Signalment factors, comorbidity, and trends in behavior diagnoses in dogs: 1,644 cases (1991–2001)

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Objective—To determine trends in behavior diagnoses; assess the relationship between diagnoses and age, sex, reproductive status, and breed; and evaluate associations between diagnoses within the same dog (comorbidity).

Design—Retrospective case series.

Animals—1,644 dogs.

Procedures—Medical records of dogs evaluated for behavioral problems were reviewed for breed, sex, reproductive status, consultation year, birth date, and diagnoses.

Results—Numbers of dogs with aggression, anxiety, and unruly behavior increased over the course of the study, as did the total number of dogs evaluated for behavioral problems. In general and for aggression, Dalmatians, English Springer Spaniels, German Shepherd Dogs, and mixed-breed dogs were evaluated more often than expected, whereas Labrador Retrievers and Golden Retrievers were evaluated less often than expected. Labrador Retrievers were also underrepresented for anxiety, whereas mixed-breed dogs were overrepresented. Males were overrepresented except for interdog aggression, anxieties, and phobias, whereas females were overrepresented for phobias. Dogs with phobias were evaluated at a median age of 6.5 years, compared with dogs with other problems (median age, 2.5 years). A mean of 1.6 diagnoses/dog was observed, with certain diagnoses clustered.

Conclusions and Clinical Relevance—Results suggested that in dogs, behavioral problems changed over the course of the study; age, sex, and breed distributions varied among diagnoses; and certain diagnoses were likely to occur together. (*J Am Vet Med Assoc* 2006;229:1591–1601)

Owners' perceptions of behavioral problems in dogs as well as practitioners' interest in managing behavioral problems may lead to changes over time in the numbers and types of cases evaluated by general practitioners and referred to major university centers. An understanding by general practitioners of current trends as well as age, sex, and breed distributions of such dogs may aid them in making the correct diagnosis. Knowledge of comorbidity may also help the practitioner focus questions during evaluation of the dog's history, resulting in a more efficient consultation. With such knowledge, general practitioners can educate their clientele, who may then be more likely to report behavioral problems and seek resolution. Also, if educators understand current behavioral trends and case demographics, clinical training of veterinary students as well as continuing education may be benefited.

Abbreviations

ABC	Animal Behavior Clinic at Cornell University
CUHA	Cornell University Hospital for Animals

Behavioral problems have been evaluated via owner surveys[1-8,a,b] as well as case-review studies.[9-20] Several studies[4,8,a] based on owners' opinions have revealed unruly behavior (barking and jumping up) as the most common problem confronting dog owners, whereas others have revealed house soiling[2,3,5,b] or nonbehavioral concerns (sadness when the pet dies, finding care when away, and shedding)[6,7] as the primary problem. In contrast, results of most canine case studies[9-15,17,18,20] indicate that aggression is the most prevalent behavioral diagnosis in dogs. Reports of several studies describe age, sex, and breed distributions in dogs with behavioral problems[1,4,6,7,9-14,17-21] and associations among diagnoses.[11-18]

Most behavioral studies involve analysis of data during a specified period and do not evaluate trends over time, although a few have evaluated monthly and seasonal trends in overall behavioral problems[10,b] or have provided yearly overview data[2,3,5-7,10] with some analysis from year to year.[7,10] The primary objective of the study reported here was to determine trends in behavior diagnoses made at the ABC from 1991 to 2001. Secondary objectives included assessing the relationship between behavior diagnoses and signalment factors (age, sex, reproductive status, and breed), assessing the distribution of these factors over time, and evaluating comorbidity.

Criteria for Selection of Cases

Medical records for 1,668 dogs evaluated at the ABC from January 1, 1991, through December 31, 2001, were evaluated for this study; 24 dogs were excluded from the population because of incomplete data; therefore, 1,644 dogs were included in the study.

Procedures

Data on breed, sex, reproductive status, consultation year, birth date, and behavior diagnoses were gathered on each dog. A maximum of 3 diagnoses were

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taken for each dog; these diagnoses were the first 3 listed in the record. Dogs (n = 57,196) evaluated at the CUHA over the same period served as the reference population for breed, sex, reproductive status, and age comparisons. Breed, sex, reproductive status, and age data from the reference population were gathered independently. Over the entire study, a breed was assigned to all dogs and sex and reproductive status were specified for > 98% of the dogs. The owners were able to specify the age in 75% of the dogs. Ninety-six individual diagnoses taken from original records were assigned to the following general categories: aggression, anxieties, locomotor behaviors, ingestive behaviors, self-directed aggression, grooming behaviors, fears, house soiling, phobias, sexual behaviors, unruly behaviors, vocalization behaviors, and miscellaneous behaviors (cognitive dysfunction, depression, pseudocyesis, psychogenic salivation, and hyperesthesia syndrome; **Appendix**). Individual diagnoses listed under the general categories of aggression, fears, and house soiling were divided into several subcategories. In the aggression category, subcategories were defined by target; defined as people (owners or strangers), animals, and things; and then further defined into individual diagnoses by motivation or etiology. Fears were grouped into subcategories by triggers as fear of people, animals, or situations. House soiling diagnoses were placed into either marking or elimination subcategories.

Statistical analysis—Diagnoses were analyzed on the levels category, subcategory, and individual. For any given level of diagnosis, no dog was counted more than once. Each diagnosis was initially evaluated by determining the number of dogs with that diagnosis over the 11-year study period, compared with the total number of dogs with any diagnosis, and expressing this as a percentage value. Each diagnosis assigned to an absolute number of 32 or more dogs over the entire study was then analyzed for trends over time and, secondarily, for the relationships between diagnoses and age, sex, reproductive status, and breed. Diagnoses assigned to < 32 dogs over the entire study typically had 2 or fewer dogs in most years, making analysis of trends over time difficult or impossible. Where an individual diagnosis was assigned to ≥ 95% of the dogs in a particular subcategory (eg, barking comprised 97.7% of the vocalization cases), only the subcategory was reported and discussed because the results (relationship with age, sex, reproductive status, and breed) were the same. To detect trends over time for all diagnoses, a least squares linear regression was performed by use of the square root of the number of cases (ie, the No. of dogs with a specific diagnosis) within a given year as the dependent variable and the year of diagnosis as the independent variable.[22,23] A trend was defined as a slope that was significantly ($P < 0.05$) different from 0. An upward trend in a diagnosis was defined as an increasing annual percentage of total cases over time (positive slope), and a downward trend in a diagnosis was defined as a decreasing annual percentage of total cases (negative slope). A square root transformation was used to normalize errors in the data set.[23,24] To detect trends over time for each diagnosis, logistic regression was performed by use of a proportion (the No. of cases of that particular diagnosis in a given year divided by the total No. of cases in that year) as the dependent variable and the year of diagnosis as the independent variable. Because the dependent variable was a proportion and not a direct count, logistic regression was used instead of linear regression.[22,25] Neither regression was weighted because no individual value for a dependent variable was more important than any other.[26]

To determine the relationship between the age of dogs and each diagnosis, descriptive statistics (median and interquartile range) were first calculated for all dogs with each diagnosis over the 11-year study period as well as for all remaining dogs (dogs that did not have that diagnosis) over the same period. Median and interquartile range were used because the histogram of the number of cases (1-year bins) versus age did not follow a Gaussian distribution.[26] To determine whether a significant difference between the ages of these 2 groups (dogs with a diagnosis and those without) existed, the log of the age was compared by use of a 2-sample *t* test[22] to more closely approximate a Gaussian distribution. To determine clinical importance, a difference of > 2 years was set to account for dogs in which age was estimated. These same methods were also used over all diagnoses for use of breed (mixed breed vs purebred), sex, and reproductive status as grouping variables. To assess the relationship between age of dogs over all diagnoses from year to year, the median age was determined for each year and a least squares linear regression was performed with the median age for each year as the dependent variable and the year of diagnosis as the independent variable.

To assess the relationship between the caseload (the total No. of dogs evaluated) and sex of dogs over the study period, the percentage of total dogs for total (intact and neutered), sexually intact, and neutered males as well as total, sexually intact, and spayed females was determined. The 2-sample proportion test was used to compare percentages between males and females and between sexually intact and neutered dogs within the ABC population; this test is used to compare proportions in 2 independent samples.[22] Between the ABC and CUHA populations, the 1-sample proportion test was used to compare total males with total males, castrated males with castrated males, and spayed females with spayed females; the corresponding proportion in the CUHA population was treated as fixed and was used to define the null hypothesis for this test. The 1-sample proportion test is used to test whether a proportion differs from a hypothesized value.[22] To assess the relationship between the caseload and sex of dogs from year to year, the percentage of total dogs for total males, neutered males, and spayed females was determined for each year and analyzed by use of logistic regression; regressions between the ABC and the CUHA populations were compared by use of a Wald test that treated the CUHA population as fixed. Specifically, a test statistic for the equality of slopes was computed by taking the absolute value of the difference of the slopes from the 2 regressions divided by the SE of the slope in the ABC population.[25] A 2-tailed *P* value was then computed by use of a normal distribution.

To assess the relationship between the caseload and breed of dog during the total study period, the percentage of total dogs of each breed (total No. of dogs of each breed divided by all dogs of all breeds) during the study was determined. Breeds with ≥ 30 dogs during the study were compared with the percentage of total dogs of each breed of CUHA dogs during the same time by use of a 1-sample proportion test. The relationship between each diagnosis and breed of dog was analyzed in the same manner; the percentage of total dogs of the 4 top breeds (including mixed breed) in each diagnosis was compared with the percentage of total dogs of the same breeds evaluated by the CUHA over the same time by use of a 1-sample proportion test. To assess the relationship between the caseload and breed of dog from year to year, the percentage of total dogs for breeds with 30 or more dogs over the study was analyzed via logistic regression; regressions between the ABC and CUHA populations were compared in the same manner as described previously.

The level of association between 2 diagnoses occurring within the same dog was assessed by first determining the probability of each diagnosis given that the other diagnosis was present. The significance of this association was then evaluated by use of the Pearson χ^2 test.[22,26]

All analyses were performed with standard software.[c] All tests were 2-tailed, and values of $P < 0.05$ were considered significant.

Results

The number of dogs evaluated at the ABC increased significantly ($P = 0.002$) between 1991 and 2001 (**Figure 1**). This trend was also seen in the CUHA population over the same period (slope of the regression line = 1.114; SE = 0.14; $r^2 = 0.87$; $P < 0.001$); a significant ($P < 0.001$) difference was found between the ABC and CUHA populations when regressions were compared—the CUHA population increased at a greater rate than the ABC population.

