



EUROPEAN COLLEGE OF  
Veterinary Behavioural Medicine  
Companion Animals



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# **10th European Congress on Companion Animal Behavioural Medicine**

**Cremona, Italy**

22–23 October 2004

**EDITED BY**

Sarah Heath

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This collection of papers were first presented at the 10th European Congress on Companion Animal Behavioural Medicine which incorporated the First meeting of the European College of Veterinary Behavioural Medicine – Companion Animals, the ESVCE Roundtable on Canine Aggression and the Tenth annual meeting of the European Society of Veterinary Clinical Ethology. The meetings were held in Cremona, Italy from 22 to 23 October 2004 and were hosted by ESVCE and ECVBM-CA in conjunction with SISCA and SCIVAC.

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# Preface

It is a great pleasure to welcome you to the 10th European Congress on Companion Animal Behavioural Medicine, which is being held in Cremona, Italy.

This year's event incorporates the 10th annual meeting of the European Society of Veterinary Clinical Ethology (ESVCE) and the 1st annual meeting of the European College of Veterinary Behavioural Medicine – Companion Animals (ECVBM-CA).

The College meeting, entitled *Current Research in Veterinary Behavioural Medicine – the importance of accurate diagnosis and appropriate therapy*, will be held on the morning of the first day and this will be followed in the afternoon by a roundtable discussion on Canine aggression, organised by ESVCE in association with SISCA (Societa Italiana di Scienze Comportamentali Applicate). The theme of the ESVCE meeting on the second day is *Understanding Emotional Disorders in Companion Animals* and the morning session will consist of invited presentations with speakers from France, England, Belgium and Italy.

The topics of these meetings are very important ones within the field of veterinary behavioural medicine and we are looking forward to a combination of high quality presentations and enthusiastic debate.

The organisation of an annual congress is a daunting task and when three events are being held together it becomes even more of a challenge! ESVCE and ECVBM-CA would like to thank SISCA for all of their assistance in organising this meeting and to give a special mention to Cris Osella and Elena Piccioni for their hard work. We would also like to thank everyone who submitted papers for the different meetings and the members of the scientific review panels who took the time to read the various abstracts and select those that are included in the programmes.

Finally we are very grateful to our sponsors for their support of this event and we encourage you to visit their stands in the commercial exhibition.

On behalf of the boards of ESVCE and ECVBM-CA I sincerely hope that you enjoy this congress and would like to thank you for your support.

**Sarah Heath**

ESVCE President

ECVBM-CA President

# Part 1

## First annual meeting of the European College of Veterinary Behavioural Medicine – Companion Animals Current research in veterinary behavioural medicine: The importance of accurate diagnosis and appropriate therapy

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# The use of clomipramine hydrochloride for the treatment of feline psychogenic alopecia

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Psychogenic alopecia describes a self-inflicted, localized depilation as a result of excessive grooming (licking, chewing or hair pulling). Affected areas commonly include the flanks, the abdomen, medial thighs, or thorax. Grooming, a typical displacement activity in cats, is carried out for extended periods of time or with increased intensity. Psychogenic alopecia is seen in cats of both genders and all ages. Although some breeds seem to be predisposed for some compulsive disorders, such as wool chewing, it appears that no breed is more commonly affected by psychogenic alopecia than others.

A prospective, double-blind, placebo-controlled, randomized, uni-centric trial included 23 cats of any breed, sex or age referred to us, with the history and clinical signs of self inflicted, non-inflammatory alopecia. The objective of the trial was to evaluate the efficacy of clomipramine hydrochloride (0.5 mg/kg SID po) for the treatment of feline psychogenic alopecia. Before enrollment and throughout the trial, all cats underwent detailed behavioral, medical, dermatological and cardiological assessment, including a physical exam, complete blood count, serum biochemistry, urinalysis, fecal exam, auscultation and ECG, skin scraping, trichogram, skin biopsy, fungal culture, as well as VARL testing and food trial if indicated by the results of the biopsy. The study was subdivided into a baseline period (week -1) following the initial assessment, a treatment period of 56 days (rechecks at day 0, 28, and 56), as well as a follow-up period (D57 – D84).

Preliminary results (19/23) show that owners of cats that received clomipramine perceived the behavior subjectively as much improved. All but one owner of cats that received placebo noted that they saw no difference in the cat's behavior. However, clomipramine failed to reduce the frequency of self-grooming, as observed by the owners of cats with psychogenic alopecia, when compared to cats that received a placebo. The hair length in the affected areas became closer

to the normal hair length until day 84. The affected area became smaller until day 56 then it increased in size at day 84. This effect was seen in both the placebo and the control group. During the study one cat (neutered male) that received clomipramine had to be hospitalized due to crystaluria (struvite) and urinary retention. Aside from this case, we did not see any adverse effects during the study period regarding the cat's overall health or cardiological problems. Side effects reported by the owners of cats that received clomipramine included lethargy, reduced appetite, and reluctance to interact.

# Analysis of Plasma Monoamine concentrations in anxious dogs treated with Clomipramine HCl

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## Introduction

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There is abundant evidence for abnormalities of the norepinephrine (NE) and serotonin (5HT) neurotransmitter systems in depression and anxiety disorders, even if their dysfunction is likely to be due to their role in modulating, and being modulated by, other neurobiological systems, that together mediate the symptoms of affective illness, like the dopaminergic system (Oliver and Miczek, 1998; Reisner et al., 1996; Siegel et al., 1995).

This study has been designed to evaluate plasma monoamine concentrations in dogs affected by anxiety related disorders throughout the administration of clomipramine HCl. The goal was to define peripheral markers connected to underlying physiological mechanisms in order to better understand how the brain mediates behaviours and to target pharmacological treatment in anxiety. In reality some behavioural overlaps exist in the effects of norepinephrine, serotonin and dopamine, and it is thought that emotional disorders may reflect interactions between these neurotransmitters, which may be detected in the blood. The project was an open field study.

## Materials and methods

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Ten dogs with a diagnosis of anxiety related disorders were enrolled in the study. They included males and spayed females ranging in age from 2 to 5 years old. In the first consultation ( $T_0$ ) the clients were given instructions about behavioural

therapy and drug therapy with clomipramine HCl (Clomicalm®, 2 mg/kg PO q12h).

A standard method for the clinical and behavioural examination of the animals was used; the blood samples were collected in order to perform a haematological profile and measure plasma level dosages during the consultations  $T_0$ ,  $T_1$  (4th week of treatment) and  $T_2$  (12th week of treatment). Epinephrine, norepinephrine and dopamine serum levels were measured using a RIA kit (Tricat, HBL Hamburg) and serotonin serum levels were measured using an ELISA kit (Serotonin ELISA HBL Hamburg).

Data were statistically processed using a Student *t*-Test.

## Results

Results are expressed as mean value (ng/ml) (SEM (n = 8); they are summarized in the following table:

	$T_0$	$T_1$	$T_2$	
<b>Epinephrine</b>	0.12 ± 0.016	0.15 ± 0.023	0.13 ± 0.026	$T_1$ vs $T_2$ P = 0.04
<b>Norepinephrine</b>	0.46 ± 0.13	0.36 ± 0.10	0.42 ± 0.13	
<b>Dopamine</b>	0.12 ± 0.035	0.22 ± 0.016	0.18 ± 0.050	$T_0$ vs $T_1$ P = 0.04
<b>Serotonine</b>	762.65 ± 152.33	338.37 ± 99.41	390 ± 79	$T_0$ vs $T_1$ P = 0.04

Four weeks ( $T_1$ ) of clomipramine HCl treatment induced a significant (P = 0.04) increase in dopamine serum levels and a significant (P = 0.04) decrease in serotonin serum levels ( $T_0$  vs  $T_1$ ); epinephrine serum levels showed a non significant increase at  $T_1$  but a significant decrease between  $T_1$  and  $T_2$ . Norepinephrine concentrations did not change with respect to  $T_0$  values.

## Discussion and conclusions

In veterinary medicine discordant results have been obtained on plasma monoamine levels and their metabolites, and no databases are available (Brozoski et al., 1979; Freed and Yamamoto, 1985).

Results of the present study suggest that treatment with antidepressants is accompanied by a modification of the peripheral levels of catecholamines and serotonin. Despite the fact that this study was limited by the small sample size, and therefore did not allow a complete valuation of the different underlying neurophysiological mechanisms, it can still be seen as a useful first step and it indicates the need for further research on the topic, focusing on the correlations between behaviour and peripheral neurochemical markers. Clinical implications of this research relate to the pharmacological approach to the treatment of canine behavioural disorders.

## References

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- Brozoski T. J., Brown R. M., Rosvold H. E., Goldman P. S. (1979) Cognitive deficit caused by regional depletion of dopamine in prefrontal cortex of rhesus monkey. *Science* **205**, 929–932.
- Freed C. R., Yamamoto B. K. (1985) Regional brain dopamine metabolism: A marker for the speed, direction, and posture of moving animals. *Science* **229**, 62–65.
- Oliver B., Miczek K. A. (1998) Fear and anxiety: mechanisms, models and molecules. In: *Psychopharmacology of Animal Behavior Disorders*. Dodman N.H., Shuster L., Blackwell Science, Malden, USA, 105–122.
- Reisner I. R., Mann J. J., Stanley M., Huang Y., Houpt K. A. (1996) Comparison of cerebrospinal fluid monoamine metabolite levels in dominant-aggressive and non aggressive dogs. *Brain Research*, **714**, 57–64.
- Siegel A., Schubert K., Shaikh M. B. (1995) Neurochemical mechanism underlying amygdaloid modulation of aggressive behaviour in the cat. *Aggressive Behavior*, **21**, 49–72.

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**Keywords:** Anxiety, Clomipramine HCl, Dogs, Monoamines, Plasma Concentrations

# Development of a questionnaire on anxiety related disorders in dogs

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## Introduction

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Anxiety-related disorders, including separation anxiety, are one of the most common categories of behavioural problems in domestic dogs (Overall *et al.*, 2001) and unfortunately, signs associated with these disorders are non-specific, making a diagnosis difficult.

