

An overview of types of aggressive behaviour in dogs and methods of treatment

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ABSTRACT

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In 223 cases of dogs presented to a specialist behavioural clinic in Brisbane, Australia, 87 (39%) were for severe aggression. The classes of aggression included dominance (31.6%), territorial (29%), predatory (12.3%), intermale (12.3%), sibling rivalry (7.9%), fear biting (6%) and idiopathic rage (0.9%). The breeds most represented which attacked humans were the Bull Terrier (16%), German Shepherd and crosses (15%), Cattle dog breeds (Blue Heeler and crosses, 9.2%), Terrier breeds (9.2%), Labrador (8%), Poodle and Cocker Spaniel (both 5.7%) and Rottweiler (4.6%). The dangerous dog list put out by the local Brisbane City Council includes the first three breeds mentioned and the Rottweiler as the top four breeds causing aggression problems.

Hospital records in Victoria and Queensland confirm that most damage is caused to humans by Bull Terriers and German Shepherds. Many breeds similar to those in our study are also represented in American data on aggressive breeds.

Treatments included obedience training only, restraint only, obedience and restraint, synthetic progestins and obedience, castration, progestins and obedience, castration and obedience, use of chlorpromazine and as a last resort, euthanasia (12.6%). Entire males formed the largest group (44%), followed by castrated males and females (both 21%) and spayed females (15%).

Several breeds (Boxer, Briard, Samoyed and St. Bernard) only attacked other animals and birds.

This study reinforces evidence that social disruption is caused by aggressive dogs, but it also indicates that many responsible clients seek advice on how to deal with this behavioural problem.

INTRODUCTION

The most common behavioural problem in dogs referred to the University's Companion Animal Practice during a 6-month period was aggression towards family members and other animals (Blackshaw, 1988).

There are various types of aggression, including competitive, sexual (intermale), territorial, predatory, pain-induced, fear-induced, maternal, learned and dominance aggression and these have been described by Houpt (1979), Hart (1980), Beaver (1983) and Blackshaw (1985). Idiopathic rage is not

common but has been described by Hart and Hart (1985) and Blackshaw (1987). In many cases the outcome is similar, an adult or child is savaged badly or another animal is killed.

It is useful for a veterinarian or animal behaviourist to be informed about dog breed characteristics so that some of the problems associated with aggression can be avoided.

Hart and Hart (1985) produced a table of behavioural profiles of dog breeds which can be used to aid selection of an appropriate dog. These workers classified dogs into very high, medium and very low aggression groups and this was associated with varying degrees of ease of trainability and reactivity (affection demand, excitability, excessive barking, snapping at children, general activity).

Blackshaw (1988) listed the German Shepherd, Bull Terrier, Labrador, Cocker Spaniel, Poodle, Cattle dog and various terriers as the most common aggressive dogs seen in the University clinic. Three of these breeds occur on the list of the four most aggressive breeds of dogs compiled by Brisbane City Council (released in the Courier Mail, Brisbane, Qld., 3 October 1989). These breeds were German Shepherds, Rottweilers, Bull Terriers and Cattle dogs. A recent study of the incidence of dog attacks on children requiring hospitalisation in Brisbane, Australia (Podberscek et al., 1990) indicated that where the breed was recorded, the Bull Terrier was the most commonly involved. Other breeds identified were the Kelpie, Dobermann, Dingo and another Terrier breed. Of recorded dog bites requiring attention in a Victorian Hospital (Australia), where the breed of dog was identified, 47% were caused by the German Shepherd. Other breeds were the Blue Heeler cattle dog (12%), Labrador (9%), Dobermann (6%) and the Terrier breeds (6%) (Thomas and Buntine, 1987).

The number of cases of aggression recorded of various dog breeds must be considered in relation to the frequency of those breeds in the community. Studdert (1989) compiled a list of the purebred registrations in Australia for 1988 (91 768 dogs). The most common breed is the German Shepherd (12%), followed by Rottweiler (7.5%), Cattle dog (4.7%), Chihuahua (4%), Labrador (3.8%), Dobermann (3.4%), Cocker Spaniel (3.2%), Bull Terrier (3.1%), Boxer (3%), Poodle (2.9%), Border Collie, Golden Retriever and Staffordshire Bull Terrier (all 2.8%), Australian Silkie Terrier (2.3%), Collie varieties (2.2%), Maltese and Welsh Corgies (both 2.1%), Dachshund and Cavalier King Charles Spaniel (both 2%) and the Shetland sheepdog (1.4%).