Distribution of diagnoses—The number of dogs affected by each diagnosis (and percentages, compared with the total No. of affected dogs) for all major category diagnoses and all diagnoses that affected ≥ 32 dogs/y over the study period were determined (**Table 1**). Because each dog may have had up to 3 diagnoses, the sum of the individual percentages was > 100%. The category of aggression accounted for the largest percentage of affected dogs during the study period, followed by anxieties, unruly behavior, house soiling, phobias, excessive vocalization behavior, abnormal ingestive behavior, abnormal locomotor behavior, miscellaneous, fears, self-directed aggression, grooming behavior, and sexual behavior.

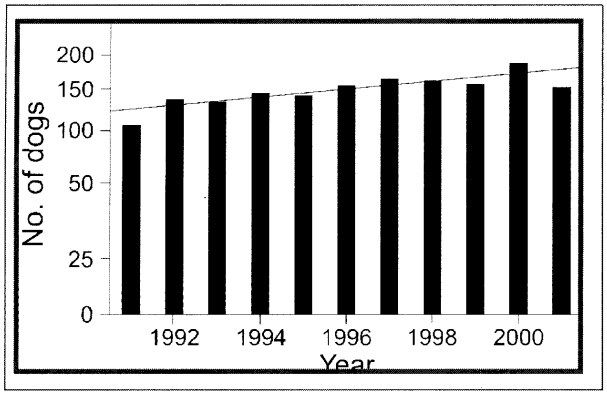

Figure 1—Plot of the number of dogs evaluated for behavioral problems at the ABC from 1991 to 2001. The y-axis is scaled as the square root of the number of dogs. The straight line represents the linear regression line for the data (slope = 0.214; SE = 0.05; $r^2 = 0.67$; $P = 0.002$).

Trends in diagnoses—Trends were detected for several diagnoses (**Table 2**). In the category of aggres-

Table 1—Distribution (number of affected dogs [%]) of diagnoses among 1,644 dogs evaluated for behavioral problems at the ABC from 1991 to 2001.

Diagnosis	No. of dogs (%)
Aggression	1,191 (72.4)
People-directed aggression	997 (60.6)
Owner-directed aggression	724 (44.0)
Dominance-related aggression	667 (40.6)
Fear aggression directed at owners	85 (5.2)
Stranger-directed aggression	535 (32.5)
Fear aggression directed at strangers	276 (16.8)
Territorial aggression	339 (20.6)
Animal-directed aggression	304 (18.5)
Interdog aggression	268 (16.3)
Anxieties	324 (19.7)
General anxiety	93 (5.7)
Separation anxiety	236 (14.4)
Locomotor behavior	16 (1.0)
Ingestive behavior	23 (1.4)
Self-directed aggression	8 (0.5)
Grooming behavior	9 (0.5)
Fears	11 (0.7)
House soiling	124 (7.5)
Elimination	117 (7.1)
Urination and defecation	99 (6.0)
Miscellaneous	14 (0.9)
Phobias	64 (3.9)
Storm phobia	37 (2.3)
Sexual behavior	2 (0.1)
Unruly behavior	201 (12.2)
Attention-seeking behavior	126 (7.7)
Destructive behavior	40 (2.4)
Vocalization behavior	45 (2.7)
Barking	44 (2.7)

Percentages do not add to 100% because each dog may have had up to 3 diagnoses. Major category diagnoses and all other diagnoses with > 32 cases/y over the study period are listed.

Table 2—Results of logistic regression analysis of the frequency of various behavior diagnoses in dogs from 1991 to 2001.

Diagnosis	Slope	SE	*P* value
Dominance-related aggression	−0.038	0.016	0.019
Fear aggression directed at owners	0.142	0.039	< 0.001
Stranger-directed aggression	0.122	0.018	< 0.001
Fear aggression directed at strangers	0.199	0.024	< 0.001
Anxieties	0.141	0.021	< 0.001
General anxiety	0.171	0.038	< 0.001
Separation anxiety	0.107	0.024	< 0.001
House soiling	−0.097	0.031	0.002
Elimination	−0.104	0.031	0.001
Urination and defecation	−0.145	0.035	< 0.001
Unruly behavior	0.069	0.025	0.006
Attention-seeking behavior	0.263	0.037	< 0.001
Destructive behavior	−0.135	0.053	0.011

Slope = Slope of the regression line. *P* value indicates comparison with a slope of 0.

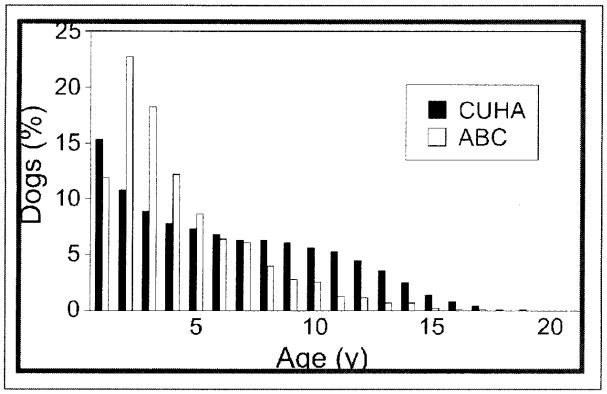

Figure 2—Distribution of ages (%, compared with overall population) among dogs evaluated for behavioral problems at the ABC and all dogs evaluated at CUHA (reference population).

Table 3—Distribution of sexes for dogs with various behavior diagnoses from 1991 to 2001.

Diagnosis	Male (%)	Female (%)
All diagnoses	56.6*	43.4
Aggression	60.1*	39.9
People-directed aggression	64.6*	35.4
Owner-directed aggression	66.2*	33.8
Dominance-related aggression	67.8*	32.2
Stranger-directed aggression	64.7*	35.3
Fear aggression directed at strangers	56.5*	43.5
Territorial aggression	68.4*	31.6
Animal-directed aggression	44.7	55.2†
Interdog aggression	42.5	57.5†
Anxieties	45.0	54.9†
General anxiety	24.7	75.3*
Phobias	39.1	60.9†

*Significantly ($P \leq 0.05$) greater than values in the opposite sex in the ABC population and values for the same sex in the corresponding reference CUHA population. †Significantly ($P \leq 0.05$) greater than values in the opposite sex in the ABC population only. For the CUHA population, percentages of male and female dogs were 48.5% and 51.5%, respectively.

sion, upward trends were seen in fear aggression directed at owners, stranger-directed aggression, and fear aggression directed at strangers. A downward trend was found in dominance-related aggression. Upward trends were also detected in anxieties as well as in general and separation anxiety. Downward trends were observed in house soiling, elimination, and urination and defecation. Upward trends were observed in unruly and attention-seeking behaviors, whereas a downward trend was observed in destructive behavior.

Relationship between diagnoses and age—The distribution of age for the CUHA population differed from that of the ABC population (**Figure 2**). Because of differences between the 2 populations, the relationship between age and diagnosis was determined by making comparisons within the ABC population (dogs with the diagnosis vs dogs without the diagnosis). Overall, median age at evaluation was 2.5 years, mean age was 3.7 years, and interquartile range was 1.5 to 5.5 years. Because exact age was estimated to the nearest month or year in some dogs, only diagnoses in dogs with an age difference (between dogs with the diagnosis and those without) of > 2 years were considered to have clinical importance. Only phobias (median age, 6.5 years; interquartile range, 4.8 to 9.5 years) and storm phobia (median age, 6.5 years; interquartile range, 5.5 to 9 years) were significantly ($P < 0.001$) different between dogs with the diagnosis and dogs without the diagnosis (median age, 2.5 years; interquartile range, 1.5 to 4.5 years) and considered clinically important. No difference was detected in median ages from year to year; corresponding data from the CUHA also yielded no difference in median ages.

Relationship between diagnoses and sex—Sex differences among dogs with various diagnoses were determined (**Table 3**). Overall, more total male dogs and more neutered dogs were seen in the ABC population, compared with the CUHA population. Sex differ-

Table 4—Distribution (%) of breeds in a reference (CUHA) population and among dogs with various behavior diagnoses evaluated at the ABC from 1991 to 2001.

Breed	CUHA	All diagnoses	Aggression	Anxiety	House soiling	Phobias	Unruly behavior	Vocalization
Beagle	1.9			3.4	5.6*			
Bichon Frise	0.7				4.8*			
Cairn Terrier	0.6							8.9*
Cocker Spaniel	3.8	2.9			6.5			
Dachshund	1.2							4.4
Dalmatian	1.0	2.6*						
Doberman Pinscher	1.7							4.4
English Springer Spaniel	1.7	4.1*	5.2*					
German Shepherd Dog	4.8	5.8*	6.5*	4.0		6.3	4.5	4.4
Golden Retriever	5.5	3.3†				7.8	5.5	
Jack Russell Terrier	0.8							4.4*
Labrador Retriever	9.5	4.9†	4.5†	5.6†		4.7	8.5	4.4
Miniature Dachshund	0.3							4.4*
Rottweiler	2.4	2.2						
Shetland Sheepdog	1.5							8.9*
Mixed	24.7	30.7*	29.6*	39.2*	22.6	34.4	32.8*	24.4

For the CUHA population, values indicate percentage distribution of dogs for each breed.
*Significantly ($P \leq 0.05$) greater than that of the corresponding CUHA population. †Significantly ($P \leq 0.05$) less than that of the CUHA population. All diagnoses = breeds with 30 or more cases; for all other diagnoses, values are given for the top 4 breeds with regard to the number of dogs with each diagnosis, except for the category vocalization, for which the diagnosis was equally evident in > 4 breeds.

ences were observed in the categories of aggression, anxieties, and phobias, with more total males in most of the aggression diagnoses categories but more total females in the interdog aggression, anxieties, and phobias categories. General anxiety was the only diagnosis for which the percentage of neutered dogs (males) was not higher than the corresponding percentage in the CUHA population. The only change in sex or reproductive status over time was an upward trend in spayed females (slope of the regression line, 0.044; SE = 0.017; $P = 0.009$). A similar trend was observed in the CUHA population (slope of the regression line, 0.036; SE = 0.003; $P < 0.001$). There was no significant difference when these regressions were compared ($P = 0.646$).