There is evidence that dogs exhibiting separation problems are often strongly bonded to the owner (McBride *et al.* 1995) and furthermore the owners' attitude towards their dogs seems to affect the occurrence of separation problems (Voith *et al.*, 1992; O'Farrell, 1995; Jagoe & Serpell, 1996). Separation related problems are also reported to be associated with owners having relationships with their dogs which are characterised by emotional involvement (O'Farrell, 1986).

The aim of this study was to develop a questionnaire, which would enable clinicians to identify the presence of anxiety related disorders in dogs.

## Materials and Methods

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The subjects were 31 adult dogs (18 males and 13 females), of either pure or mixed breeds. Fifteen dogs had been diagnosed with an anxiety-related disorder (anxious dogs) and the remaining dogs (controls) were recruited both by personal contact and from advertisements.

The questionnaire, which requested information about anxiety-related behaviours, was based on available literature on this topic (American Psychiatric



Association, 1994; Overall, 1997; Pageat, 1998; Lund & Jorgensen, 1999; Simpson, 2000; Overall *et al.*, 2001; Casey, 2002; Neilson, 2002, Overall, 2002).

It consisted of five sections and each section consisted of a list of behaviours.

In the first section the owners were presented with a list of behaviours associated with generalized anxiety and asked to indicate which behaviours their dogs exhibited, as well as the frequency of their expression.

In the second section the owners were asked to indicate which behaviours associated with separation anxiety their dogs exhibited and their frequency.

In the third and fourth section owners were asked to indicate whether their dogs reacted to situations such as meeting adults, children or other dogs, or to stimuli including thunderstorms, fireworks and other noises. If the owners responded positively to these questions they were then asked to indicate whether their dog displayed behaviours associated with phobia and panic attack and if so, record the nature and frequency of those reactions.

In the final section the owners had to indicate whether their dogs showed OCD behaviours such as tail chasing, circling or pica and if so at what frequency.

The owners' answers to the questionnaire were scored and analysed using multivariate statistical analysis (classification analysis by KNN, Principal Component Analysis and Cluster Analysis), to reveal the relationship between the considered variables and the distribution of the subjects according to those variables.

## Results and discussion

The results indicated that the questionnaire was able to discriminate between anxious and control dogs.

A first classification analysis with KNN on considered variables allowed us to clearly identify the two groups of dogs with the exception of one subject. This dog belonged to the control group but, from the results of the questionnaire, it was clear it had many anxiety related behaviours.

The two groups of dogs were also clearly identifiable with PCA analysis. On the first component there was a clear distinction between control and anxious dogs, with the exception of one subject. However, while control dogs clustered homogeneously, anxious dogs tended to separate on the second component in two groups. This allowed us to identify two separate kinds of anxiety related behaviours: one with higher variables values associated with generalized anxiety and separation anxiety behaviours, the other one with higher variables values related to phobias and panic attack behaviours.

The cluster analysis was used to see if it was possible to identify homogeneous groups related to the considered behaviours. Again, all the control dogs gather together in one cluster, whereas the anxious ones clustered in two different groups.

The dogs were able to be classified as a result of the answers to the questionnaire

and these findings suggest that this questionnaire is an appropriate tool to identify anxious dogs and to distinguish them from the control group.

## References

- American Psychiatric Association (1994) *The diagnostic and Statistical Manual of Mental Disorders IV*. American Psychiatric Association. Washington, DC.
- Casey R. (2002) Fear and stress. In: Horwitz D., Mills D., Heath S., eds. *BSAVA Manual of canine and feline behavioural medicine*. Gloucester, Great Britain: British Small Animal Veterinary Association; 144–152.
- Jagoe A. and Serpell J. (1996) Owner characteristics and interaction and the prevalence of canine behaviour problems. *Applied Animal Behavioural Science* 47: 31–42.
- Lund J. D. and Jorgensen M. C. (1999) Behaviour patterns and time course of activity in dogs with separation problems. *Applied Animal Behaviour Science* 63: 219–236.
- McBride E. A., Bradshaw J. W. S., Christians A., McPherson J. and Bailey G. P. (1995) Factors predisposing dogs to separation problems. In: Rutter S. M., Rushen J., Randle H. D., Eddison JC (eds) *Proceedings of the 29th International Congress of the International Society for Applied Ethology*, pp. 103–104.
- Neilson J. C. (2002) Fear of places or things. In: Horwitz D., Mills D., Heath S., eds. *BSAVA Manual of canine and feline behavioural medicine*. Gloucester, Great Britain: British Small Animal Veterinary Association; 173–180.
- O'Farrell V. (1986) *Manual of canine behaviour* pp. 56–59. BSAVA Publications, Gloucester, UK.
- O'Farrell V. (1995) Effects of owner personality and attitudes on dog behaviour. In: Serpell J. (ed) *The domestic dog: its evolution, behaviour, and interactions with people* pp. 154–158. Cambridge University Press, Cambridge, UK.
- Overall K. L. (1997) *Clinical Behavioural Medicine for Small Animals*. Mosby, St Louis
- Overall K. L. (2002) Noise phobias in dogs. In: Horwitz D, Mills D, Heath S, eds. *BSAVA Manual of canine and feline behavioural medicine*. Gloucester, Great Britain: British Small Animal Veterinary Association; 164–172.
- Overall K. L. Dunham A. E. and Frank D. (2001) Frequency of nonspecific clinical signs in dogs with separation anxiety, thunderstorm phobia, and noise phobia, alone or in combination. *Journal of American Veterinary Medical Association* 4: 467–473.
- Pageat P. (1998) *Pathologie du comportement du chien*. Le point Vétérinaire, maisons-Alfort, Paris.
- Simpson B. S. (2000) Canine Separation Anxiety. *Comp Cont Educ Sm Ani*: Vol 22, (4): 328–338.
- Voith V. L. Wright J. C. and Danneman P. J. (1992) Is there a relationship between canine behavior problems and spoiling activities, anthropomorphism and obedience training? *Applied Animal Behaviour Science* 34: 263–272.

**Keywords:** anxiety, behaviour, dog, questionnaire

# The relationship between owner consistency and ‘problem’ behaviours in dogs: a preliminary study

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Dogs are obviously born with the ability to display the whole range of canine social behaviours, but the context in which each behaviour is used, and the appropriate response to the signals of others is largely learnt through the socialisation and juvenile phases of development (Serpell and Jagoe 1995). As puppies develop within a canine social group, their social behavioural repertoire develops through learning the consequence of their own actions towards other individuals, and the consequences of the actions that individuals direct towards them. In this way, they learn which of their own behaviours are ‘successful’ in social encounters, and the effective responses to social behaviours from other dogs (Bradshaw and Nott 1995).

A similar process of learning occurs when puppies develop within a human social context: each dog learns to ‘read’ those human behaviours that are relevant to it, and learns which of its own behaviours are successful at achieving social interaction with humans. Dogs are obviously a complex enough species to learn different ‘social rules’ and patterns of interaction between humans and other dogs. In the context of canine interaction the signals and responses tend to be consistent within individuals, and hence a developing puppy is able to learn rapidly an appropriate manner of interacting with each individual dog within the social group. In a human environment, however, humans are often inconsistent in their responses, and this commonly creates confusion for the dog, and the development of motivational conflict. A simple but very common example is where a puppy learns that picking up a slipper is a good way of getting human social contact, because people would pay attention to the puppy and laugh at it. However, as the puppy becomes larger and perhaps picks up a more valuable shoe, the owners

will often display a very different response, and perhaps punish the dog. From the point of view of the puppy, it is showing exactly the same behaviour, but the outcome is very different. The common consequence of this chain of events is dogs that pick up shoes as they have learnt at a young age that this is successful at engaging in social contact, but then become defensive once they have a shoe in their mouth and a person approaches as this has subsequently predicted punishment.

This pilot project was developed because we see such a high number of dogs in our clinic that are showing behaviours related to this kind of motivational conflict that arises from inconsistencies in owner behaviour. The aim of the study was to examine the effectiveness of different methodologies to assess owner consistency. This was done through two broad approaches, one using owner questionnaires, and the other using the observation of owners and dogs as they carried out some simple tasks. These measures of owner consistency were then compared with the occurrence of unwanted behaviours in each dog, as determined by their owner. The sample population was 45 owners and dogs selected at random from the University of Bristol Small Animal Practice. The experimenter (P.Cullinan) visited each owner in their own home, as both owner and dog were considered to behave most 'normally' in this context. During the visit each owner was asked to complete a questionnaire and was observed whilst interacting with their dog in a series of standard tests. The questionnaire asked owners to report their responses to their dog in a series of scenarios, where some aspect of the environment varied, to see if their behaviour towards their dog varied. For example, one question asked how they reacted when their dog jumped up, and another how they reacted if their dog jumped up with muddy paws. The test involved asking the owner to give their dog four simple commands during which their type and pattern of interaction was recorded. Each owner was given a mean consistency score for both the questionnaire and the test. These scores appeared not to be measuring the same variation in owner behaviour on kappa analysis, and hence each score was used independently in further analysis. Owners also identified any 'problem' behaviours in the questionnaire – these behaviours were described and owners marked if they were present and, if so, whether they considered the behaviours to be a problem. There was a significant correlation between the number of behaviours dogs exhibited that were considered a problem by owners, and consistency score from the questionnaire ( $p < 0.05$ ); although not between the presence of these behaviours and either measure of consistency. The problem behaviours were categorised into five types, but no significant correlations were found between any of these categories and either score of consistency.

The relationship between behaviours found to be a problem by owners and the questionnaire assessment of consistency is an indication that predictability of owner behaviour is an important factor in the development of problem behaviours in dogs. In addition, this study has highlighted some interesting problems of measuring 'consistency' in owners: owners appeared not to be equally consistent

or equally inconsistent in different contexts, and further research is needed to further identify the relative importance of the different measures in terms of dog behaviour.

## References

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- Bradshaw J. W. S. and Nott H. M. R. (1995). Social and communication behaviour of companion dogs. In: *The Domestic Dog: Its Evolution, Behaviour and Interactions with People*. J. Serpell (Ed.). Cambridge University Press. Cambridge, UK.
- Serpell J. and Jagoe J. A. (1995). Early experience and the development of behaviour. In: *The Domestic Dog: Its Evolution, Behaviour and Interactions with People*. J. Serpell (Ed.). Cambridge University Press. Cambridge, UK.

