*, eines Vorfahrens des Haushundes, befasst. Eine Untersuchung derselben kann dazu beitragen, das Verhalten des Hundes und den Einfluss von Zuchtwahl und Domestikation besser zu verstehen. Es werden Verhaltensformen wie Fluchtweite, Annäherungs- und Ausweichensverhalten, Beissen aus Furcht und das Erlöschen von Furchtreaktionen diskutiert.