Relationship between diagnoses and breed—For breeds that had ≥ 30 dogs with any diagnosis and for breeds with the 4 highest percentages of dogs with each category of diagnosis, the percentages of affected dogs, compared with all affected dogs, were determined for the ABC population; corresponding percentages for these breeds were also determined for the CUHA population (**Table 4**). Across all diagnoses, affected Dalmatians, English Springer Spaniels, German Shepherd Dogs, and mixed-breed dogs constituted a significantly higher percentage of the total number of dogs in the ABC population, compared with the CUHA population; cases involving Golden Retrievers and Labrador Retrievers constituted a lower percentage of the total number of cases. With regard to breed distribution for all diagnoses over time, an upward trend was detected in mixed-breed dogs and a downward trend was detected in Cocker Spaniels, English Springer Spaniels, and German Shepherd Dogs (**Table 5**); these trends were also detected in the CUHA population. When regressions between the ABC and CUHA populations were compared, significant differences were detected in mixed-breed dogs ($P = 0.012$) and English Springer Spaniels ($P < 0.001$). In both breeds, the ABC population changed at a faster rate than did the CUHA population.

Table 5—Results of logistic regression analysis of various breeds of dogs evaluated at the ABC (1991–2001) versus year, and analysis of breed versus year in a reference population of dogs at the CUHA.

Population	Slope	SE	*P* value
ABC			
Mixed breed	0.061	0.017	< 0.001
Cocker Spaniel	–0.107	0.048	0.025
English Springer Spaniel	–0.083	0.041	0.04
German Shepherd Dog	–0.071	0.036	0.046
CUHA			
Mixed breed	0.019	0.003	< 0.001
Cocker Spaniel	–0.018	0.007	0.007
English Springer Spaniel	–0.06	0.01	< 0.001
German Shepherd Dog	–0.031	0.006	< 0.001

P value indicates comparison with a slope of 0.

Comorbidity—Of all dogs, 55.4% had 1 diagnosis, 26% had 2 diagnoses, and 18.6% had ≥ 3 diagnoses made at the time of evaluation. The mean number of diagnoses per dog was 1.6, and certain diagnoses occurred in clusters. Significant associations between 2 diagnoses were detected (**Table 6**). Most of the significant associations involved cases with both diagnoses from the aggression category.

Discussion

Aggression was diagnosed in nearly 75% of all dogs evaluated, mostly because of aggression directed at humans (mostly owners) rather than other animals. Dominance-related diagnoses accounted for the majority of owner-directed aggression (92%), whereas fear aggression directed at owners accounted for most of the remaining cases. Clearly, owner-directed aggression has been[10,19,27-31,d] and continues to be a difficult problem for veterinarians and owners to manage. Although not as prevalent as aggression, anxieties are often considered to be the next most frequently reported problem, with separation anxiety being the most commonly seen problem in this category.[10,13]

Upward trends were detected in several diagnoses in the categories of aggression (stranger-directed aggression, fear aggression directed at strangers, and fear aggression directed at owners) and anxieties (general and separation). It is imperative that veterinarians, in training and at the level of continuing education, be aware of current behavioral problems and understand how to advise clients in prevention and management. This is especially important in the case of stranger-directed aggression, for which upward trends may be a sign of the increasingly litigious nature of society. It is

Table 6—Associations between pairs of diagnoses in 1,644 dogs evaluated at the ABC from 1991 to 2001.

Diagnosis 1	Diagnosis 2	No.	D1	D2	*P* value
Fear aggression directed at strangers	Territorial aggression	105	276 (38.0)	339 (30.9)	< 0.001
Fear aggression directed at owners	Fear aggression directed at strangers	56	85 (65.9)	276 (20.3)	< 0.001
Dominance-related aggression	Fear aggression directed at owners	52	667 (7.8)	85 (61.2)	< 0.001
Dominance-related aggression	Interdog aggression	47	667 (7.0)	268 (17.5)	< 0.001
Interdog aggression	Territorial aggression	37	268 (13.8)	339 (10.9)	0.003
Dominance-related aggression	Separation anxiety	21	667 (3.1)	236 (8.9)	< 0.001
Fear aggression directed at strangers	Separation anxiety	17	276 (6.2)	236 (7.2)	< 0.001
Dominance-related aggression	General anxiety	15	667 (2.2)	93 (16.1)	< 0.001
Territorial aggression	Separation anxiety	10	339 (2.9)	236 (4.2)	< 0.001
Noise phobia	Separation anxiety	10	27 (37.0)	236 (4.2)	< 0.001
General anxiety	Interdog aggression	6	93 (6.5)	268 (2.2)	0.008

No. = Number of dogs with both diagnoses. D1 = Number of dogs with diagnosis 1 (percentage of dogs that also had diagnosis 2 in parentheses). D2 = Number of dogs with diagnosis 2 (percentage of dogs that also had diagnosis 1 in parentheses). The last column gives the value of *P* as determined by the Pearson χ^2 test.

interesting that the percentage of dominance-related aggression cases decreased over time. This may be partially because of trends in current terminology. Few studies have tracked caseloads over extended periods of time. However, in a review of canine cases in 2000,[10] the referral rate of status-related aggression had declined and fear aggression had increased since 1996; these results support our findings. Although Appleby et al[10] reported a decline in the referral rate for separation anxiety from 1996 to 2000, an increase among dogs obtained from rescue was detected. In the study reported here, the upward trends detected in separation anxiety may have been attributable to greater awareness of this problem by veterinarians as well as pet owners and the emergence during this time period of an approved medication to treat separation anxiety.[32]

Breed incidence of behavioral problems varies depending on many factors including breed distribution, sample size, geographic location, time of study, reference population, and source of puppies. When a behavioral problem has been clearly identified within a breed, it is important that veterinarians, breeders, dog owners, and prospective owners be alerted that such problems exist. Overall, in our study, many more (30.7%) dogs of mixed breed (unknown crosses as well as known crosses) were evaluated than dogs of any pure breed, although purebred dogs as a group were more than twice as numerous as mixed-breed dogs. This was also true of the CUHA population that included 24.7% mixed-breed dogs and has been reported by others.[13,17,20,31] Golden Retrievers and Labrador Retrievers were underrepresented in general and specifically for aggression problems, whereas Dalmatians, English Springer Spaniels, German Shepherd Dogs, and mixed-breed dogs were overrepresented in these areas. Some or all of the breeds in the latter group have also been reported more frequently by others for general problems[11,17,27,33,34] as well as for aggression.[1,11,13,17,27,30,33-35] In our study, Beagles, Dalmatians, and mixed-breed dogs had separation anxiety more often than expected and the number of mixed-breed dogs (n = 104) with separation anxiety far outnumbered the group of purebred dogs (17) with separation anxiety. However, breed distribution of separation anxiety varies among previous studies. Results implicate mixed-breed dogs[35] and purebred dogs[c] as being evaluated more frequently than expected or that there is no difference between these groups.[36]

Regarding the incidence of all diagnoses over the study period for various breeds, an upward trend was detected in mixed-breed dogs and downward trends in Cocker Spaniels, English Springer Spaniels, and German Shepherd Dogs. These trends were also seen in the CUHA population, but changes in incidences of all diagnoses in mixed breeds and English Springer Spaniels were significantly greater in the ABC population. It is important to note that all of these breeds except Cocker Spaniels were evaluated more often than would be expected for many diagnoses in the aggression category; perhaps the popularity of these breeds in our geographic location has decreased because of behavioral problems such as aggression.

In addition to breed distribution, veterinarians and owners need to know at what age certain problems are more likely to appear to prevent them altogether or to diagnose them in the early stages of development. Median age at evaluation of all dogs for behavior problems was 2.5 years, and mean age was 3.7 years. Others have reported similar findings[17,18,21] or found that the largest age categories included these ages.[9,10,13] In the study reported here, phobias and storm phobias occurred at a median age of 6.5 years, compared with a median age of 2.5 years for all other diagnoses. Landsberg[17] did not analyze differences among ages in various diagnoses but reported that all diagnoses occurred at a mean of 2 to 3 years of age, except for phobias, which occurred at a mean of 5 years of age. The older age at evaluation implies that learning plays an important role in development of phobias in dogs, even more so than in other diagnoses, for which median ages ranged from 2.5 to 3.5 years. In assessing age distribution over time, median ages for a given year were remarkably static because all were 2.5 years except the year 1992, for which median age at evaluation was 3.5 years.

It is also necessary to understand whether sex plays a role in development of problem behaviors. In the study reported here, males were evaluated more often than expected overall and for many aggression problems (56.6% overall; 60.1% aggression); others have reported similar results.[1,9-14,17-21,27,28,30,33-35,37-39,d] Neutered dogs were evaluated more frequently than sexually intact dogs by more than a factor of 4, which was most likely because male and female dogs are often routinely castrated and spayed before puberty. For most behavior diagnoses, neutered dogs were also evaluated more often than expected, compared with the CUHA population. Although similar findings have been reported in recent studies,[10,13,14] other studies covering periods before neutering is typically performed have detected a preponderance of sexually intact males[20,37,d] or sexually intact males and spayed females[11,18,34] evaluated for aggression. It is important to note that animal-directed and interdog aggression (including household and nonhousehold aggression) were the only aggression diagnoses for which females were evaluated more often than expected in our study. However, reported sex differences in interdog aggression vary. Some authors have found that males are more likely to fight than females, especially with other males,[11,33] whereas others have found no sex differences.[17] Sherman et al,[40] using data from 3 of the years (1991 to 1993) reported in our study, determined that females are more likely to initiate interdog household aggression, whereas males are more likely to attack nonhousehold dogs. We also found that females were evaluated more often than males for anxieties, general anxiety, and phobias. Lund et al[21] reported that males had a significantly lower risk of general anxiety, and Appleby et al[10] reported that phobic behavior was higher in females in the 1994 caseload analysis. However, Overall et al[41] found that there was no sex difference in regard to the relative percentage of total cases of thunderstorm phobia, noise phobia, and separation anxiety (discrepancy may be attributable to higher sample size of the present study). Numbers of spayed females increased over the study in the ABC population as well

as the CUHA population, with a significantly greater change seen in the ABC population; this difference was most likely attributable to more sexually intact females being evaluated at CUHA because of referrals for reproductive problems.