# Evaluating the quality of behaviour development in puppies: Preliminary results of a new scale

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Behaviour problems have been identified as one of the primary causes of rehoming and euthanasia of young dogs in many countries. Behaviour counselling and early identification of abnormal behaviour development are considered to be essential in preventing behaviour problems, re-educating maladapted puppies and increasing the effectiveness of behavioural treatments (1, 2, 3). It is also an interesting way to induce breeders to consider improving the management of their kennels, since the early identification of behaviour problems may result in owners being in a position to contemplate seeking some compensation for puppies with compromised behavioural development.

Although many veterinary surgeons are now convinced that it is important to improve their education and develop their practical skills within the field of behaviour medicine, there is still a problem of uptake of this discipline within the profession and this appears to result from a belief that the clinical approach to behaviour cases is not compatible with the general practice environment.

Two obstacles to the integration of behaviour medicine into general practice have been identified:

- 1.** The process of behavioural history taking appears to be less precise than in other veterinary disciplines and certainly obtaining information about a behavioural disorder is not comparable to measuring the heart rate or taking a blood sample in a general practice context.
- 2.** It takes a long time to collect a behavioural history and the financial rewards on a per hour basis are simply not comparable with acceptable fees for a physical consultation and examination in general practice.

Veterinary behaviourists need to take these criticisms into account and try to find some way of improving introductory education in order to increase the

involvement of veterinary surgeons in the field.

Psychometric methods appear to offer an opportunity to build new clinical tools to enable veterinary surgeons to assess behaviour in a less time consuming and more reproducible way. The aim of this study is therefore to identify the most significant behavioural symptoms, which could easily be observed by veterinary surgeons during a routine vaccination appointment.

## Material and Methods

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This is a three stage study:

- identification of the significant parameters
- correlations between the parameters
- validation of the scale

**Identification of the parameters:** Prior to commencement of the study a panel of veterinary surgeons working in general practice were asked how much time was allocated to a routine vaccination appointment. The results suggested that the mean time for such an appointment is 15 minutes and thus the behaviour observation for this study was limited to 15 minutes.

A population of 256 puppies were observed during a vaccination appointment. To begin with the puppies were observed when they were free in the examination room (with a toy and some food provided) and then they were examined on the table and a questionnaire was administered. A follow-up of these puppies was performed by telephone one month and 6 months later and a full examination was performed during the vaccination appointment one year later, to assess their behaviour and identify any behaviour problems. Using multiple components factorial analysis the parameters with the higher contribution to the definition of the puppies with or without behaviour problems were identified.

**Correlations between parameters:** using the results of the identification of parameters, we analysed the correlations between the items to obtain a better description of the 'diagnosis groups'. Then, it was possible to propose a scale to evaluate the puppies.

**Validation of the scale:** a population of 120 puppies examined for their first vaccination have been evaluated with the scale by two veterinary surgeons. A follow-up of these puppies was performed 3 and 6 months later by telephone. The two evaluations have been compared and the correlations with the follow-up (occurrence of behaviour problems) identified.

**Results:** A standardised scale has been obtained with four groups of parameters:

- spontaneous exploration of the room during a 5 minute period (with no stimulation by owners or vet)

- reactions of the puppy during interactions with the vet (the owners are asked to stay away)
- reactions of the puppy to restraint (by the vet): the vet responds to an inappropriate reaction of the puppy during the examination by punishing the puppy and observing his reactions
- responses of the owners to three questions (one about fear reactions, one about sleeping periods and one about self-control when playing).

During the spontaneous exploration of the room, we have observed the following items with these results:

<b>Spontaneous behaviour</b>	<b>Number of puppies</b>
<b>SB1:</b> Rests as close as possible to the place where he has been left; rests for more than 2/3 of the 5 min in that location	17
<b>SB2:</b> Rests for some seconds and then hides close to his owners; very short exploration time	26
<b>SB3:</b> First, the puppy rests close to his owners and then begins to explore but returns frequently for physical contact with them	84
<b>SB4:</b> Exploration alternates with returns to the owners or the vet for physical contact	105
<b>SB5:</b> Runs everywhere, very short and repeated contacts with every encountered item (objects and people), tendency to chew strongly (destroy) on everything he finds.	24

<b>Reactions during physical examination</b>	<b>Number of puppies</b>
<b>R1:</b> Puppy immediately begins to play and cannot stop spontaneously, he growls or bites when the vet tries to restrain him for the examination. The help of the owners does not modify the behaviour. Lesions of bites or chewing can be observed on owner's hands	27
<b>R2:</b> Puppy seeks contact with the vet during the less invasive part of the examination (auscultation, palpation). In contrast, he shows a submissive posture when the vet's hand is on his neck or during more invasive examination (abdominal palpation, mucous examination)	119
<b>R3:</b> Puppy rests where he has been placed. The vet has to initiate the contact and it induces fear reactions such as trying to escape, biting, neurovegetative reactions (urination, defecation, expression of the anal sac secretion). The fear reactions disappear when the owners approach.	92
<b>R4:</b> Puppy rests where he has been placed. The vet has to initiate the contact and it induces fear reactions such as trying to escape, bites, neurovegetative reactions (urination, defecation, release of the anal sack secretion). The fear reactions do not disappear when the owners approach.	18



Reactions when restrained	Number of puppies
<b>C1:</b> The puppy tries to escape, sometime urinates and/or defecates and tries to bite (or bites). Even maintaining restraint (30 seconds maximum) the vet does not obtain submission.	31
<b>C2:</b> The puppy first tries to escape and bite and then calms down after crying and yawning. When the vet removes the restraint to return to the physical examination, the puppy relapses into trying to bite and escape.	67
<b>C3:</b> Sometimes the puppy cries softly during restraint but after some movements of the legs, he calms down and is submissive.	158

The questionnaire: is divided into three parts:

- fear reactions
- sleep
- ability to rest and control the bite

Questions related to fears	No of puppies for Yes F <sub>x</sub> Y	No of puppies for No F <sub>x</sub> N
<b>F1:</b> Is your puppy frequently afraid of any noises?	155	101
<b>F2:</b> Is your puppy afraid of any moving objects?	86	170
<b>F3:</b> Is your puppy afraid of any kind of people? (children, people with a hat etc)	61	195

Questions related to sleep	No of puppies for Yes S <sub>x</sub> Y	No of puppies for No S <sub>x</sub> N
<b>S1:</b> Do you commonly see your puppy asleep during the day?	22	234
<b>S2:</b> Is it common for you to wake up during the night because your puppy is active (making noise)?	31	225

Questions related to ability to rest and control bites	No of puppies for Yes CB <sub>x</sub> Y	No of puppies for No CB <sub>x</sub> N
<b>CB1:</b> Does your puppy bite you during play?	28	228
<b>CB2:</b> Is your puppy able to stop playing when you stop playing?	47	209
<b>CB3:</b> Do children commonly complain about your puppy playing roughly?	23	233

Using Multiple Components Factorial Analysis, 6 axes with an inertia higher than 5% were identified. Taking into account the absolute contributions of each individual and variable to the axes, it is possible to identify 6 groups of puppies, which

are described by the following associations of variables. Due to the non-exclusive relationship between the variables FxY, SxY, and CBxY we have simplified these variables in using FY versus FN, SY versus SN and CBY versus CBN.

Groups of puppies	Describing variables	Number of puppies
Group 1	SB <sub>5</sub> R <sub>1</sub> C <sub>1</sub> SY CBY	14
Group 2	SB <sub>1</sub> R <sub>4</sub> C <sub>2</sub> FY	20
Group 3	SB <sub>5</sub> /SB <sub>1</sub> R <sub>1</sub> /R <sub>4</sub> C <sub>1</sub> /C <sub>2</sub> SY CBY FY	34
Group 4	Any association comprising at least one of the following: SB <sub>3</sub> SB <sub>4</sub> R <sub>2</sub> C <sub>3</sub>	55
Group 5	SB <sub>1</sub> R <sub>3</sub> C <sub>2</sub> FY	46
Group 6	SB <sub>3</sub> /SB <sub>4</sub> R <sub>2</sub> C <sub>3</sub> FN SN CBN	87

Three and six months later, the puppies were evaluated regarding their behaviour through a standardised behaviour examination (1, 4) and the diagnosis for each of them was compared with the group from the previous examination.

Diagnosis 6 months later

Groups	Deprivation syndrome	Depression	HS-HA syndrome	Disorder of sensory homeostasis	Phobia	Normal development	Separation anxiety
G 1	0	0	13	1	0	0	0
G 2	18	1	0	1	0	0	0
G 3	2	1	1	29	0	0	1
G 4	0	0	1	2	49	1	2
G 5	0	0	0	1	5	2	38
G 6	0	0	0	0	6	79	2

The correlation between the evaluation and the occurrence of behaviour problems is highly significant ( $p = 0,007$ ). Further analysis is currently being performed to try to improve the sensitivity of the scale by modifying some of the variables.

The evaluation of a group of 120 puppies by two veterinary surgeons showed a dramatic homogeneity of the results. Only 8 dogs obtained different evaluations by the vets, all of them being group 3 and 4. The correlation between the evaluations by the two vets was highly significant ( $p < 0,001$ ).

These results prove that the evaluation is reproducible but show that improvements to the sensitivity of the scale are needed.

## Conclusion

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The development of behavioural medicine is dependent upon veterinary surgeons in general practice being able to evaluate behaviour routinely as they currently do for other physiological functions. One of the main obstacles is that the time that appears to be required to observe and analyse the behaviour is not compatible with the requirements of general practice. Thus creating scales and tests to integrate behavioural medicine into the routine examination of domestic animals, and especially pets, is highly important. This new scale, now simplified by creating colour codes for each variable, makes its use possible during the clinical examination prior to the vaccination of puppies (5).