The breeds whose owners sought advice for the dogs's aggression, the types of aggression, treatments prescribed and the outcomes of the treatment are discussed in this paper. The dogs treated are those referred by local and interstate veterinarians, the Royal Society for the Prevention of Cruelty to Animals (RSPCA) and the Brisbane City Council pounds. The Australian Postal

System and private solicitors also seek advice, and the services of an expert witness (Blackshaw) are used in some dog bite cases which come to court.

ANIMALS, MATERIALS AND METHODS

Over the last 2 years, advice has been given in 223 cases of behavioural problems of dogs, through the University of Queensland's Companion Animal Practice. Of these dogs, 87 (39%) were referred for severe aggression either to adults or children or to other animals (pets, wildlife, livestock) and birds. The advice on treatment for and management of the different types of aggression was given by the author, an animal behaviour consultant, and the Practice or referring veterinarians performed the clinical examinations and prescribed drugs. Where the dog was referred by a veterinarian, this person with the advice and assistance of the behavioural consultant managed the case. Follow up was either undertaken by the referring veterinarian or directly by the University's Animal Practice.

RESULTS

Table 1 lists the 26 breeds of dogs represented, in order of the number seen for aggression problems. The most common breeds were the Bull Terrier (16%), German Shepherd and crosses (15%), Cattle dog breeds (9.2%), Terrier breeds (9%), Labrador (8%), Poodle and Cocker Spaniel (both 5.7%) and Rottweiler (4.6%).

The first five breeds of dogs (50 dogs) mentioned accounted for 57.5% of the aggression problems, and the first three breeds appear on the Brisbane City Council's dangerous dog list. In our sample the Rottweiler accounted for 4.6% of the aggressive behaviour and this is the other breed in the Council's list of the four most dangerous breeds of dog.

The frequency of occurrence of breed types which cause aggression was analysed by the χ^2 test, using the 1988 percentages of purebred registrations (91 768) (Studdert, 1989) to estimate expected frequencies. Breed figures with less than five reports were pooled. There was a highly significant result ($\chi^2=95.263$, $P<0.001$, d.f.=6); the major contributors, which were greatly over-represented in the study, are given in Table 2.

Table 1 shows that of the eight breeds which are most aggressive, only the Terrier types were not reported to attack people outside the family. Also four breeds (Boxer, Briard, Samoyed and St. Bernard) only attacked other animals and birds.

The Bull Terrier is the most frequently referred dog and it is interesting to note that 64.3% of those dogs were entire males compared with only 15.4% males in the German Shepherd group. In all cases when the sexes were consid-

TABLE 1

Breeds of dogs whose owners sought advice on aggression (87 dogs) towards family members, towards other people (includes visitors, service people and people passing by) and towards other animals (pets, wildlife, livestock, birds)

Breed ¹	No.	Sex ²	Age range	Aggression with damage to		
				Family	Other people	Other animals and birds
Bull Terrier and crosses (4)	14	9 M 2 CM 2 F 1 CF	6 months–5 years	4	10	4 (dogs)
German Shepherd and crosses (4)	13	2 M 3 CM 3 F 5 CF	9 months–6 years	10	5	7 (2 poultry, 1 cat, 3 dogs, 1 horse)
Cattle dog and crosses (4)	8	2 M 1 CM 2 F 3 CF	10 months–3 years	7	2	2 (dogs)
Terrier types Australian Silkies (3) Fox (2) Wirehair (1) Skye (1) Airedale (1)	8	4 M 2 CM 2 F	7 months–8 years	> 13		3 (poultry, koala, dogs)
Labrador	7	2 M 2 CM 1 F 2 CF	10 months–8 years	4	2	1 (dog)
Poodle (1 Toy)	5	4 M 1 CM	8 months–5 years	3	2	2 (dog, cat)
Cocker Spaniel	5	3 M 2 F	4 months–3 years	> 3	> 9	> 3 (dogs)
Rottweiler and cross (1)	4	2 M 1 F 1 CF	8 months–2 years	2	1	1 (poultry)
Chihuahua	2	1 CM 1 F	12 months–8 years	> 4	> 3	
Doberman	2	2 M	11 months–1.5 years	1	> 6	
Boxer ³	2	1 M 1 CM	5 months–5 years			> 5 (2 crows, poultry birds, dog)
Border Collie cross	2	1 M 1 CM	2–12 years		> 5	

TABLE 1 (continued)