In the study reported here, certain diagnoses occurred together more often than chance would predict. The practitioner could use this knowledge during evaluation of the dog's history to help focus questions and uncover problems of which even the owner may have been unaware. The highest number of combinations of diagnoses occurred within the category of aggression, and the next most frequently occurring group of combinations was diagnoses in the aggression and anxiety categories. Owners with dogs with fear aggression toward strangers should be questioned specifically on issues of fear aggression toward family members because these diagnoses are often associated. Also, contexts and postures during aggressive incidents in the home should be clearly defined because we found an association with fear in dogs with dominance-related aggression. Dogs that fight with other dogs may also have issues in the home with owners (dominance-related) or with strangers (territorial). We found 6 pairs of aggression-anxiety diagnoses in at least 6 dogs over the study. This is not surprising because anxiety may lower a dog's threshold for aggression.[42,43] Because of this, dogs with aggression (dominance-related, fear towards strangers, interdog, and territorial) should be observed carefully during the consultation for signs of anxiety and inability to relax,[44] and owners should be questioned for signs of separation anxiety or general anxiety in their dogs. Noise phobia and separation anxiety also occurred together more often than chance would predict. Such results have been reported in 2 other studies.[36,41] It is important to keep in mind that these data represent only those dogs referred to veterinary behaviorists and that breed distributions reported in this study do not necessarily reflect breed prevalence of behavioral problems.

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Appendix

Definitions of behavioral diagnoses for cats and dogs.

Aggression—a general term that includes all features of defense, threat, and attack behavior directed at people, animals, or things and excludes all features of affiliative behavior.

People-directed

Owner-directed

Dominance-related aggression—formerly known as dominance aggression, also known as conflict-related, impulse/control, and status-related aggression; includes 2 or more of the following signs: growling, barking aggressively, blocking, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at owners or family members over control of resources such as space, food, possessions, proximity to owner, or situations.

Aggression to children—includes 2 or more of the following signs: growling, barking aggressively, blocking, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at familiar children.

Fear—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at owners and accompanied by attempts to escape; fearful postures such as tucked tail, crouched body, or supine with abdomen exposed; and flattened or pinned ears. This aggression may occur in any location, either on or off the owner's property or in both locations.

Herding—nipping, barking, and biting at the feet and ankles in an attempt to move owners in 1 direction.

Idiopathic—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at owners for which no medical or behavioral stimulus or cause has been discovered.

Irritable—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at owners in response to a broad range of situations, such as stress, frustration, or pain.

Noise-triggered aggression—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, or biting (dogs) or hissing, growling, and biting (cats) directed at owners that is solely initiated by a sound.

Pain-based—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) that may be triggered by an action, either internal or external to the pet, that the pet perceives as painful and that is directed at the owner.

Petting-induced aggression—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at a person after a certain number of pets to the animal's head or body.

Play—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at the owner or family members during a play session.

Predatory—stalking and hunting accompanied by attempts to kill or killing directed at owners, usually infants.

Redirected—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting directed at the owner when a pet is prevented from pursuing aggressive behavior directed at another target.

Stranger-directed

Aggression to children—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at unfamiliar children.

Fear—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at strangers and accompanied by attempts to escape and fearful postures such as tucked tail, crouched body or supine with abdomen exposed, and flattened or pinned ears. This aggression may occur in any location, either on or off the owner's property, or in both locations.

Idiopathic—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at strangers, for which no medical or behavioral stimulus or cause has been discovered.

Irritable—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at strangers in response to a broad range of situations, such as stress, frustration, or pain.

Pain-based—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) that may be triggered by an action, either internal or external to the pet, that the pet perceives as painful and that is directed at a stranger.

Petting-induced aggression—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at a stranger after a certain number of pets to the animal's head or body.

Play—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at strangers during a play session.

Predatory—stalking and hunting accompanied by attempts to kill or killing directed at strangers, usually infants.

Redirected: includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at a stranger when a pet is prevented from pursuing aggressive behavior directed at another target.

Territorial—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) directed at strangers on the owner's property or what the animal considers to be the property.

Animal-directed

Fear—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at animals and accompanied by attempts to escape and fearful postures such as tucked tail, crouched body or supine with abdomen exposed, and flattened or pinned ears. This aggression may occur in any location, either on or off the owner's property, or in both locations.

Intercat—includes 3 or more of the following signs: staring, blocking, hissing, vocalizing, stalking, swatting, lunging, and biting among 2 or more cats within a household or among cats from different households.

Interdog—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting among 2 or more dogs within a household or among dogs from different households.

Interspecies—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at another species (exclusive of people) within the household or outside of the household, exclusive of predation.

Play—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, or biting (dogs) or hissing, growling, and biting (cats) directed at other animals, exclusive of people during a play session.

Predatory—stalking and hunting accompanied by attempts to kill or killing other animal species, exclusive of people.

Redirected—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting (dogs) or hissing, growling, and biting (cats) directed at another animal when a pet is prevented from pursuing another aggressive behavior.

Thing-directed

Aggression to cars—includes 2 or more of the following signs: growling, barking aggressively, snapping, snarling, lunging, and biting directed at parked or moving cars.

Appendix

Definitions of behavioral diagnoses for cats and dogs (continued).

Anxieties—conditions resulting from the anticipation by the animal of danger or harm.
- **Anxiety-related pruritis**—itching occurring during situations of stress, frustration, or conflict and having no medical cause.
- **Barrier frustration**—inability to stay or be enclosed or confined in any way without extreme anxiety.
- **General anxiety**—increased vigilance, motor activity, and autonomic activity that interfere with normal functioning.
- **Hyperattachment**—remaining within sight or touch of the owner at all times.
- **Separation anxiety**—includes 1 or more of the following signs: destructive behavior, vocalization, salivation, and elimination caused by physical or visual separation from the owner.
- **Travel anxiety**—increased vigilance, motor activity, and autonomic activity during any type of travel.

Locomotor behavior—out of context, repetitive body movements that are difficult or impossible to interrupt and interfere with the animal's normal routine.
- **Circling**—repetitive walking or running in a circular pattern for no apparent reason.
- **Light chasing**—following light from any source in attempt to catch it, such that normal function is interfered with.
- **Shadow chasing**—following shadows produced by any source in attempt to catch them, such that normal function is interfered with.
- **Tail chasing**—repetitive and excessive chasing of the tail that may or may not result in alopecia, abrasions, or ulcerations.

Ingestive behavior—out of context, repetitive oral movements that are difficult or impossible to interrupt and interfere with the animal's normal routine and abnormal appetite or abnormal ingestion of nonfood items.
- **Air biting**—repetitive snapping at the air for no obvious reason, exclusive of normal activities.
- **Abnormal suckling**—preference by an animal to suckle on a human finger, body part, or clothes.
- **Anorexia**—loss or lack of the appetite for food.
- **Chewing telephone cords**—repetitive chewing with the molars on telephone cord or wires.
- **Cloth chewing**—repetitive chewing with the molars on cloth material.
- **Coprophagy**—ingestion of feces.
- **Excessive chewing**—repetitive mastication when there are no longer any food materials in the mouth.
- **Fabric licking**—repetitive and excessive licking of cloth material.
- **Foraging**—searching for food.
- **Hyperphagia**—eating a greater than optimal quantity of food.
- **Pica**—ingestion of a variety of nonfood items and not limited to 1 particular substrate.
- **Psychogenic polydipsia**—drinking of excessive amounts of water because of stress and not because of a medical condition.
- **Wood chewing**—repetitive chewing with the molars on wood or wooden material.
- **Wool chewing**—repetitive chewing with the molars on woolen material.
- **Wool sucking**—repetitive sucking on woolen material.

Self-directed aggression—repetitive oral or body movements that are self-afflicted, cause the animal severe harm, are difficult or impossible to interrupt, and interfere with the animal's normal routine.
- **Self-mutilation**—repetitive and excessive actions that result in ulcerations, bruises, or abrasions.
- **Tail chewing**—repetitive and excessive chewing of the tail that may result in alopecia, abrasions, or ulcerations.

Grooming behavior—out of context, repetitive self-grooming movements that may injure the animal but do not cause severe harm, are difficult or impossible to interrupt, and interfere with the animal's normal routine.
- **Lick granuloma**—licking in excess of normal grooming that results in areas of alopecia and abrasion.
- **Licking**—licking in excess of normal grooming that does not result in areas of alopecia.
- **Excessive grooming**—hair-pulling, licking, or chewing in excess of normal grooming that results in areas of alopecia.

Fears—behaviors resulting from the avoidance of triggers such as people, other animals, situations, or activities that the animal perceives as dangerous.
- **Fear of people**
  - **Fear of men**—reluctance to be near or in the vicinity of men.
  - **Fear of strangers**—reluctance to be near or in the vicinity of an unfamiliar person.
  - **Shyness**—preferring to be alone and not interacting with the owners.
- **Fear of animals**
  - **Antisocial behavior**—reluctance to be in the company of other members of the same species.
  - **Fear of insects**—reluctance to be near or in the vicinity of any type of insect.
  - **Fear of other dogs**—reluctance by a dog to be near or in the vicinity of other dogs.
- **Fear of situations**
  - **Agoraphobia**—fear of open spaces.
  - **Resistance to handling**—fear or reluctance to being picked up, held, or handled by a person.

House soiling—the release or deposition of feces or urine in an indoor location that is unacceptable to the owner.
- **Elimination**—normal amounts of urine or feces deposited outside of areas the owner considers acceptable and variable amount of urine released during periods of excitement or while the animal is in any type of submissive posture.
- **Excitement urination**—releasing small amounts of urine during periods of excitement.
- **Submissive urination**—releasing small amounts of urine while in any type of submissive posture.
- **Urination and defecation**—normal amounts of urine and feces deposited outside of areas the owner considers acceptable.
- **Defecation**—normal amounts of feces deposited outside of areas the owner considers acceptable.
- **Urination**—normal amounts of urine deposited outside of areas the owner considers acceptable.
- **Marking**—depositing less than normal amounts of urine or stool in socially or olfactory important locations.
- **Urine marking**—depositing less than normal amounts of urine on a vertical surface (spraying) or horizontal surface in socially or olfactory important locations, in response to social or olfactory stimuli, or both.

Miscellaneous—behaviors with criteria that do not fit well into any of the listed categories.
- **Cognitive dysfunction**—an age-related syndrome caused by degeneration in the brain and a decline in higher brain functions, causing a group of signs such as disorientation, changes in interactions with owners, and changes in sleep-wake cycles and elimination patterns.
- **Depression**—changes in appetite and sleep-wake cycle, often accompanied by social withdrawal.
- **Pseudocyesis**—the condition of false pregnancy in which hormonal changes consistent with pregnancy result in similar behavioral changes.
- **Psychogenic salivation**—salivating excessively because of stress and not because of a medical condition.