## References

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1. LANDSBERG G., HUNTHAUSEN W., ACKERMAN L. (2003) *Handbook of behavior problems of the dog and cat*. Second edition. Saunders, Edinburgh. 1–13.
2. HUNTHAUSEN W., SEKSEL K. (2002) Preventive behavioural medicine. In HORWITZ D., MILLS D., HEATH S. 2002. *BSAVA Manual of canine and feline behavioural medicine*. BSAVA, Gloucester, 49–60.
3. PAGEAT P. (1998) *Pathologie du comportement*. 2ème édition. Editions du Point Vétérinaire, Maisons-Alfort, 267–306.  
*Patologia comportamentale del cane*. Point Veterinaire Italie, Milano 1999.  
*Patologia del comportamiento del perro*. Pulso ediciones, Barcelona 2000.
4. PAGEAT P. The European approach to behavior counselling. In LANDSBERG G., HUNTHAUSEN W., ACKERMAN L. (2003) *Handbook of behavior problems of the dog and cat*. Second edition. Saunders, Edinburgh. 455–482.
5. PAGEAT P. (2003) Comportement: le dépistage individuel des troubles chez le chiot et le chaton. *Le Nouveau Praticien Vétérinaire*. Hors-Série Néonatalogie et pédiatrie du chien et du chat. 459 (137–140).

# Dog aggression in the present social environment: Approach to the problem and operational aspects

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## Introduction

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In 1999 a 'Behavioural Clinic' was instituted in the University of Milan to support the practical activity of the Post Graduation Specialisation School in Applied Ethology and Welfare of Domestic Animals. According to behavioural medicine specialists, canine aggression is the most challenging problem they face in such clinics. This behavioural disorder is also the most frequent and it has significant consequences for the owner-animal relationship and for public safety (Burroughs *et al.*, 2002). To understand the basis of aggression and its expression in many different environments it is useful to define a rational treatment of the aggressive behaviour (Reisner, 2003).

In the last few years, dog aggression and canine bites have increased both in frequency and in gravity, illustrating a world-wide lack of appropriate legislation. In fact, only recently in Italy, the pressure of public opinion through the media, induced the legislator at several level (State, Region, Commune) to issue laws and regulations, often different from each other, which were aimed at repressing specific 'dangerous' breeds of dogs but which had neither an organic nor a scientific basis.

## Materials and Methods

242 dogs (different breeds, sex and age) which were presented for behavioural problems were then examined as part of this study and a diagnosis of aggression was made in 107 (44,2%) cases. 86 (80,4%) of these dogs had already bitten the owner and/or a relative and/or a stranger (Fatjo *et al.*, 2003). Of these 86 cases, 57 were available for follow-up (duration 12 to 24 months). Three of the dogs were euthanized after the second biting episode, three were sent away from the family (given to kennels) (Guy *et al.*, 2001). The remaining 51 animals followed a prescribed therapeutic programme without biting again.

The main aggression categories seen in the 107 dogs were: hierarchy related aggression (63 cases), territorial aggression (23 cases), fear aggression (11 cases), intraspecific aggression (8 cases), predatory aggression (2 cases) (Moyer, 1968).

The data, collected by means of a history-taking questionnaire, filled in by the client during the consultation, was used to enable the investigators to formulate a diagnosis and to suggest a specific treatment (Verga & Palestrini, 2001).

Subsequently the data was analysed by statistical processing.

In order to have a better understanding of the behavioural problem of canine aggression, the influence of individual variables (e.g. breed, size, sex, age), environmental variables (e.g. adoption time, place of origin, household composition, training, rest place, etc.) and behavioural variables (e.g. intolerance of children, attention seeking, obedience, biting, etc.) were analysed. These variables were also analysed under the different aggression categories.

## Results

The majority of aggressive dogs were non neutered males (54%); their mean age was 1–5 years (69%) and mixed breed dogs were most frequent (44%) with medium (33%) or large sizes (50%) predominating.

Every case was treated with appropriate behavioural therapy (behaviour modification) and pharmacological intervention, taking into account that drugs are not always needed and are only a support to environmental and behavioural modification. Drugs are indicated to decrease the level of anxiety and to facilitate learning.

## Discussion and conclusions

On the basis of the results of this study the essential role of the owner in the progress of therapy was confirmed (Rugbjerg *et al.*, 2003). However, the action of the owner is also crucial in terms of prevention of aggressive behaviour. In fact

owners have an important responsibility for both the dog's education and its management. As part of this study the main national and international laws on the matter of dog aggression were examined and in many cases were found to consist of breed specific legislation. Aggression is a normal behaviour trait in the dog (Overall, 2001). It is only when this normal behaviour becomes excessive or uncontrolled that the dog may become a danger (Dehasse, 2002). The behaviour that a dog will exhibit results from a complex interaction of a number of factors such as genetic inheritance, conditioning and training, environmental factors and hormonal status. Aggression cannot therefore be related only to breed, and aggressive examples of all breed types can occur (Vezzoni & Marchesini, 2000).

## References

- Burroughs J. R., Soparkar C. N. S., Patrinely J., Williams P., Holck D. (2002) *Peculiar dog bite injuries and responsible care*.
- Dehasse J. (2002) *Le Chien Agressif*. Publibook Paris.
- Fatjo J., Manteca X. (2003) Aggression towards unfamiliar people and other dogs: diagnosis and treatment. *The European Journal of Companion Animal Practice*, Vol. 13- (1).
- Guy N. C., Luescer U. A., Dohoo S. E., Spangler E., Miller J. B., Dohoo I. R., Bate L. A. (2001) Risk factor for dog bites to owners in a general veterinary caseload. *Appl. Anim. Behav., Sci*, 74, pp. 29-42.
- Guy N. C., Luescer U. A., Dohoo S. E., Spangler E., Miller J. B., Dohoo I. R., Bate L. A. (2001) A case series of biting dogs: characteristics of the dogs, their behaviour and their victims. *Appl. Anim. Behav., Sci*, 74, pp. 43-57.
- Moyer K. E. (1968) kinds of aggression and their physiological basis. 11 Communic. In *Behav. Biol.*, Vol. 2, pp. 65-87.
- Overall K. L. (2001) Dog bites to humans: demography, epidemiology, injury and risk. *JAVMA*, Vol. 218, N° 12, pp. 1923-1934.
- Reisner I. R. (2003) Differential diagnosis and management of human-directed aggression in dogs. *Vet. Clin. Of North Am.: Small Anim. Pract.*, 33, pp. 303-320.
- Rugbjerg H., Proschowsky H. F., Ersboll A. K., Lund J. D. (2003) Risk factors associated with interdog aggression and shooting phobias among purebred dogs in Denmark. *Preventive Veterinary Medicine*.
- Verga M., Palestini C. (2001) Disturbi comportamentali nel cane: il problema dell'aggressività. *Summa*, Anno 18, 7, pp. 57-63.
- Vezzoni A., Marchesini R. (2000) Circolare FVE/00/039.

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# Nesting in rabbits: Function of the nest in the development of juvenile rabbits

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The domestic rabbit has been selected from the wild species *Oryctolagus cuniculus*, the European rabbit, whose natural range is the Iberian peninsula and northern Africa. The wild rabbit is a fugitive animal, which is the prey of several predators (prey-birds, canids, mustelids, felines etc). It is the only lagomorph, which burrows and forms stable social groups of 2 to 20 individuals. These individuals share a common underground burrow, which is their main protection against predators and variations of the environment. Communal grazing is the usual feeding behaviour in such groups. Surprisingly, intrasexual aggression is very common between adults of the same group (1), making the survival of the offspring very hazardous. Pregnant does do not give birth in this common burrow but rather build a special one.

The nesting behaviour of the doe is a well-organised sequence of events under circadian and hormonal control (2, 3, 4). Around the 31st day of pregnancy, the female builds a new short nursery burrow, and prepares a nest of dried grass which is lined with fur from her ventrum. After a very short parturition (maximum 10 to 15 minutes), she gives birth to 10 or more pups. The pups are naked, their eyes and outer ears are sealed and their motor coordination is extremely poor. They are completely dependent on external sources of warmth to maintain their body temperature. Just after the last pup is born, the doe leaves the burrow, closes the entrance and returns 24hrs later, reopening the burrow (5, 6). During the first 4 weeks of the pups' lives, the doe will visit them just once a day. She just feeds them, rarely cleans the pups and never retrieves those who stray from the nest (7). The suckling time is limited to 3 to 4 minutes and the doe does not give any assistance in suckling. This extreme pattern of maternal behaviour seems to be an adaptation to the survival of a prey species whose offspring are so vulnerable. During suckling, the nursery burrow is open and visible: the shorter it lasts,

the smaller the probability of being detected by predators. Thus, the pups are very dependent on precise information, which makes them stay in the nest and which orientates them to the nipple. Many authors have suspected and shown the evidence for a nipple-search pheromone which is able to guide the pups to the nipple, making such a short feeding time possible (8, 9). Recently, (10) this pheromone has been identified as a monomolecular pheromone 2-methylbutyl-2-enal (2M2B). In contrast evidence for a mechanism to ensure the attraction to the nest is not readily available and very little research has been done in that respect. In rabbit farms, many stockmen have observed that introducing the fur from the nest decreases the consequences of the weaning stress. Although no precise data are available, there seems to be a relationship between a higher mortality rate in the offspring of primiparous does and the lack of fur in the nest. The chemical analysis (GC/MS) of the fur found in the nest of lactating does, compared with fur obtained from non lactating does, has shown some evidence of a putative pheromone having the same chemical structure as those observed in the other species of mammals (11, 12).

The aim of this study was to determine the function of the nest in the development of the litter.

## Material and methods

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This study was divided in two stages.

The first stage was to evaluate the reactions of the rabbit pups to the nest and to identify the significant stimuli provided by the fur. 12 females and 12 litters were used in this study. The fur was analysed using Gas Chromatography/Mass Spectrum methods, and the behaviour of the females and litters, using video-taping and classical statistical methods.

The second stage involved evaluating the effects of the chemical signals identified in the nest. Trials comparing the effects of these signals were performed in a standardised stress test (rabbits in a crate, experiencing a sudden light and sound) in laboratory rabbits (36 rabbits) and in two rabbit farms (first farm: females with litter, 100 crates, 4 rooms, between 812 to 902 rabbits per room; second farm: 2 rooms, 400 rabbits). Daily Weight Gain (DWG), Food Conversion Index (FCI), cortisol blood level and diameter of the surrenal glands have been studied. In the first farm, the rate of alive weaned pups was recorded and the growth of 1500 rabbits between the two farms (726 and 785 rabbits respectively) was recorded during the fattening period.