Breed ¹	No.	Sex ²	Age range	Aggression with damage to		
				Family	Other people	Other animals and birds
Dalmation and cross (1)	2	1 M 1 CM		3	> 4	
Bassett Hound	1	1 M	5.5 years	> 3		
Beagle	1	1 CM	4.5 years	2		
Briard ³	1	1 M	2 years			1 (dog)
Corgi	1	1 M	3.5 years	> 3		
Mastiff×Staghound	1	1 M			1	
Miniature Husky	1	1 F	5.5 years	1		
Old English Sheepdog	1	1 F	-	> 3	1	
Rhodesian Ridgeback	1	1 F	2 years		> 3	
Samoyed ³	1	1 CM	6 years			cats, dogs
Schnauzer	1	1 M	2 years	> 3		
Sheltie	1	1 CM	2.5 years		2	
St. Bernard ³	1	1 F	4 years			dogs
Weimaraner	1	1 CM	7.5 years		1	
Total	87					

¹Numbers in parentheses are number of that breed in the study.
²M= male, CM= castrated male, F= female, CF= castrated female.
³Not aggressive to humans.
 >: At least this number but often more and difficult to estimate.

TABLE 2

The frequency of occurrence of breed types which contribute to aggression and are greatly over-represented in this study

Breed	No. in clinic sample	χ^2	Percent of registered population
Bull Terrier	14	68.310	3.1
German Shepherd	13	3.060	12
Cattle dog	8	7.467	4.7
Labrador	7	7.766	3.8
Poodle	5	4.827	2.9
Cocker Spaniel	5	3.822	3.2
Other breeds (< 5 per breed)	15	0.011	

$\chi^2=95.263, P<0.001, d.f.=6.$

ered, 38 (44%) were entire males, 18 (21%) were castrated males, 18 (21%) were females and 13 (15%) were spayed females.

The total frequency of aggressive acts (biting, attacking, growling, threatening to bite, snapping, killing animals or birds) is difficult to record accurately. In many cases, clients seek advice after only one incident, but in other cases the dog has been aggressive over a long period and the client reports more than three incidents have occurred. Actual physical harm (bites, knocking over and damage) to the family which owned the dog occurred on 49 occasions. One child required plastic surgery (Cattle dog) and a Miniature Husky bit a baby severely around the eyes.

Some breeds, the Cattle dog, Cocker Spaniel, Rottweiler and Dobermann were in a younger, upper age range, which may indicate that people with these breeds seek advice sooner, or that the damage caused by the dog is more severe.

Table 3 shows the type of aggression treated in 87 dogs and indicates that dominance aggression (31.6% of cases) and territorial aggression (29%) were the most common behavioural problems. Sibling rivalry, where the dog is only aggressive towards a child, may be an aspect of competitive aggression and occurred in 7.9% of cases (Hart and Hart, 1985, p. 38). Predatory and inter-

TABLE 3

Types of aggression in 87 dogs. Some breeds show more than one type of aggression ($n=114$)

Type of aggression	No. of cases (%)	Breeds involved
Dominance	36 (31.6)	Australian Silkie Terrier, Airedale, Basset Hound, Beagle, Bull Terrier (4), Cocker Spaniel, Corgie, Cattle dog (3), Cattle Dog× (2), Chihuahua (2), Dalmation, Fox Terrier, German Shepherd (4), German Shepherd×, Labrador (2), Old English Sheepdog (2), Poodle (2), Rottweiler, Rottweiler×, Schnauzer, Sky Terrier, Weimaraner, Wirehair Terrier
Territorial	33 (29)	Basset Hound, Border Collie (2), Boxer, Bull Terrier× (2), Cattle Dog× (4), Chihuahua, Cocker Spaniel (4), Dalmation, Dobermann (2), German Shepherd (4), German Shepherd×, Labrador (3), Labrador X, Miniature Husky, Mastiff×Staghound, Poodle (2), Sheltie, St. Bernard
Predatory	14 (12.3)	Border Collie, Boxer, Fox Terrier, German Shepherd (3), German Shepherd× (2), Labrador (2), Poodle (2), Samoyed, Sheltie
Intermale	14 (12.3)	Australian Silkie Terrier (2), Boxer, Briand, Bull Terrier (3), Bull Terrier ×, Cattle Dog, Cattle Dog×Cocker Spaniel, German Shepherd, Poodle, St. Bernard
Sibling rivalry	9 (7.9)	Bull Terrier (2), German Shepherd, German Shepherd×, Labrador ×, Miniature Husky, Poodle, Rottweiler (2)
Fear biting	7 (6)	Bull Terrier×, Cattle dog (3), Dobermann, Rhodesian Ridgeback, Samoyed
Idiopathic rage	1 (0.9)	Cattle dog

male aggression (both 12.3% of cases) are innate tendencies and can be treated.