Appendix
Definitions of behavioral diagnoses for cats and dogs (continued).

Hyperesthesia syndrome—a poorly understood syndrome also known as twitchy cat disease, rolling skin disease, and feline neurodermatitis. Behaviors seen include rippling of skin, rolling on the floor, and self-directed mutilation; these behaviors are usually accompanied by vocalization.

Phobias—an extreme fear response that is excessive and disproportionate to any real or potential threat or situation perceived as threatening.
- **Hysteria when approached**—profound and extreme response to being approached by a person or another animal.
- **Noise phobia**—profound and extreme response to noise other than thunder, resulting in escape, avoidance, and anxiety behaviors.
- **Panic attack**—a profound response to a situation causing extreme anxiety.
- **Storm phobia**—profound escape, avoidance, or anxiety behaviors in response to thunderstorms and their manifestations (rain, noise, lightning, darkness, wind, and changes in barometric pressure and ozone).

Sexual behavior—sexual activity that is either excessive or inappropriately directed.
- **Masturbation**—self-manipulation of the genitals.
- **Mounting**—thrusting the pelvis against animate or inanimate objects.

Unruly behavior—behaviors resulting from control and obedience problems, including medical causes for inadequate control.
- **Attention-seeking behavior**—intrusive behavior initiated by the pet and continued until the pet has the owner's attention. The behavior may be active (such as jumping, vocalizing, pawing) or passive (such as staring, leaning against).
- **Destructive**—destroys household property by digging, scratching, or chewing in presence or absence of owner.
- **Difficult to control**—all situations in which the owner is unable to adequately control the dog, including jumping on people, running away, car chasing, and pulling while on lead.
- **Hyperactive**—unable to relax, high heart and respiratory rates, and high temperature at rest with little increase when exercised.
- **Hyperexcitable**—being overly stimulated or excited by situations, people, or objects.
- **Roaming**—leaving the property for extended periods before returning, usually for sex, food, or hunting prey.
- **Running away**—escaping from the property.
- **Scratching destructively**—use of the claws on a surface the owner considers undesirable.

Vocalization behavior—excessive annoying sounds emitted by the animal in play, excitement, greeting, social facilitation, and attention-seeking behavior, but excluding vocalizations secondary to serious behavioral problems such as separation anxiety, aggression and cognitive dysfunction.

Behavioural effects of ovariohysterectomy on bitches

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ABSTRACT

A questionnaire about their dogs' behaviour was administered to the owners of 150 spayed bitches at the time of spaying and again six months later. It was also administered twice with the same time interval to a control group of 150 unspayed bitches, group matched for breed and age. Principal component analysis of the questionnaire responses yielded 13 factors. On two of these factors, 'indiscriminate appetite' and 'dominance aggression towards family members', the scores of the spayed bitches showed a significant increase compared with their controls. The spayed bitches most likely to show an increase in dominance aggression were puppies under one year, already showing some aggression.

INTRODUCTION

In bitches, the most frequently performed surgical operation is that of ovariohysterectomy, or spaying. Although it is sometimes performed for medical reasons, its most usual purpose is the avoidance of pregnancy and the inconveniences of a bitch in oestrus. It is occasionally undertaken as a treatment for a behavioural problem. It is sometimes stated that spaying affects temperament adversely (for example that spayed bitches 'lack personality' or are 'frankly neurotic' (Jones and Joshua 1982)). It has been observed clinically (Voith and Borchelt 1982, O'Farrell 1986) that owners of bitches presenting with problems of aggression frequently report an exacerbation after spaying. However, there are no objective and controlled studies in this area. The aim of the present study was to fill this gap.

MATERIALS AND METHODS

The owners of 150 bitches were interviewed at the time that the bitch was spayed and again six months later. They were an unselected sample, being the first 150 owners contacted through veterinary practices who were available for interview. These formed the experimental group. The control group was composed of 150 unspayed bitches: their owners were also interviewed twice with an interval of six months. The controls were matched for breed with the bitches in the experimental group and the groups were matched for age. No dog was included in the study which was less than four months old at initial interview or which had been acquired less than one month previously.

Questionnaire

The interview took the form of a questionnaire with 60 items. Twenty of the items were concerned with basic information about the dog and its circumstances: age, age when acquired, number of dogs and people in the household, number of pregnancies, etc. The rest of the questionnaire was concerned with the dog's behaviour over the previous month. The following areas were covered: aggression (to owners, visitors, other dogs), fears, activity level, excitability, destructive chewing, reactions to separation from owner, behaviour in the car, roaming, feeding, urination and defecation and scavenging. Most of the questions were phrased in such a way that the replies were in the form of an estimated absolute or relative frequency of the behaviour.

RESULTS AND DISCUSSION

To simplify the results of the responses to the 40 behavioural items, the correlations between the items were subject to principal component analysis. The results are shown in Table 1.

Table 1. Principal component analysis of questionnaire items (Varimax rotation)

	Factor loadings
Factor 1. Protective aggression (9·8% of variance)	
Threatens people outside family	0·76
Barks, growls when owner opens door to someone	0·68
Gets excited when owner opens door to someone	0·60
Factor 2. Aggression towards other dogs (7·2% of variance)	
Growls at other dogs	0·85
Growls at dogs outside the household	0·83
Factor 3. Urination or defecation indoors (5·2% of variance)	
Urinates in house	0·83
Defecates in house	0·78
Factor 4. Destructive behaviour (4·8% of variance)	
Destructive when left alone	0·88
Destructive chewing generally	0·81
Factor 5. Phobias (4·4% of variance)	
Afraid of visitors	0·73
Afraid of specific kind of person (eg, men)	0·76
Afraid of things (eg, vacuum cleaner)	0·57
Factor 6. Dominance aggression towards family members (4·3% of variance)	
Threatens if disturbed when resting	0·78
Threatens family members	0·72
Threatens when groomed	0·50
Threatens when something taken away (eg, food)	0·35
Factor 7. Excitement in car (3·6% of variance)	
Sits quietly in car	−0·85
Jumps about or barks in car	0·81
Factor 8. Indiscriminate appetite (3·5% of variance)	
Eats meals quickly	0·83
Eats any commercial dog food	0·83
Eats rubbish, carrion, etc	0·36
Factor 9. Dislike of separation from owner (3·3% of variance)	
Follows owner to door on departure	0·74
Looks miserable when owner leaves	0·63
Takes no notice when owner leaves	−0·55
Factor 10. Territorial urination (3·1% of variance)	
Adopts non-squatting posture when urinating	0·74
Urinates frequently on walks	0·72
Factor 11. Activity level in the house (2·8% of variance)	
Moves around constantly	0·74
Reacts to noises	0·48
Follows owner around house	0·38
Factor 12. Perverse appetite (2·7% of variance)	
Eats dog faeces	0·87
Eats rubbish, carrion, etc	0·57
Factor 13. Reactivity (2·6% of variance)	
Reacts to noises	0·72
Threatens when groomed	0·45
Barks when left	0·43

Table 2. Differences between experimental and control groups at first interview

Spayed group	
1 Was acquired at older age	P<0·001
2 Had fewer administrations of synthetic progestogen	P<0·01
3 Had fewer dogs in household	P<0·0001
4 Reacted less to separation (factor 9)	P<0·01
5 Jumped about less in car	P<0·01
6 Roamed more from house	P<0·02

Table 3. Change in factor scores in unspayed group between first and second interview

Factor	Change
1 Protective aggression	+
2 Aggression towards other dogs	+
3 Urination or defecation in the house	− (P = 0·002)
4 Destructive behaviour	−
5 Phobias	−
6 Dominance aggression towards family members	−
7 Excitement in car	− (P < 0·05)
8 Indiscriminate appetite	− (P < 0·01)
9 Reaction to separation from owner	−
10 Territorial urination	+ (P < 0·01)
11 Activity level in the house	−
12 Perverse appetite	−
13 Reactivity to stimuli	−

Where changes are significant, significance level is shown (Wilcoxon test)

For each interview, a score on each factor was calculated by summing the score on the relevant items, weighted by their factor loadings. In analysing the results, for the most part, these factor scores were used, rather than the scores on the individual items.

Next, the results were examined to see if there were any significant differences between the spayed and unspayed groups at initial interview. Any significant differences between the groups would mean that groups were not matched on those variables. The mean age of the experimental group was 33·47 months (SD 33·95). The mean age of the control group was 33·29 months (SD 30·52). These ages were not significantly different: the groups, therefore, had been successfully matched for age. There were, however, significant differences between the groups on some variables: these are shown in Table 2. The relevance of these differences is discussed later.

The factor scores on first and second interview for the unspayed bitches were then compared (Wilcoxon test for matched pairs) to determine what changes in behaviour had occurred due only to the passage of time. The changes in the factor scores are shown in Table 3. It can be seen from this table that significant decreases occurred in urination and defecation in the house, excitement in the car and indiscriminate

Table 4. Change in factor scores in unspayed group between first and second interview by age

Factor	Change		
	11 months and under	12-24 months	25 months and over
1 Protective aggression	+	+	–
2 Aggression towards other dogs	+	+	–
3 Urination or defecation in the house	– (P = 0·003)	–	–
4 Destructive behaviour	–	–	+
5 Phobias	+	+	– (P = 0·002)
6 Dominance aggression towards family members	–	–	–
7 Excitement in car	– (P = 0·02)	–	–
8 Indiscriminate appetite	– (P = 0·01)	–	–
9 Reaction to separation from owner	+	–	–
10 Territorial urination	+ (P = 0·005)	+	+
11 Activity level in the house	–	+	–
12 Perverse appetite	–	+	–
13 Reactivity to stimuli	–	+	–

Where changes are significant, significance level is shown (Wilcoxon test)

appetite: a significant increase occurred in territorial aggression. The unspayed group was then divided into three age groups: 11 months and under (puppies), one to two years and over two years. The changes occurring in these groups over the six months were examined. These are shown in Table 4. It can be seen that where significant changes occurred in the group as a whole, these were due to changes in the puppy group. These changes are not surprising: they are the changes one would expect in puppies as they mature. The finding, however, is reassuring, as it confirms the validity of the questionnaire. It is interesting that fears do not follow the same pattern: they do not decrease until the bitch is over two years old.

The changes in the spayed group from first to second interview were then calculated and the changes compared with the changes in the unspayed group (Wilcoxon test). The comparison was also made with the puppies excluded, in case changes in the puppy group were masking changes due to spaying. The factors for which the changes in the spayed and unspayed group differed significantly are shown in Table 5.