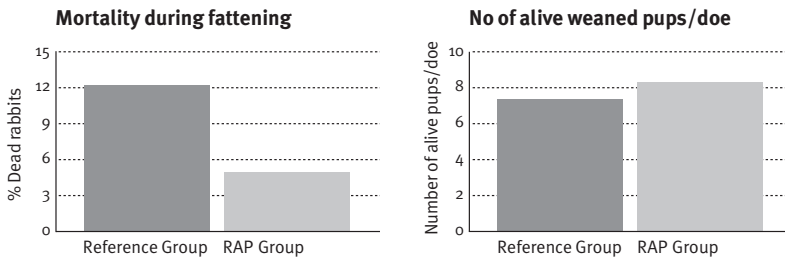


## Results

The first stage of the study confirmed the role of the nest. When the nest was moved to a new location the litter followed the nest. Replacing the fur by an artificial nest (cotton) or fur washed using organic solvents, induced chaotic movements of the litter and the pups did not remain together. GC/MS of the fur showed an association of fatty acids, esters and dimers of fatty acids known to be the main components of maternal appeasing pheromones. This pheromone has been named Rabbit Appeasing Pheromone (RAP). In the nests lined with washed fur (organic solvents) and sprayed with the structural analogue of RAP, pups were observed to be react in the same way as they did when exposed to natural fur. The pups remained close together and stayed quiet and there was a consequently low mortality.

During standardised stress tests, the treated group showed a significantly lower cortisol rate and surrenal diameter ( $p = 0,03$  and  $p = 0,012$ ), a higher DWG and a better FCI ( $p < 0,05$ ).

In farms, the rate of weaned rabbits was significantly higher in the room treated with the appeasine and the technical results confirmed the results of the laboratory test.



## Conclusion

The nest of the rabbit appears to be highly important in the development of the litter. It can be considered as a releasing system for RAP. According to ecological and evolutionary considerations, the maternal behaviour of the female rabbit is highly adapted to protect the litter against predators. By only lactating once a day the female decreases the probability of scent aiding predators to find the nest and when the offspring are appeased by the pheromones released by the fur they do not produce any noise and are therefore poorly detectable. The use of structural analogues of this appeasine could be extremely useful in the management of fear reactions in a species, which is known to be highly sensitive to stress.

## References

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1. COWAN D. P., BELL D. J. (1986) Leporid social behaviour and social organization. *Mammal Rev.*, **16**, 169–179.
2. JILGE B. (1993) The ontogeny of the circadian rhythms in the rabbit. *J. Biol. Rhythms*, **8**, 247–260.
3. GONZALEZ-MARISCAL G., DIAZ-SANCHEZ V., MELO A. I., BEYER C. & ROSENBLATT J. S. (1994a) Maternal behaviour in New-Zealand white rabbit: quantification of somatic events, motor patterns and steroid levels. *Physiol. Behav.*, (1081–1089).
4. HUDSON R., MÜLLER A. & KENNEDY J. (1995) Parturition in the rabbit is compromised by daytime nursing: role of oxytocin. *Biol. Reprod.*, **53**, 519–524.
5. DEUTSCH J. A. (1957) Nest building and behaviour of domestic rabbits under semi-natural conditions. *Br. J. Anim. Behav.*, **5**, 53–54.
6. HUDSON R., BILKO A. & ALBÄCKER V. (1996) Nursing, weaning and the development of independent feeding in the rabbit. *Z. Säugetierkunde*, **61**, 39–48.
7. HUDSON R., DISTEL H. (1982) The pattern of behaviour of rabbit pups in the nest. *Behaviour*, **79**, 255–271.
8. HUDSON R., DISTEL H. (1984) Nipple location by newborn rabbits: behavioural evidence for pheromonal guidance. *Behaviour*, **85**, 260–275.
9. GONZALEZ-MARISCAL G., CHIRINO R. & HUDSON R. (1994) Prolactin stimulates emission of nipple pheromone in ovariectomized New-Zealand white rabbit. *Biol. Reprod.*, **50**, 373–376.
10. SCHAAL B., COUREAUD G., LANGLOIS D., GINIES C., SEMON E. & PERRIER G. (2003) Chemical and behavioural characterization of the rabbit mammary pheromone. *Nature*, **424**, 68.
11. PAGEAT P. (2000) Pig appeasing pheromone to decrease stress, anxiety and aggressiveness. United States Patent 6,077,867. June 20, 2000.
12. PAGEAT P., GAULTIER E. (2003) Current research in canine and feline pheromones. *Vet Clin Small Anim*, **33**, 187–211.

**POSTER**

# Behavioural characteristics of pure-bred dogs in Italy; comparison with US and UK

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The selection of dog breeds for functionality has progressively lost its importance and behavioural attributes, which were originally selected for, are often now considered problematic in the context of the household. Large-scale genetic studies to identify inherited behavioural traits within current breeds are likely to encounter prohibitive ethical, economic and practical factors.

This study investigated behavioural characteristics of the 49 most popular breeds in Italy, by applying the same methodology used in studies conducted in the USA by Hart & Hart (1983) and in the UK by Bradshaw *et al.* (1996). The comparison of results for nominally identical breeds with their USA and UK counterparts provides further information about behaviour in effectively genetically isolated populations.

One-hundred and twelve Italian veterinarians and fifty-six dog experts (trainers, behaviour counsellors and animal charity officers) completed a questionnaire with 13 questions about behavioural characteristics of dogs, including some related to comparisons between male and female behaviour. Thirty-two breeds in this Italian study were present in both the US and UK studies, a further three breeds were surveyed in the Italian and US studies and a further seven breeds were surveyed in the Italian and UK studies. Six Italian breeds and the American Staffordshire Bull Terrier were only represented in the Italian Study.

In this study females were considered more trainable for obedience, more demanding of affection and more house trainable ( $P < 0.05$ ). Males were rated higher than females ( $P < 0.05$ ) for all other traits except playfulness and general activity, where the NS trend agreed, thus reflecting the general trends shown in previous studies.

Principal factor analysis was conducted, generating two principal factors called 'aggressivity' and 'reactivity/immaturity' that accounted for 56.7% of the total

variance (Fisher & Yates, 1963, SPSS, 1998). Nine breed groups with different behavioural characteristics (described by the two factors) were generated by K-means Cluster analysis. These groupings had similarities with the groupings presented in the USA and UK studies; e.g. of the 7 breeds rated as high in aggressivity in this study, which were also present in the other studies, 5 were rated as high aggressivity in all the three countries, 1 breed was rated as high aggressivity in Italy and the US (Miniature Schnauzer) and just 1 breed (Yorkshire terrier) was rated as high aggressivity in the Italian study and average aggressivity in the other two studies.

In the present study factor analysis generated factors that accounted for less of the total variance when compared with the studies conducted by Hart & Hart (1983) and by Bradshaw et al. (1996), where generated factors accounted for 88% of the total variance. This suggests several factors that could explain these results, e.g. differences in evaluations of dog breed behaviour both between and within groups of respondents, differences in breeding in the different countries and differences in cultural perception of dog behaviour. However, these results provide further evidence of the need for care when transposing breed behavioural advice or treatments between countries.

## References

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1. Bradshaw J. W. S., Goodwin D., Lea A. M. & Whitehead S. L. (1996) 'Behavioural characteristics of pure -bred dogs in the United Kingdom' *Veterinary Record*, 138, pp. 465–468.
2. Fisher R. A. & Yates F. (1963) *Statistical table for biological, agricultural and medical research* London, Oliver and Boyd. p.31.
3. Hart B. L. & Hart L. A. (1983) 'Selecting the best Companion animal: breed and gender specific behavioural profiles' in Anderson, R. K., Hart, B. L., & Hart, L. A. (eds) *The pet Connection: its influence on our health and quality of life. Center to Study human-Animal Relationships & Environments*, Minneapolis.
4. SPSS (1998) *SPSS BASE 8.0 Application Guide* Marketing Department SPSS inc. Chicago pp. 293–315, 317–358.



# Part 2

## ESCVE Roundtable on Canine Aggression

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**LUCIANA BERGAMASCO**, *Italy*
  
- 38 Critical review of current European legislation regarding the issue of dangerous dogs  
**RUDY DE MEESTER**, *Belgium*
  
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- 58 Presentation of the ANMVI-SISCA project for the prevention of dog bites  
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# Aggressive behaviour: Mechanisms and function in animals

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Aggression may be the expression of a complex interaction between innate and learning mechanisms, the crucial manifestation of a distressed animal or the product of a systemic disease. Despite the fact that several studies have been carried out in humans and laboratory animals, the neuroanatomical, neurochemical and molecular basis of canine aggression are, at present, not completely clarified. The role of different neurotransmitter systems in the development of aggressive behaviour has been widely investigated in humans and in laboratory animals (Lesch and Merschdorf, 2000; vanErp and Miczek, 2000; Gregg and Siegel, 2001). In humans with a history of aggression low central nervous system levels of the major serotonin metabolite 5-hydroxyindoleacetic acid and other monoamine metabolites have been reported (Brown et al., 1979; Placidi et al., 2001). Similar findings have also been assessed in laboratory animals (Hilakivi et al., 1989) and in dominant aggressive dogs (Reisner et al., 1996). The serotonin inhibitory effect on aggression seems to be mediated through interactions with several 5-HT receptor subtypes. The involvement of the 5-HT receptors has been described in cats (Shaikh et al., 1997).

Amplified sympathetic and adrenal activity has been recognized as being responsible for the 'fight-flight' response (Hoffman and Taylor, 2001). Increases in catecholamine plasma levels have been detected in the early phase and during the process of fighting (Stoddard et al., 1986).

Studies on  $\beta$ -adrenoceptors ( $\beta$ -AR) in human brain from suicide victims are reported (Arango et al., 1990). Unfortunately, at the present time the relationship between brain  $\beta$ -AR concentrations and aggression has not been investigated in the dog. The understanding of the biological basis of canine aggression may

enable the development of pharmacological treatments that would target specific brain regions and neurotransmitter systems.