The cases of fear biting involved veterinarians, a dog judge and four children. The Cattle dog which showed the classic symptoms of idiopathic rage, including sniffing the air, looking vicious and not recognising the owner (Hart and Hart, 1985; Blackshaw, 1987), was also the dog that caused a wound requiring plastic surgery.

Treatments

Individual circumstances and the type of aggression will influence the treatment and management of each case. Table 4 shows the treatments used for the different classes of aggression and the victims of the aggression. Treatments included obedience and restraint; synthetic progestins (usually MPA-Promone E, Upjohn, see Blackshaw and Allan, 1988) and obedience; castration, progestins and obedience; castration and obedience training; chlorpromazine (Largactil, May and Baker (Aust. Pty Ltd.), see Blackshaw and Allan, 1988); euthanasia was only recommended when the dog was very dangerous and had caused severe damage to a human, when other treatments such as restraint and obedience were beyond the capacity of the client, or when all other measures had failed.

In this sample, 11 (12.6%) dogs were euthanized. All Rottweilers and crosses seen (2 males, 1 female, 1 castrated male), 2 German Shepherds and 1 cross, a Cattle dog, Labrador, Cocker Spaniel and the Mastiff × Staghound were euthanized.

Table 4 summarises the treatments for each type of aggression.

Dominance aggression

All cases of dominance aggression were directed towards family members; 66.7% (24) were towards adults and 33.3% (12) towards children (Table 4).

Treatment began with proper restraint of the dog and obedience training which it was recommended should be practiced each day for 10 min. For male dogs, castration was advised; this also prevents any inherited aggression tendency to be passed on. The synthetic progestins (medroxyprogesterone acetate, megestrol acetate) are useful for aggressive dogs and can be used with castration (Blackshaw and Allan, 1988). It is important that obedience training is continued even when using the progestins as this reinforces the owner's control and responsibility for the dog's behaviour.

The success rate of our 36 cases was 75%; 7 dogs were euthanized and the outcome was unknown in two cases (Table 4).

TABLE 4

The treatments used with the different types of aggression in 87 dogs (some dogs show more than one type of aggression)

Aggressive behaviour	Treatment	No. treated
Dominance (36) ¹ Family adults 24 (66.7%), Family children 12 (33.3%)	Unknown	2
	Euthanasia	7
	Obedience training (reinforced 10 min day ⁻¹)	5
	Obedience and progestins	8
	Castration and obedience training	6
	Castration, progestins and obedience training	7
	Chlorpromazine and restraint	1
Territorial (33) ¹ Passing children 13 (39.4%), passing adults 8 (24%), neighbours 5 (15%), visitors 4 (12%), postmen 3 (9%)	Obedience, restraint and progestins	10
	Obedience and restraint	5
	Restraint only	3
	Castration and progestins	7
	Castration and restraint	6
	Euthanasia	2
	Restraint only	5
Predatory (14) ¹ Poultry, cats, dogs, Koala, birds, horse	Obedience and restraint	3
	Castration and restraint	3
	Restraint and progestins	2
	Euthanasia	1
	Castration	5
Intermale (14) ¹	Obedience and progestins	4
	Restraint	3
	Chlorpromazine	2
	Dog given away	5
Sibling rivalry (9) ¹ Baby 4 (44%), young child 3 (33.3%), grandchild 2 (22%)	Castration and progestins	3
	Euthanasia	1
	Restraint and progestins	1
Fear biting (7) ¹ Children 4 (57%), veterinarian 2 (29%), dog judge 1 (14%)	Castrations and progestins	2
	Chlorpromazine	2
	Habituation to white coat	1
	Euthanasia	1
	Euthanasia	1
Idiopathic rage (1) ¹	Euthanasia	1

¹Numbers in parentheses are number of dogs displaying that category of aggression in the study.

Territorial aggression

This is a normal canine behaviour as dogs are territorial animals that defend a particular area. It becomes a serious problem when service people, visitors and people passing by are attacked. In our cases, passing children were attacked the most (39.4%), followed by passing adults (24%), neighbours (15%), visitors (12%) and postmen (9%).

Table 4 shows the types of treatment used. The success rate was 94% and 2 dogs were euthanized. Obedience training, restraint and castration were the most useful treatments, aided by progestins in seven cases.