The first question to be considered is whether these differences are due to spaying or whether they might be accounted for by any of the differences between the two groups at initial interview. It seems unlikely that the difference on factor 6 (dominance aggression) or on factor 8 (indiscriminate appetite) could be accounted for by any of the initial differences. However, in the case of factor 7 (excitement in the car) the items which loaded on this factor were 'does not sit quietly in the car' and 'jumps about in the car'. On examining the changes on these two items, it was found that changes in the 'jump about' item were solely responsible for the significant difference in the changes between the groups on factor 8. The initial scores of the two groups on the

Table 5. Change in factor scores between first and second interview: significant differences between experimental and control groups

Factor	
6	Dominance aggression towards family members Spayed group increase Unspayed group decrease P<0·05
7	Excitement in car Spayed group increase Unspayed group decrease P<0·05
8	Indiscriminate appetite (puppies excluded) Spayed group increase Unspayed group decrease P<0·05

Table 6. Changes in dominance aggression by age

Age	Aggression increases	Aggression stays the same	Aggression decreases	Total
11 months or less	S = 13 U = 4	S = 28 U = 31	S = 4 U = 6	S = 45 U = 41
12-24 months	S = 6 U = 6	S = 31 U = 26	S = 5 U = 7	S = 42 U = 39
2 years +	S = 14 U = 11	S = 38 U = 43	S = 11 U = 16	S = 63 U = 70
Total	S = 33 U = 21	S = 97 U = 100	S = 20 U = 29	

S Number of bitches in spayed group
U Number of bitches in unspayed group

'jump about' item were significantly different (Table 2): it cannot be concluded, therefore, that spaying caused an increase in excitement.

With regard to factor 8 (indiscriminate appetite), it seems safe to conclude that the relative increase in the experimental group when puppies were excluded was due to the effects of spaying. Presumably this behavioural change

Table 7. Changes in dominance aggression by initial aggression score

Initial Aggression	Aggression increases	Aggression stays the same	Aggression decreases	Total
Some aggression	S = 16 U = 8	S = 7 U = 5	S = 20 U = 29	S = 43 U = 42
No aggression	S = 17 U = 13	S = 90 U = 95	—	S = 107 U = 108
Total	S = 33 U = 21	S = 97 U = 100	S = 20 U = 29	

S Number of bitches in spayed group
U Number of bitches in unspayed group

Table 8. Changes in dominance aggression by age and initial aggression

	Aggression increases	Aggression stays the same	Aggression decreases	Total
Bitch under 12 months showing some initial aggression	S = 6 U = 1	S = 2 U = 0	S = 4 U = 6	12 7
Bitch over 12 months showing no initial aggression	S = 10 U = 10	S = 64 U = 64	—	74 74

sometimes results in the weight gain which is often cited as a possible side-effect of spaying.

Similarly, it seems safe to attribute the change in factor 6 (dominance aggression towards family members) to spaying. The results were examined more closely in an attempt to discover which bitches are most at risk of developing increased aggression following spaying. Table 6 shows the changes occurring in bitches spayed at different ages. It can be seen that although there is no clear trend with increasing age, the greatest difference between experimental and control group occurs in the youngest age group. Table 7 shows a comparison between bitches showing some aggression at initial interview and those showing none. It can be seen that there is a greater risk of aggression increasing in those already showing some aggression. Combining the variables age and initial aggression, Table 8 compares puppies under one year old already showing some aggression with dogs over one year showing none. If a puppy showing some aggression is spayed, there is a 50/50 chance that her aggression will increase. If she is not spayed, the chances are 6 to 1 that her aggression will decrease. On the other hand, if an adult bitch showing no aggression is spayed, this does not increase at all the chances that she will subsequently show some aggression: these are 6 to 1 in either case.

CONCLUSIONS

There is no evidence that spaying has beneficial effects on behaviour (excluding, of course, behaviour directly connected with oestrus).

The operation should not be undertaken as a treatment for behavioural problems.

Spaying is accompanied by the risk of certain behavioural changes. There is a risk of increase in indiscriminate appetite. More importantly, there is a risk of increase in dominance aggression towards family members. This risk is greatest in puppies under one year already showing some aggression. For these, some alternative method of controlling oestrus (eg, a synthetic progestogen or a surgical procedure which does not remove all ovarian tissue) might be preferable. (Unfortunately, the figures do not, of course, indicate whether the risk diminishes for these dogs as they get older). On the other hand, there seems no risk of increased aggression resulting from spaying for older dogs not showing any aggression. In addition the study showed no adverse effects on other kinds of behaviour.

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Effects of ovariohysterectomy on reactivity in German Shepherd dogs

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Abstract

This study investigated the effects of ovariohysterectomy on reactivity of German Shepherd dogs. Fourteen healthy dogs ranging in age from 5 to 10 months were assigned to an ovariohysterectomy or a sexually intact group. Their behaviours were digitally video recorded 4–5 months after treatment and analysed for treatment effects on reactivity. Responses to the approach of an unfamiliar human leading an unknown dog were assigned the following reactivity scores: severe reactivity, 3; moderate reactivity, 2; defensive or mild reactivity, 1; attentive or no reactivity, 0. Median reactivity scores in response to the approach of an unfamiliar human walking with an unknown dog were calculated for each observation period.

Dogs in the ovariohysterectomized group showed more reactivity, and median reactivity scores were higher in the ovariohysterectomy group compared with those of the sexually intact group. Ovariohysterectomy of 5–10 month old German Shepherd bitches specifically, and perhaps bitches of any breed generally, may induce an increase in reactivity. Practitioners may benefit from recognizing that a range of behavioural changes may occur post-ovariohysterectomy.

Keywords: Aggression; Behaviour; Dog; Ovariohysterectomy; Reactivity

1. Introduction

Ovariohysterectomy is one of the most frequently performed surgical operations in dogs. The usual recommendation is to perform the surgery when a bitch is between 5 and 8 months old and after the first oestrus (Jackson, 1984; Johnston, 1993; Salmeri et al., 1991; Stone et al., 1993).

The most common reason for performing an ovariohysterectomy is to prevent unwanted pregnancy (Salmeri et al., 1991) but other reasons include prevention and treatment of pyometra, metritis, neoplasia, cysts, trauma, uterine torsion and subinvolution of placental sites (Cotchin, 1961; Dow, 1958; Durfee, 1968; Fidler et al., 1966; Fingland, 1998; Hedlund, 2002; Jergens et al., 1987; Sandholm et al., 1975; Stone et al., 1993). Although ovariohysterectomy has been performed for many of the reasons given above, the side effects of the operation, particularly any changes in behaviour, have been quantified in only few studies (Hardie et al., 1997; O' Farrell and Peachey, 1990).

Houpt et al. (1979) reported that ovariohysterectomized bitches gained more weight than sham-operated controls and food intake also was significantly greater. On the basis of a survey of owners, O' Farrell and Peachey (1990) noted that spaying was accompanied by a risk of increased indiscriminate appetite and by aggression towards family members but only if the puppies already exhibited some aggression at less than one year

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of age. Salmeri et al. (1991) found that ovariohysterectomized bitches showed more general activity than a sexually intact group, and Thrusfield (1985) reported that urinary incontinence occasionally followed ovariohysterectomy.

A dog's 'reactivity' can be inferred by visual signals, from the ears, mouth, facial expression, tail, the hair on shoulders and rump, overall body position and posture (Abrantes, 1997; Beaver, 1999; Houpt, 1998; Landsberg et al., 2003; Overall, 1997; Schaffer, 1993; Voith and Borchelt, 1996). In order to investigate behavioural changes after ovariohysterectomy we exposed the dogs in the present study to a strong social stimulus: a stranger and a strange dog approaching the front of the dog's kennel. We observed the dogs' behaviour, and the visual, auditory signals shown. On the basis of these observations, we evaluated the effects of ovariohysterectomy on canine behaviour.

2. Materials and methods

2.1. Experimental animals

Fourteen healthy German Shepherd (GSD) bitches at the Korean Air Force Dog Training Center were studied. Their ages were between 5 and 10 months (mean ± SD, 6.5 ± 1.8) at the time of surgery and between 10 and 15 months at the time of behavioural testing. Dogs were housed in 180 × 240 cm wire mesh kennels with 250 cm walls. Each kennel contained a 180 × 60 × 140 cm dog house.

The animals were handled according to the Laboratory Animal Control Guidelines of Gyeongsang National University, which are based on the *Guide for the Care and Use of Laboratory Animals* of the US National Institutes of Health (1996).

2.2. Experimental design and surgery protocol

The dogs were assigned randomly to either the ovariohysterectomy (OVH) or to the sexually intact group (SIG).

OVH dogs were premedicated with glycopyrrolate (0.01 mg/kg, IM), acepromazine (0.02–0.05 mg/kg, IM), butorphanol (0.02–0.04 mg/kg, IM) or oxymorphone (0.05 mg/kg, IM). General anaesthesia was induced by administration of thiopental sodium (10–12 mg/kg, IV) and anaesthesia was maintained with isoflurane (1–2.5%) during OVH (surgery group). SIG dogs were anaesthetized as above and then allowed to recover from the anaesthesia.

During the first 18–24 h after surgery, IM injections of either oxymorphone (0.05 mg/kg) or butorphanol (0.02–0.04 mg/kg) were administered every 6 h for management of pain. To control for genetic and early environmental influences, littermates were assigned equally to both groups.

The responses of the bitches to the approach of a unfamiliar human with a dog unknown to the test dog to within 1 m of the dog's kennel were recorded using a Digital Palmcorder four and five months after surgery when the dogs were 10–15 months old. The 14 dogs were observed twice one week apart at 4 months and twice one week apart at 5 months making a total of 56 observations. Only the focal dog remained in a run; the other dogs were confined indoors.

The unfamiliar human and dog stood in front of the kennel and the observations ended when the dog calmed down. Behaviours were analysed for 2–3 min during each observation.

2.3. Behaviour analysis

A single observer performed all analyses of the videos.

Parameters observed were ear, eye and lip-positions, tooth exposure and posture. Any vocalization was also recorded.

On the basis of previous descriptions (Abrantes, 1997; Beaver, 1999; Houpt, 1998; Landsberg et al., 2003; Overall, 1997; Reisner, 2003; Schaffer, 1993; Voith and Borchelt, 1996), all behaviour used for analysis was scored by an observer blind to the dog's reproductive condition. Individual reactivity scores in response to the approach of a stranger with a strange dog (the stimulus to reactivity) were determined, and a median reactivity score was calculated for each observation time (Table 1).