## References

- Lesch K. P., Merschdorf U. (2000) Impulsivity, aggression and serotonin: a molecular psychobiological perspective. *Behav. Sci. Law* 18, 581–604.
- VanErp A. M., Miczek K. A. (2000) Aggressive behavior, increased accumbal dopamine and decrease cortical serotonin in rats. *J. Neurosci.* 20, 9320–9325.
- Gregg T. R., Siegel A. (2001) Brain structures and neurotransmitters regulating aggression in cats: implications for human aggression. *Prog. Neuropsychopharmacol. Biol. Psychiatry* 25, 91–140.
- Brown G. L., Goodwin F. K., Ballenger J. C., Goyer P. F., Majer L. F. (1979) Aggression in human correlates with cerebrospinal fluid amine metabolites. *Psychiatry Res.* 1, 131–139.
- Placidi G. P., Oquendo M. A., Malone K. M., Huang Y. Y., Ellis S. P., Mann J. J. (2001) Aggressivity, suicide attempts, and depression: relationship to cerebrospinal fluid monoamine metabolite levels. *Biol. Psychiatry* 50, 783–791.
- Hilakivi L. A., Lister R. G., Durcan M. J., Ota M., Eskay R. L., Mefford I., Linnoila M. (1989) Behavioral, hormonal and neurochemical characteristics of aggressive alpha-mice. *Brain Res.* 502, 158–166.
- Reisner I. R., Mann J. J., Stanley M., Huang Y. Y., Houpt K. A. (1996) Comparison of cerebrospinal fluid monoamine metabolite levels in dominant-aggressive and non-aggressive dogs. *Brain Res.* 714, 57–64.
- Shaikh M. B., Lanerolle N. C., Siegel A. (1997) Serotonin 5-HT<sub>1A</sub> and 5-HT<sub>2/1C</sub> receptors in the midbrain peraqueductal gray differentially modulate defensive rage behavior elicited from the medial hypothalamus of the cat. *Brain Res.* 765, 198–207.
- Hoffman B. B., Taylor P. (2001) Neurotransmission: the autonomic and somatic motor nervous systems. In: Hardman, J.G., Limbird, L. E. (Eds.), Goodman & Gilman's – *The pharmacological basis of therapeutics*. McGraw-Hill, New York, pp. 115–154.
- Stoddard S. L., Bergdall V. K., Townsend D. W., Levin B. E. (1986) Plasma catecholamines associated with hypothalamically-elicited defense behavior. *Physiol. Behav.* 37, 709–715.
- Arango V., Ernsberger P., Marzuk P. M., Chen J. S., Tierney H., Stanley M., Reis D. J., Mann J. J. (1990) Autoradiographic demonstration of increased serotonin 5-HT<sub>2</sub> and  $\beta$ -adrenergic receptor binding sites in the brain of suicide victims. *Arch. Gen. Psychiatry* 47, 1038–1047.



# Critical review of current European legislation regarding the issue of dangerous dogs

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## Introduction

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Dog aggression legislation is rarely considered to be effective, well balanced or adequate (1). Behind the scenes, most professionals have a lot of criticism to level at it, but seldom are constructive propositions made. This text is meant to give a critical overview of the current European legislation as well as offer some suggestions. Comparing European legislation, however, is not an easy task. For example, in some countries dog aggression is purely a national issue (e.g. Belgium, Netherlands), whereas in other countries it is also a regional one (e.g. Germany, Austria), leading to the existence of different forms of legislation in one country. To make it even harder, in most of the countries there are cities that have local legislation on dog aggression. This text will just concentrate on what exists at a national or regional level in Europe. Not only do a lot of countries have specific aggressive dog legislation, but most of them also have a penal or civil code that deals with the consequences of dog bites (e.g. United Kingdom, France). These specific pieces of legislation will not be covered by this article.

## The European Union

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Since 2000 some countries (e.g. Germany, Italy) have tried to find support for their breed specific legislation from the European Commission. To date the European Commissioners have always stated that this was not a European matter (2-8). On the other hand, every country has the right to develop specific national legislation as long as free trade is guaranteed. However Art. 30 of the Treaty of the European Communion allows for an exception on this limitation if the safety or

health of the public is in danger.

The European Convention for the Protection of Pet Animals creates, in article 5, an opportunity for a more European approach, since this article states that countries will aim to forbid breeding with animals when they are carrying a genetic characteristic that affects the welfare of the offspring (9) and countries can put behavioural traits onto the list of genetic characteristics.

## The member states

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### Breed specific legislation

Breed specific legislation exists in Austria, Denmark, Germany, France, Ireland, Italy, Malta, the Netherlands, Spain, the United Kingdom and Switzerland. The compulsory euthanasia of the animals is seldom imposed (Malta). More frequent measures are: a trade ban, an import ban, compulsory licensing, identification, registration, and sterilisation, the obligation to keep dogs permanently on leash or muzzled, behavioural testing, a ban on training or breeding for aggression. Owners must be adults, have a clear criminal record, be properly insured, have a license or be obliged to follow a course.

Criticisms can be levelled regarding the choice of the breeds, the measures imposed, the applicability of these measures and the legal situation of the owners and the dogs. A lot of side effects are encountered as a result of this kind of legislation, most of them unwanted.

### Non breed specific legislation

Some countries (see table) only legislate against aggressive dogs, while others have legislation that is directed to all dogs. Some of the laws relate primarily to the owners, e.g. a clear record, being of age and holding compulsory insurance, while other relate to the dogs themselves. Mandatory leashing or muzzling can be specific for dogs that are defined aggressive or for all dogs, along the same lines as the obligation to be identified and registered. In some countries there is a ban on breeding with aggressive dogs, while in others training in order to enhance aggressive behaviour is prohibited.

In some countries a complaint can be filed against a dog, while in others it is filed against his owner. An assessment by a specialist is also requested. Measures against dogs that have proven to be aggressive, are found in the legislation of Denmark, France, Ireland, Latvia, Norway, the United Kingdom, Spain, Sweden and Switzerland. Denmark, Germany, France, Ireland, Italy, Spain and the United Kingdom have breed specific, as well as non breed specific legislation, as do regions in Austria and Switzerland.

There is a lot of criticism in relation to non-breed specific legislation. Most of the time the necessary conditions to apply this kind of legislation are not fulfilled.

Amongst these necessary conditions are: validated behavioural tests, experienced test persons, a good definition of an aggressive or dangerous dog, good identification and registration of the dogs and last but not least a good parent-hood registration. Specific criticisms are made in relation to permanent muzzling and keeping dogs on leash, since some scientists think these two measures make the dogs even more dangerous or at least pose a threat to the dog's welfare when not applied correctly (10–11).

According to most authors, it is essential to have clear definitions of what is an aggressive or a dangerous dog and in addition agreement has to be reached on such issues as what are the necessary conditions and the exceptions, what protocols have to be applied, who is going to do the evaluation of the risk, when which measure will be imposed. Without fulfilling these conditions, legislation that provides security to society but also protects the responsible dog owner and his animal is impossible.

## **How successful is legislation against dog aggression?**

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To know if legislation against dog aggression has been successful, one needs good statistics over long periods both before and after the introduction of the legislation (12–13). Even then the side effects, such as public sensitisation and awareness, are difficult to separate from the effect of the specific action that has been taken. To date, there are no published data that prove the efficacy of one type of legislation over another or vice versa. This leads to the conclusion that there is no scientific or socially acceptable basis to install breed specific legislation. However, in spite of the fact that non-breed specific legislation seems to be more defensible from an ethical point of view, the necessary conditions to implement this kind of legislations are not yet in existence

It is therefore the opinion of the author that the direct effects of classical dog aggression legislation on the reduction of the number and severity of incidents will be very limited. The problem is that the existing dog aggression legislation is almost always purely repressive and is rarely preventative. Until the opposite is proven by good statistics, the author expects that the best results will most probably be obtained by a combination of a limited, non breed specific legislation, which concentrates on the responsibility of the owner and on good prevention techniques. This legislation would need to be advertised to the public in a repetitive way, thereby increasing public concern and promoting requests for information.

Correct and easily obtainable information, directed to owners, victims, breeders, trainers and others must be provided (12–17) since such information will lead to a constant improvement of the contacts between people and dogs. In terms of efficacy, it is essential to focus on the information directed towards children. Not

only are they the most vulnerable group, and the accidents in this group the most devastating, but they will also be the adults of tomorrow and an investment in their behaviour will result in an improvement over time. Educationalists have also proven that the best way to educate parents is by influencing their children (18). During the past decennium, many of our most valued colleagues have invested a lot of energy in trying to direct and influence decision making regarding dog aggression legislation. Unfortunately they were seldom listened to and even more seldom were their efforts successful. Frustration was often their reward since there is a huge difference between the logical thought processes of a scientist and those of a politician under pressure. However, it is important that veterinary practitioners keep pushing the political world and there is a real need to formulate a common approach to dog aggression and to its prevention. Such an approach then needs to be communicated successfully to as many politicians and pressure groups as possible and the starting point is a combination of effort and the collection of as much relevant information as possible.

If the veterinary profession really wants to play an important social role in the reduction of dog bites, it is essential to focus more on prevention and to work closely with other professions (e.g. educationalists and health professionals) to define just how this vital message can be best conveyed. A lot of good people are motivated, waiting for the veterinarians and especially for those working in behavioural medicine to start a campaign. Let's not waste time fighting with government bureaucracy and inertia. Let's not get frustrated because we count on them to provide us with the necessary means (especially the financial ones). Instead let us cross the national borders, since problems are the same in every country and let us unite and share information. Let us take decisive steps as a veterinary profession and hopefully frustration can be replaced by satisfaction.

## References

1. Butcher R., De Meester R. and Radford M., 'Dangerous dogs – are we getting it right? in: *The European Journal of Companion Animal Practice*, vol. 12 (1), April 2002, pp. 41–48.
2. (1999/C370/103) Written question E-0623/99 from Josep Pons Grau (PSE) and María Sornosa Martínez (PSE) to the Commission.
3. (2000/ C 46 E/97) Written question E-0968/00 from Stefano Zappalà (PPE-DE), Antonio Tajani (PPE-DE), Francesco Fiori (PPE-DE), Giuseppe Gargani (PPE-DE), Enrico Ferri (PPE-DE), Giorgio Lisi (PPE-DE), Mario Mauro (PPE-DE), Amalia Sartori (PPE-DE), Raffaele Costa (PPE-DE).
4. Raffaele Fitto (PPE-DE), Mario Mantovani (PPE-DE), Francesco Musotto (PPE-DE) and Jas Gawronski (PPE-DE) to the Commission.
5. (2001/C 81 E/241) Written question E-2339/00 from Stephen Hughes (PSE) to the Commission.
6. (2001/C 136 E/142) Written question E-2887/00 from Theresa Villiers (PPE-DE) to the Commission.