Predatory aggression

This behaviour is innate and is released by the stimulus of a fast-moving animal (Blackshaw, 1985). Restraint only or restraint with obedience training, castration or progestins was used successfully in 93% of cases. One dog was euthanized.

Intermale aggression

This is an innate behaviour related to testosterone secretion. Castration was indicated in 35.7% of cases, obedience training and synthetic progestins, restraint and chlorpromazine were other treatments (Table 4). Chlorpromazine was used in two cases where there was no response to castration, progestins or training. The owners wished to keep the animals and chlorpromazine kept the dogs subdued although not trustworthy.

Sibling rivalry

This can be classified as competitive aggression but is directed towards children who visit a childless home that contains a very bonded dog. It also occurs with the arrival of a new baby. In another occurrence, the dog suddenly developed a nasty temperament towards a child of the family.

Of the dogs in this category 5 (56%) were given away, 1 was euthanized and the remaining 3 were castrated and treated with progestins (Table 4).

Fear biting

Fear-induced aggression occurs in male and female dogs when they are in a situation from which they cannot escape. Castration and progestins were useful in two cases, chlorpromazine was used in one case before a visit to the veterinarian, and habituation to a white coat corrected a dog that was fearful of judges.

Children should be taught not to crowd a dog and to give it plenty of space to move.

Idiopathic rage

This case involved a Cattle dog which also exhibited sibling rivalry towards a grandchild and turned against its owner. Euthanasia was recommended

The outcome of most cases was improvement to the extent that, with careful management the dog could remain in the family. An interesting group included dogs where all treatments were tried with no success but the owners insisted on keeping their dogs. These dogs were put on chlorpromazine and maintained on maintenance levels of 0.5–1 mg kg⁻¹ (by mouth) daily (Blackshaw and Allan, 1988).

The sex of the owner was recorded in most cases and it was found that there were 58 females (67%), 14 males (16%), with 15 unrecorded (six involved court cases).

DISCUSSION

The cases seen by the University Animal Practice are usually referred and some treatment may have already been tried. The types of aggression seen were dominance, territorial, sibling rivalry, predatory, intermale, fear-induced and one case of idiopathic rage (Hart and Hart, 1985, p. 47; Blackshaw, 1987). The breeds that were mainly dealt with were also represented in the Brisbane City Council's list of most dangerous dogs. These dogs are reported to the Council by people other than the dogs' owners, but the cases seen by the Practice are brought by the concerned owner. Male dogs caused the most aggression (44%), which may indicate that education of clients to neuter males may reduce some of the problems.

Wright and Nesselrote (1987) noted that in 105 dogs referred for behavioural problems, significantly more intact males and neutered females were referred for aggressive behaviour. This reinforces our experience with male dogs, although neutered females were the least frequent in our sample. The breeds which bite more than expected (Table 2), especially the Bull Terriers, must be properly controlled and owners warned of their responsibilities.

Behavioural profiles of dog breeds obtained by Hart and Hart (1985) were compared with the 26 aggressive breeds in this study. Sixteen breeds were rated by Hart and Hart (1985) as having medium, high or very high aggression. The Labrador, Old English Sheepdog and Basset Hound were the only

TABLE 5

Our 26 breeds of aggressive dogs compared with Hart and Hart's (1985) behavioural profiles of medium, high and very high aggression and low aggression

Medium, high, very high aggression	Low aggression (Hart and Hart)	Breeds not listed by Hart and Hart
German Shepherd	Labrador	Bull terrier
Poodle	Border Collie	Cattle dog
Cocker Spaniel	Old English Sheepdog	Miniature Husky
Rottweiler	Basset Hound	Mastiff × Staghound
Chihuahua		Rhodesian Ridgeback
Beagle		Sheltie
Corgi		Briand ¹
Schnauzer		
Weimaraner		
St. Bernard ¹		
Samoyed ¹		
Boxer ¹		
Terriers		
Dobermann		
Dalmation		

¹Only attacked other animals and birds.

breeds rated by them as having low aggression (Table 5). Their data were derived from a data base of breed profiles of 56 of the most frequently registered breeds in the U.S.A.

It is important to enable the dog to fit back into family life as safely as possible so the treatment and behavioural management must be effective. From the cases studied, it is apparent that many dogs can be treated successfully, but there is always a group where euthanasia is the only alternative. It is interesting to note that of the known clients, 67% are female and 16% are male. This may indicate that the female either nominally owns the family dog or that it is her job to solve the problems. This study indicates that the various forms of aggression are important canine behavioural problems which have severe consequences for humans. Careful treatment and management are required with the cooperation of the owner to obedience train and restrain their animals.

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