If a dog reacted with barking and growling, snarling, lips lifting or curling, head up, ears forward, staring, widely opened eyes and was lunging and jumping it was given a score of 3 (Fig. 1). Ifone to three of these actions were not exhibited the dog was given a score of 2 (Fig. 2). If four or more were not exhibited the dog was given a score of 1 (Fig. 3). If the dog did not respond at all it received a 0 score (Fig. 4).

Table 1
Evaluation and grading of reactivity

Grade	Description of body expression and vocalization
3	Vocalization: bark or growling, movement: lunging or jumping, snapping, head: up, ear: forward, eye: large palpebral fissure staring, lip: lifting or curling
2	Body expression and vocalization were changed by ⩽3 items, being compared with grade 3
1	Body expression and vocalization were changed by ⩾4 items, being compared with grade 3
0	No response or attentive

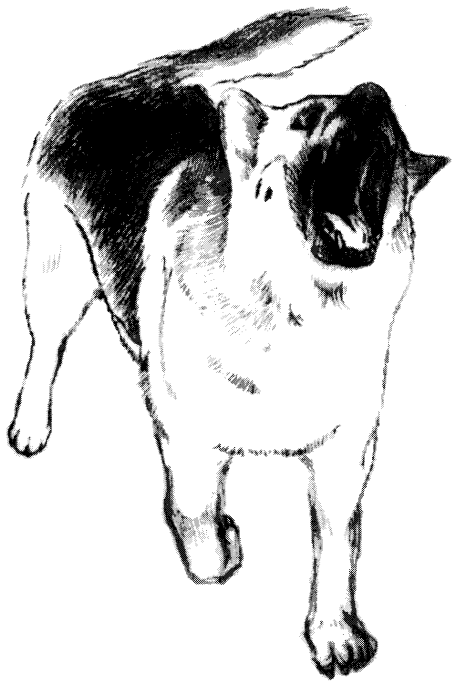

Fig. 1. The posture of grade 3 reactivity. Dog barks and shows growling, jumping, snapping, head up, ear forward, large palpebral fissure staring and lip curling.

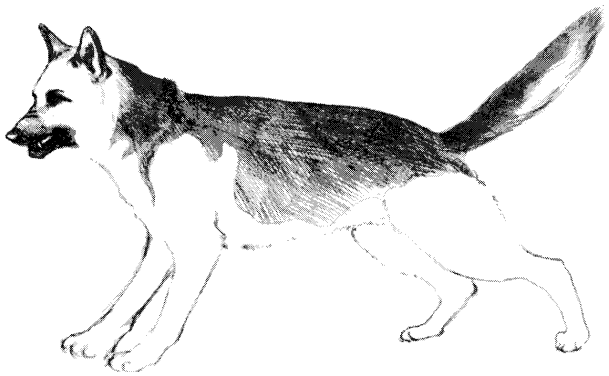

Fig. 2. The posture of grade 2 reactivity. Dog shows growling, snapping, ears forward, large palpebral fissure, staring, lip curling and tail up.

2.4. Statistical analysis

The behavioural effect of OVH was evaluated by comparing the scores of the two groups. The non-parametric repeated measures analysis of variance and Mann–Whitney *U*-test were used for comparisons between the OVH and sexually intact groups. Wilcoxon matched-pairs signed-ranks test was used to make comparison within groups between the observation times. All statistical tests were performed by use of computer software SPSS 9.

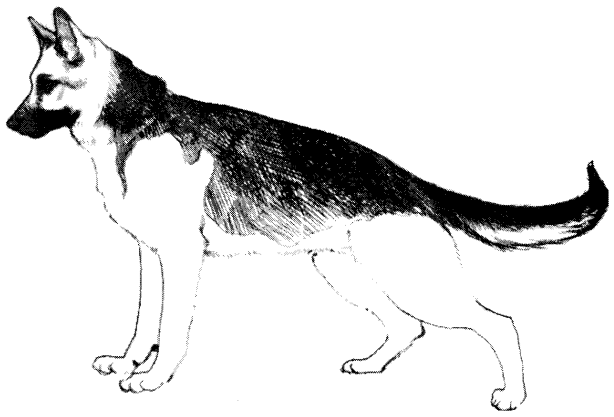

Fig. 3. The posture of grade 1 reactivity. Dog shows ears forward, large palpebral fissure staring and tail swing.

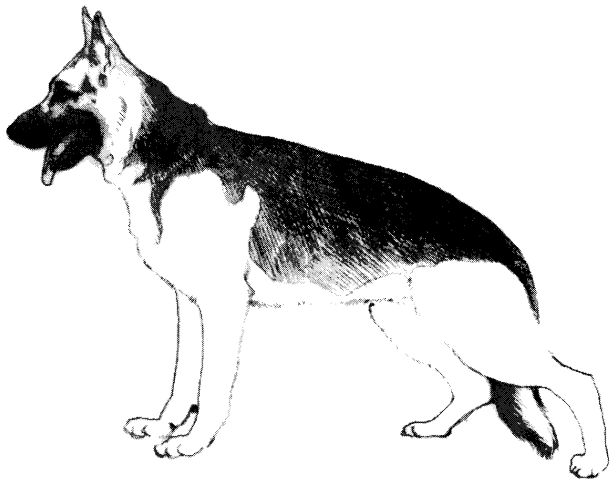

Fig. 4. The posture of grade 0 reactivity. Dog shows ears forward and a relaxed tail.

3. Results

Dogs in the OVH group showed increased reactivity based on facial expression and activities. Median reactivity scores were higher in the OVH group compared to those of the sexually intact group ($P < 0.05$) (Table 2). Median reactivity scores of the OVH group decreased significantly from 3 during the first observation to 1.1 during the fourth observation ($P < 0.001$). Median reactivity scores of the SIG group decreased from 1 at first observation time to 0.4 during the fourth observation ($P = 0.218$).

Of the 56 observations (4 × 14 dogs), head up was observed 43 times – 25 OVH and 18 SIG. The ears were forward 32 times – 25 OVH and 7 SIG. Staring with widely opened eyes was observed 22 times but only in the OVH group. The commissures of the lips were drawn forward 17 times and all in the OVH group.

Table 2
Individual reactivity scores in response to the approach of a stranger with a strange dog (the stimulus to reactivity)

Observation time	Group													
	OVH (n = 7)							SIG (n = 7)						
Dog ID:	A	B	C	D	E	F	G	H	I	J	K	L	M	N
4th month														
1st week	3	3	2	2	2	2	1	1	1	1	1	1	1	0
2nd week	3	3	2	2	2	2	1	1	1	1	1	1	1	0
5th month														
1st week	3	3	2	2	2	1	1	1	1	1	1	1	1	0
2nd week	3	2	2	2	2	1	1	1	1	1	1	1	1	0

Note: OVH, ovariohysterectomy group; SIG, sexually intact group.

Table 3
Items and frequencies of observed behaviours

Items	Behaviour	SIG	OVH	Items	Behaviour	SIG	OVH
Head	Up	18	25	Tail	High, wagging rapidly	5	3
	Down	10	0		High, wagging slowly	2	3
Ears	Forward	7	25		Horizontal, wagging rapidly	3	12
	Flanked	16	0		Horizontal, wagging slowly	3	10
	Flattened	5	3		Down	8	0
Eyes	Big, staring	0	22		Down, wagging rapidly	2	0
	Averted	7	3		Down, wagging slowly	5	0
	Moved	11	0	Posture	Shifted to front	6	25
	In nature	10	3		Shifted to middle	16	3
					Shifted back	6	0
Lips	Drawn forward	0	17	Vocalization (sum of call numbers)	Bark	311	1314
	Drawn back	10	6		Bark and growl		105
	In nature	18	5		Bark and whine	533	
Movements	Jump	5	5		Bark, growl, and whine		45
	Lunge	0	2	Teeth	No	19	5
	Jump and lunge	0	10		Incisor	0	6
	Retreat	8	0		Canine	1	9
	Sit	2	0		Premolar	7	7
	Circle	2	0		Molar	1	1
	Come and go	10	10				
	No movement	1	1				

Note: SIG, sexually intact group; OVH, ovariohysterectomy group.

Raised and a rapidly wagged tail was observed 8 times, 3 OVH and 5 SIG. A neutral posture – leaning neither forwards nor backwards was observed 19 times, 3 OVH and 16 SIG. Leaning back was observed 6 times, all by SIG (Table 3).

4. Discussion

The study was carried out to investigate the effects of OVH on reactivity in German Shepherd bitches 4 and 5 months after surgery. The results revealed that reactivity was increased in the OVH dogs in comparison to the intact group. It is unlikely that post-operative pain or side effects of analgesics was responsible for any of the increased reactivity due to the time that had elapsed since surgery.

Although this is the first prospective study of the effects of spaying on reactivity, there have been two retrospective studies indicating an increase in reactivity after surgery. The risk of post OVH reactivity is higher if the bitches had already exhibited reactivity before their first birthday (O' Farrell and Peachey, 1990). A recent study indicated no difference in aggressiveness between bitches ovariohysterectomized before or after they had reached 5.5 months of age (Spain et al., 2004). Other less serious changes after OVH include an increase in activity and an increase in food intake, which, combined with a decreased metabolic rate, leads to an increase in body weight and urinary incontinence (which may be due to oestrogen deficiency or to adhesions or granulomas of the stump that interfere with the bladder sphincter mechanism) (Hardie et al., 1997; Houpt et al., 1979; Kyles et al., 1996; Salmeri et al., 1991).

In the present study, overall body expression and specific facial expressions were used to determine the level of reactivity. More spayed bitches than intact bitches exhibited wide open staring eyes. These results are similar to broad findings cited for self-confident or offensively aggressive dogs (Abrantes, 1997; Beaver, 1999; Houpt, 1998; Landsberg et al., 2003; Overall, 1997; Reisner, 2003; Schaffer, 1993; Voith and Borchelt, 1996). In our study, we found that more of spayed than intact GSD bitches had erect ears, although the erect ear could be simply an expression of an attentive or solicitous dog.