7. (2001/C 136 E/150) Written question E-2918/00 from Richard Corbett (PSE) to the Commission.
8. (2001/C 103 E/274) Written question P-2971/00 from Charles Tannock (PPE-DE) to the Commission.
9. European Convention for the Protection of Pet Animals. Council of Europe. Strasbourg 13.11.1987.
10. Schilder M., Report for the Dutch Government (1999) (personal communication).
11. Stur. I., Folgen bei ständigem Leinen- und Maulkorbzwang (2002).  
<http://www.hundezeitung.de/hundekunde/leinenzwang.html>  
Plattform Preventie Hondenbeten. Sociale honden bijten niet. Den Haag 1999.
12. AVMA., A Community Approach to Dog Bite Prevention. *JAVMA*, Vol 218, No. 11, June 1, 2001.
13. De Meester R., Aggressive dogs, a social problem in Belgium. Vets have something to contribute to the discussion. *Proceedings of the second world meeting on ethology*. Lyon 1999.
14. Bernardo L. M., Gardner M. J., O'Connor J., Amon N., Dog bites in children treated in a pediatric emergency department. *J.Soc. Pediatr. Nurs.* 2000 Apr.-Jun; 5(2): 87-95.
15. Chevallier B., Dog Bites in Children. *Arch Pediatr.* 1999 Dec;6(12):1325-30.
16. De Meester R., The experience of Belgian vets dealing with Government, lawyers and medical doctors regarding to dog aggression *Proceedings of the 2001 CABTSG annual study day: aggression: dispelling the myths*, Birmingham April 4, 2001 pg.13
17. Endenburg N., Study day on the relation between children and animals. *Ethologia*. Brussels 2000. Personal communication.

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# ESVCE–Dog bite prevention project

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## **Dog bites: how big a problem?**

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Dogs are integrated members of many European families. Estimates of dog bite incidence range from 9–18/1000 victims per year in the general population (Overall and Love 2001) and 22/1000 in children (Horisberger 2002, Kahn et al 2004). The aesthetic and psychological consequences of dog bites may negatively influence the quality of life of children and their families (Overall and Love 2001, Sacks et al 2000, Peters et al 2004). The repercussions of aggressive behaviour and dog bites on the veterinary profession may not be ignored either. Dog bites may result in euthanasia or relinquishment of pets to a shelter and therefore have direct and indirect adverse economic effects on the veterinary profession. These effects include direct loss of practice income, caused by loss of patients, and an indirect loss due to the possibility that fewer people will consider owning dogs because of negative publicity (Overall and Love, 2001). According to these data, the ‘prevention of dog bites’ can be seen as an important issue to our profession and to the behavioural field.

## **Prevention of dog bites: can we learn from human health prevention programs**

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Before developing a European dog bite prevention programme, it seemed useful to have a look at the experience in human medicine on the development of theory, models, research strategies and prevention programmes. In 1974, a prevention scientist (Bonfenbrenner, 1974) wrote:

“Only sustained interventions have sustained effects. Sustainability is enhanced by focusing upon underlying causes and contexts of behaviour and embedding or integrating prevention and promotion initiatives into ongoing systems, institutions and organisations so that they become a natural part of people’s everyday lives.”

A guide for prevention programme design, implementation and evaluation was published by L. Bond et al. (2004) in a recent edition of the *Journal of Primary Prevention*. The author identified 10 distinct but interdependent characteristics of effective primary prevention and promotion programmes that should frame future prevention programme development.

## Can we make these 10 points relevant to a dog bite prevention programme?

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**1. Structure, content and implementation.** The first goal is to further scientific research on risk factors (human, animal, environmental) related to dog bite accidents, as well as research on the content, structure and implementation of existing dog bite prevention programmes.

**2. European agreement on goals.** A definition of the European dog bite prevention programme should be agreed on by all participants. What do we want to achieve? Do we aim to spread information, education and enhance awareness on ‘how to prevent dog bites’ in all sectors involved? – the general public, the dog owners and professionals related to human and animal fields?

**3. Multi-factor, multi-system and multi-level approach.** Preventing dog bites in society might include crucial questions on prevention strategies like ‘how’ to reach target groups, ‘who’ should do it and what are the tools?

**4. Dosage and follow-up.** It is necessary to decide on the appropriate dosage of dog bite prevention interventions and to arrange for repeat follow-up boosters. In the USA the American Veterinary Medical Association organises an annual pet week together with a dog bite prevention week. Should we elect for these kind of continuous programmes or use more intermittent but effective interventions?

**5. Consideration of strengths – competence – wellness.** In human health, the most effective programmes not only diminish risk and adversity, but also build strengths, competence and protective factors (L. Bond, 2004). Translated to dog bite prevention, a similar goal has been described by Love and Overall (2001). The initiation of such a programme has been started in Germany. An interdisciplinary approach, and coordinated project development between human and animal health care professionals, would be beneficial for the further growth of this idea.

**6. Sensitivity to target population.** The optimal content and the optimal structure of dog bite prevention projects to reduce dog bites within the family, will depend upon the age and the maturity of the individuals. Most prevention plans have been created for school children and adults, while very few programmes address small children and their parents. When aiming for flexible programmes, able to

address different people and systems at different stages in life, it will be necessary to involve the cooperation of human health care professionals.

**7. Evaluation and monitoring.** To cite Riger (2001) “rather than starting with the programme and asking if it has achieved its goals, we should start with the people affected by the programme to see what the programme looks like from their point of view”. When developing dog bite prevention programmes, we have a vested interest to evaluate and monitor and see if the programme is functioning in the way that was intended.

**8. Transferability and translatability.** The potential impact of a programme is not only related to the ease of transferability and translatability from one setting to another but also relates to the degree to which experience can be transferred from the programme to real life. (L. Bond, 2004). Which dog bite prevention programmes are easy to start up, easy to understand, easy to learn and easy to use in different settings? How much information do we have on the link between learning situations and real life?

**9. Diverse resource needs.** Multidisciplinary consultation, exchange and collaboration between the different European countries on the experience of prevention projects will strengthen a common project and the chances for success.

**10. Socio-political sensitivity.** Political expertise and skills are not incorporated into the formal training of the veterinary surgeon or the behavioural counsellor. For a European project, coordinated communication with governments, and the creation of European guidelines regarding dog bite prevention, might be a crucial element for a programme’s success.

## Dog bite prevention projects in Europe

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In Europe, local dog bite prevention initiatives have been performed in different countries. For example:

In France, Switzerland and Belgium circumstances, prevalence and sequels of dog bites in children have been investigated (Horisberger 2002; Kahn et al 2003; Kahn et al 2004; Kern 1999; Peters et al 2004).

In Germany, Italy and Switzerland, educational programmes with schoolchildren have been conducted in order to educate and instruct children and families on basic safety rules in the cohabitation with dogs. (H. Jung, L. Notari, M.C. Osella, C. Pillonel, L. Hornisberger). In Germany a book and a complete course to train veterinarians to give courses for dog owners on anticipatory guidance (safe relationships between children and dogs) has been established by H. Jung, U. Falbesaner and D. Döring-Schätzl. In Switzerland, information campaigns to the public and veterinary profession have been performed by means of booklets and leaflets



(C. Pillonel and STVV). Simultaneously, a course for veterinarians to obtain a diploma on how to evaluate dangerous dog cases has been performed (Linda Hornisberger, Swiss Behavioural association STVV).

In Belgium, a project to inform veterinarians, breeders and dog owners on how to socialize a puppy in the correct way, has been initiated by the Flemish Veterinary Behavioural Organisation (VDWE -) C. Halsberghe, I. De Cock. Further, the Belgian Birth and Children Office (ONE) together with paediatricians (A. Kahn) and veterinarians (J. Dehasse) performed a prevention campaign to inform and educate children's health care workers.

Thanks to the success of these individual projects and settings, we have been able to consider the idea of building a European dog bite prevention project. In May 2003, the FECAVA council announced their intention to support ESVCE on the creation, the development and the promotion of a European multi-disciplinary dog bite prevention project.

## **ESVCE dog bite prevention project**

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ESVCE proposes to create a European dog bite prevention group, consisting of people actively involved in projects on dog bite research and/or dog bite prevention in their country. The aim of the prevention team would be to exchange information on already existing research and prevention projects, to encourage cooperation between different countries in creating new projects, to brainstorm on the content of prevention messages, to develop a consensus on the content of the messages in dog bite prevention and finally to screen and validate the consensus by feedback of people belonging to different professions related to the topic, such as veterinarians, ethologists, paediatricians and psychologists. The ultimate goal of ESVCE and FECAVA is to create a transferable and translatable European dog bite prevention programme for the different prevention levels.

## **How can a Blue Dog® help...?**

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According to the results of the Belgian dog bite study, 65% of the accidents occurred in the home environment during everyday activities (Kahn et al 2003). Victims were mostly young children (median age was 5 years), bitten by a dog that was familiar to them. Eighty-six percent of the dog bites occurring at home were found to be triggered by an interaction initiated by the child. Because of the complex nature of child-dog interactions, we decided to engage in a multidisciplinary project to further research dog bite prevention in children. In September 2003, a Belgian multidisciplinary team of veterinarians, behavioural vets, ethologists, researchers from the department of child psychology, paediatricians, paediatric surgeons, general physicians and members from the Graphic department of the

Ghent Art Academy started investigating the project frame of an interactive computer game for children aged 3–6 years (The Blue Dog®) to help teach the principles of dog bite prevention. The Blue Dog® is meant to be a prevention tool to be incorporated into prevention settings in veterinary practices or human health care practices, in order to reach families with children. Once finalized, The Blue Dog® will be available to the members of ESVCE as well as to behavioural organizations and veterinary associations contributing to the dog bite prevention project.