In previous descriptions (Abrantes, 1997; Beaver, 1999; Houpt, 1998; Landsberg et al., 2003; Overall, 1997; Reisner, 2003; Schaffer, 1993; Voith and Borchelt, 1996), shifting weight to the front was considered to be offensively aggressive, shifting the weight back to be withdrawal due to fear. Although shifting weight to the front feet could be ambivalent, we considered it as offensive reactivity if the dog showed other offensive behaviour.

Lifted lips were considered to be reactivity and relaxed lips as non-reactivity. If the commissures of the lips were drawn forward the dog was considered to be offensively reactive, but if they were drawn back she was considered to be defensively reactive. Based on overall body expression, OVH bitches showed more offensive reactivity than sexually intact dogs. Median scores decreased during the two months of observation time. The dogs probably had habituated to the stimuli eliciting behaviour.

Dogs communicate with various signals as human do. Common visual communication signals of dogs are ear-position, lip-position, facial expression, tail carriage, piloerection and overall body posture. These communications are different according to the dog's interpretation of and response to those of other individual in the environment. Relaxed dogs will show ears and tail that are down and will stand in a relaxed posture, but reactive dogs show erect ears, head and tail up and staring eyes. In this study, we observed head posture, eyes and ear position with the overall body posture. The results indicated that the postures of the dogs in OVH group presented with more offensive reactivity than those of the sexually intact group. Because the German Shepherd breed in general, and these military dogs in particular, have been selected for aggression and guard work, studies should be undertaken to measure the effect of ovariohysterectomy on the behaviour of bitches of other breeds.

Reactivity was induced by the approach of a stranger with a strange dog to the front of the study animal's own kennel, and dogs ovariohysterectomized between 5 and 10 months of age exhibited an increase in intensity of reactivity as measured by visual signals. Whether either earlier or post pubertal OVH would have had similar effects is unknown, but veterinary practitioners should inform owners that a bitch may become more reactive after spaying either because they have lost the calming effects of progesterone or because elevated gonadotropins stimulate release of adrenal androgens.

Acknowledgement

This work was supported by Grant No. R05-2001-000-00756-0 from the Basic Research Program of the Korea Science & Engineering Foundation.

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Stewart, Jana

From: heidi.komlofske@1776productions.com on behalf of Heidi Komlofske <heidi@1776productions.com>
Sent: Monday, January 06, 2014 1:53 PM
To: De La Cuba, Vannia; Bogaard, Bill; district1; Morales, Margo; Madison, Steve; Cruz, Christian (Field Rep); West, Jana; Sullivan, Noreen; Tornek, Terry
Subject: Don't Ban the Pit Bull Breed

It's my understanding that the City of Pasadena is looking to ban the Pit Bull breed. I'm writing to urge you not to do that for ANY breed of dog. The Pit Bull is one of THE most mis-understood breeds --- even by myself at one point not that long ago. About 2 years ago, my family was looking to rescue a dog from our local SPCA. When we first arrived and walked through the myriad of kennels, I said to my husband "No Pit Bull!" The shelter was filled with them. And then I came across, this adorable 4 month old puppy. I looked on her kennel tag, and it said "Staffordshire and Mastiff mix."

But my heart melted instantly. And I had to have her --- even though she was a Pit Bull.

What I can tell you, from not ever having had a dog before, is that she is the most loving and attentive dog I've ever seen. She doesn't have a mean bone in her body. She comes to work with me every day and greets the delivery and Post Office workers daily. She has a fan club who yells "Lily" at the bus stop as we round the corner to our office door. She's my 13-year-old daughter's best friend.

Please don't ban a specific breed of dog just because they have a false reputation.

Sincerely,

Heidi Komlofske
President & CEO

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877-913-1776 x 3

Website | Facebook | Twitter

Stewart, Jana

From: Lauren Leone <leone2626@gmail.com>
Sent: Monday, January 06, 2014 6:55 PM
To: De La Cuba, Vannia; Tornek, Terry; Morales, Margo; West, Jana; Cruz, Christian (Field Rep); Sullivan, Noreen; Bogaard, Bill; Madison, Steve; district1
Subject: Re: Banning Pitbulls

Pardon the auto correct, the book mentioned is called, I'm a Good Dog.

I'm a former Pasadena resident and I keep getting wind of city council trying to ban Pitbulls in Pasadena. I truly hope this is false and that what I've been hearing is slander. If this attempt to ban this breed proves true, it will be one of the most absurd moves I've seen a council take.

I'm an educated and responsible dog owner who happens to own a Pitbull. I grew up with German Shepherds and they're a protective, agressive breed. How come we aren't targeting them, too? Oh, that's right, because the media hasn't portrayed them to be monsters! I'm beyond sick and tired of people blaming animals when it's the OWNERS who should be held responsible.

If any of you possessed a MINISCULE amount of background regarding Pitbulls, you wouldn't be pushing such a discriminatory law into play. Do yourselves and the citizens of Pasadena a favor, read some literature ("I'm a Good Boy" is an exceptional example) on these dogs and educate yourselves before drawing conclusions. I am not interested in receiving a response from any of you, your energy is best used creating laws that have some substance.

Truly disappointed,
Lauren Leone

Flores, Valerie

From: Josh Liddy <claritysix@gmail.com>
Sent: Tuesday, November 26, 2013 3:37 PM
To: Morales, Margo
Subject: Re: Pasadena, Pit Bulls, Steve Madison

Thanks Margo, I would rather not share my home address because I view Councilman Madison as a madman quite frankly. But I can assure you that I am a Pasadena resident, just moved here from Redondo Beach about 6 weeks ago actually.
Josh

On Tue, Nov 26, 2013 at 2:01 PM, Morales, Margo <mlmorales@cityofpasadena.net> wrote:

Thank you for your e-mail. I am sharing with Council Member McAustin. Can you please provide your home address.

Margo Morales

District 2 Field Representative

(626) 744-4742

(626) 744-3814 fax

To Join Our Mailing list go to www.cityofpasadena.net/district2

From: Josh Liddy [mailto:claritysix@gmail.com]
Sent: Tuesday, November 26, 2013 1:53 PM
To: district1; Morales, Margo; Cruz, Christian (Field Rep); West, Jana; Sullivan, Noreen; De La Cuba, Vannia; Madison, Steve; Tornek, Terry
Subject: Pasadena, Pit Bulls, Steve Madison

In October of this year the Pasadena Weekly published dual articles, a week apart, which took aim at Pit Bulls. One began by talking about a mandatory spay and neuter law for all dogs, which then quickly led the author (Andre Coleman) down a path of repeatedly vilifying Pit Bulls. The other, written by John Grula, was far more egregious and erroneous than the first, which was also egregious and erroneous enough.

They both had a central character, Pasadena City Councilman Steve Madison, who routinely drives this type of a conversation into the proverbial ditch. Mr. Madison began publicly announcing his desire to ban Pit Bulls from the city a little over a year ago. Although state law prohibits this, he repeatedly put out statements noting his desire to accomplish this idea. This quickly shifted to a breed-specific mandatory spay and neuter plan once he realized that that was legally his only option. Citizens of the community, myself included, went in November

of 2012 and gave public comments to the City Council in an effort to confront Madison's witch hunt mentality and give proper perspective to this multifaceted issue. The rest of the Council tended to agree with common sense, and tabled Madison's proposal altogether. It was stated that they would reconvene at a later time to discuss a breed-neutral law, whatever it would be, that didn't target specific breeds or types of dogs.

Fast forward a year and I'm coincidentally made aware of these discriminatory write-ups while out on a massive pack walk at the Rose Bowl (also in Pasadena) that took place on National Pit Bull Awareness Day. This walk included well over 100 dogs and their owners and came off without a hitch. Imagine that.

Mr. Coleman's article quickly went off the rails and into a pseudo-profiling regurgitation of cherry-picked information taken from Pit Bull hate group DogsBite.org. Within this article he actually quotes Councilman Madison, who is still out on his banning crusade, by quoting him quoting DogsBite.org. Nice. Madison then references Riverside County's new unconstitutional law, while also exploiting the death of a Colton boy and the serious injuries of a Corona boy. He quickly attributes both incidents to "Pit Bulls" and then fearmongers the readers by stating that it's "only a matter of time" until a Pasadena citizen is killed. Madison wraps up his discriminatory rubbish with another call to "change state law" and "immediately ban Pit Bulls from Pasadena."

What Councilman Steve Madison repeatedly fails to ever mention though is the quite relevant circumstances behind almost every fatality ever attributed to any type of dog. Roughly there are about 30 of these horrible incidents a year in the United States. The 2 instances that were referenced above by Madison non-suprisingly fit the 2 most common scenarios that are almost always behind any human fatality (or serious attack) involving a dog. These are preventable circumstances being undoubtedly created by reckless individual owners, but pushers of breed-specific legislation never want to look at the real issues.

In the case of the Colton boy, this was a 2-year-old who somehow crawled out of a screenless window and ended up in a backyard where 7 resident dogs (media claimed that 4 of them were Pit Bulls) were chained and fenced. These were not family pets. There was no adult supervision whatsoever. With the Corona boy, he was out riding his bicycle when he was attacked by 2 roaming at large "Australian Shepherd-Pit Bull mixes" who had escaped their owner's property. Never does Madison, or Coleman, notate the recklessness of these 2 individual owners. It's common to see this go ignored by the factions that consistently push for discriminatory laws targeting these types of dogs. So how they can get away with claiming to genuinely care about public safety is beyond me.

Coleman then describes 4 other instances of people being menaced by dogs alleged to be "Pit Bulls," and in all 4 instances the dogs in question were out roaming freely and without any leash or supervision. Incredible.

This article is wrapped up by noting the mandatory spay and neuter law in Los Angeles, yet it goes unmentioned that this law isn't even being enforced. The city of Riverside, following the actions of Riverside County, recently enacted breed-specific mandatory spaying and neutering of all dogs deemed to be Pit Bulls. Inexplicably they already have a mandatory spay and neuter law for all dogs and that law goes totally unenforced. Why would any municipality pass a breed-specific sterilization law when they have a sterilization law for all breeds already in place? On top of that, they also have a "dangerous dog" law that is meant to deal with dogs of all breeds who have individually shown a propensity for causing incidents. Pasadena has this same law!

John Grula's article from October 16th was far worse, if that was possible.

Mr. Grula starts his piece by detailing an attack and then comes right out with an admittal that the attacking "Pit Bull" was completely loose and unsupervised. He details how the Pit Bull bit his friend "several times," impressing upon the reader that the dog was at some point attacking a person. What he was really describing was a loose dog that was attacking another dog. His friend, trying to stop the fight between the dogs with his