## References

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- Bond L. and Hauf A. (2004) Taking stock and putting stock in primary prevention: characteristics of effective programs. *The Journal of Primary Prevention*, Vol 24, No.3, Spring 2004.
- Bronfenbrenner U. (1974) Is intervention effective? *Teachers coll. Rec.*, 76, 279–304.
- Horisberger Ursula (2002) Medizinisch versorgte Hundebissverletzungen in der Schweiz: Opfer – Hunde – Unfallsituationen. Inaugural dissertation zur erlangung der Doktorwürde der veterinärmedizinische Facultät Bern, 2002.
- Kahn A., Bauche P., Lamoureux J. and the Members of the Dog Bites Research Team (2003) Child victims of dog bites treated in emergency departments. *European J Pediatr* (2003) 162:254–258.
- Kahn A., Robert E., Piette D., De Keuster T., Lamoureux J., Levêque A. (2004) Prevalence of dog bites in children. A telephone survey. *Eur J Pediatr* (2004)163: 424.
- Kern L. (1999) *Mémoire de diplôme de vétérinaire comportementaliste des Ecoles Vétérinaires Françaises*. Juin 1999.
- Love M., Overall K. (2001) How anticipating relationships between dogs and children can help prevent disasters. *JAVMA*, Vol 219, no 4 August 15, 2001.
- Overall K., Love M. (2001) Dog bites to humans – demography, epidemiology, injury and risk. *J Am Vet Med Assoc* 218:1923–1934.
- Peters V., Sottiaux M., Appelboom J., Kahn A. (2004) Post-traumatic stress disorder following dog bites in children. *The Journal of Pediatrics* 2004; 144:121–2.
- Riger S. (2001) Transforming community psychology. *American Journal of community Psychology*, 29, 69–78.
- Sacks J. J., Sinclair L., Cilchrist J., Golab G. C., Lockwood R. (2000) Breeds of dogs involved in fatal human attacks in the United States between 1979 and 1998. *J Am Vet Assoc* 217:836–840.

# Educating children in their relationship with dogs: The role of veterinary behaviourists in schools

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In modern western society the practical functions of dogs have progressively lost their importance and their behaviour as companion animals is now more relevant in the human-animal relationship. Recent research conducted in Tuscany (Gazzano *et al.*, 2002) showed that dogs are mainly chosen not because of the original functions of breeds but for their ability to relate to human beings. The same research revealed that the choice to adopt a dog is also induced by the perception that the relationship with a companion dog is 'genuine', a quality which (as the investigated sample stated) seems more and more difficult to find in interpersonal relationships. One of the reasons for this perception might be that dogs represent the ancient link of human beings with nature and with their origins, but there is the risk of an increasing tendency to 'use' dogs as human surrogates. Companion dogs can have the role of human surrogate or 'projection of self' (Veevers, 1985) and the latter function is often on the basis of the choice of particular dog breeds, because of their appearance and their popular image. Behaviour problems and difficult dog-owner relationships may arise from these anthropomorphic perceptions of the animals. The dog-owner relationship is a 'social environment' to which both the human being and the animal have to adapt, and the general level of comprehension of dog behaviour and its physiological and ethological needs are probably the most important elements that have to be taken into account.

Symptoms of poor welfare conditions – often due to excessive anthropomorphism and/or lack of knowledge of dog behaviour and needs – may have implications for dogs, their owners and the community. One of these symptoms is aggression towards human beings, which is also the main concern about dogs belonging to Government Authorities. An effective means of preventing aggression

is to educate the new generations to understand dogs, their behaviour and their needs, by means of school programmes. Educated children can also have an effect on their family members: a cultural improvement that is likely to enrich the entire society.

The practical application of these thoughts, however, seems not to be easy either from the practical or from the cultural point of view. A general project in Europe would need to ensure that cultural differences among (and even within) countries are taken into account and some of the elements that need to be considered include:

- a. existing general levels of culture about dog behaviour,
- b. management attitudes,
- c. perceptions of dogs' roles in human society,
- d. existing laws about dogs,
- e. educational systems,
- f. methods of education in schools

The role of education in schools, with the support of veterinarians specialised in behaviour, should be considered of primary importance in order to give correct information, but dog ethology and basic prevention instructions have to be included in officially recognised school programmes and supported by school teachers in order to reach the goal of giving correct and effective prevention tools and forming positive attitudes towards dogs. Veterinarians specialised in behaviour must be supported by teachers, because an effective communication implies didactical skills and a knowledge of the learning abilities and attitudes of the individuals in the classroom. Teachers should therefore be the link between children and the experts. Another important reason is that the acquired knowledge needs to be elaborated at different times: without a direct involvement of teachers such continuity of education is not possible. A first step to reach this goal might be to create didactic tools, directly illustrated by experts and then made permanently available to the classroom. 'Esopo', a Compact Disc, which will be distributed to all primary schools in Lombardy by OCIM (Osservatorio Cinologico Inter Ministeriale), is an example of this kind of didactic support.

Veterinary behaviourists are therefore central professional figures because they have the necessary expertise about dog physiology and behaviour and a thorough cultural and professional experience, as far as human-animal relationship is concerned. The collaboration with school teachers is of paramount importance when an effective programme is to be launched successfully and therefore courses in companion animal ethology and prevention of dog bites should be inserted in officially recognised school programmes.

## References

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1. Gazzano A., Sighieri C. et al. (2002) Indagine sulla relazione cane-proprietario nella Regione Toscana. *Sisca Observer* 6, 2, pag. 36–38.
2. Veevers J. E. (1985) The Social Meanings of Pets: Alternative Roles for Companion Animals. In *Pets and the Family*. Haworth Press, Inc. 11–30.

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# Dog bite prevention: the dog in schools a model project in Bavaria, Germany

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According to literature, about 70% of dog bites are directed towards members of their own family and especially children aged between 7 and 8 years. Although children in this age category are most often bitten, it appears that 89% are aware of danger and 77% do already develop an awareness of the need for prevention activities. The conclusion is that the only place to reach all children in this age category is in school and therefore in 2000, the Bavarian 'prevent a bite project' for primary schools was initiated.

The setting, development and realisation of the school project was done by the author, a veterinarian specialised in behavioural medicine, teacher for animal assisted therapy, a sworn and appointed expert for dog behaviour, certified in service dog training (Association Le Copain, Switzerland) and also trainer of rescue dogs (Red Cross Munich).

After a pilot phase from 2000 to 2002, this school project is now recommended by the authorities, the ministry of culture of Bavaria and the government of Bavaria, district upper Bavaria. This is important because the prevention training is a voluntary part of the official lessons and all members of the prevention training have a standardised education. The prevention teachers are mostly primary school teachers by profession, but there are also some vets. and along with the dog handlers and their dogs, they must complete a special course. In addition the dog must have been tested in a behaviour assessment. In other countries the dogs used in schools are often not specifically trained for working in that environment, but experience with other working dogs, such as rescue dogs and assistance dogs, has shown that dogs which receive specific training for their own work context seem to have a higher threshold for stressful situations. Visiting schools can result in

more social strain for the dogs than being used as working animals in a hunting or rescue dog environment and unstressed dogs will enjoy their work and thereby reduce the risk for the children to a minimum.

### **The procedure of the project can be described as follows**

The teams (prevention teacher – dog leader) visit every school on two occasions.

On the first visit the prevention teacher explains to the children that a dog thinks in different way to human beings. They then go through the prevention programme with the children.

On the second visit – at least two days later – the prevention teacher, the dog leader and the dog visit the classroom. The first step is that the dog leader plays the 'dog'. Only if all children show correct reactions in this scenario does the real dog start to participate in the session. Anxious children may exercise with the dog leader only if they wish but most of them like to train with the dog as well – in the company of an adult. Parents are welcome as observers at the prevention session but many teachers prefer to work without parents.

**Results:** About 190 primary school teachers, 42 special school teachers and 30 school inspectors of the different Bavarian government districts have received further education regarding the child-dog-relationship and the prevention-programme. The veterinary students of the veterinary university of Hannover are given a presentation of this prevention-programme as part of a compulsory lecture and this has been the case since 2003. In the first two years the pilot-teams reached about 600 children. In 2003/2004 12 new teams successfully completed the examination, 9 of them trained about 250 children in the first weeks (until 7/2004), 3 of them are not yet working.

**Future of the project:** In autumn 2004 there will be a round table meeting with the government to discuss integrating the prevention idea into the regular teacher education. In October the next course for dog leaders and for prevention teachers will begin.

# A multidisciplinary educational project: A pilot project in a primary school & in a kindergarten

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Direct and indirect influences of pets on the social, emotional and cognitive development of children have been widely reported in literature. Interactions with pets have also been shown to improve children's positive attitude toward pets and result in a better understanding of the non-verbal signals of domestic animals. However, the encouraging of a relationship between children and animals as an educational skill in school is a relatively new area of scientific research.

The aim of the present study was to introduce the topic of human-animal communication into the teaching schedules, to cooperate with the educators and use the already existing didactics in the primary school, in order to reduce the health risks for children which could result from interaction with pets (e.g. dog and cat bites) and also to improve the welfare of pets (e.g. cruelty toward animals).

In the first project the staff was composed of 10 teachers working in a public primary school in Chivasso (Italy) and a veterinary behaviourist; children involved in the survey were pupils from 5 classrooms (age: 7 years old; sample  $n^{\circ}$  = 125 children). The pilot project was divided into:

- 1) the discussion of the steps with the teachers
- 2) a workshop with children
- 3) the development of sub-projects according to the different subject areas (literary and scientific subjects, music, theatre, art education, computer science)
- 4) a tour of a neighbourhood shelter and a private training and sporting centre for companion dogs
- 5) follow-up with the teachers and the headmaster.

In a second project involving the kindergarten (Turin, Italy), 80 children were



divided into smaller groups according to their age (1–12 months, 1–2 years, 2–3 years). A veterinary behaviourist, a Delta Society certified Pet-Partnership worker and a psychologist cooperated with the teachers. The pilot project was divided into:

- 1) workshops with the teachers
- 2) two meetings with parents
- 3) working sessions with children introducing one dog and one cat into the facility
- 4) psychological monitoring of the children observed in their interaction with the animals
- 5) follow-up with the teachers and the headmaster.

The present study should be considered as a preliminary attempt to create specific multidisciplinary projects in schools. Further research must focus on all aspects teaching and instruction related to the pet-child relationship; such data will be important for parents, teachers and professionals working in mental and physical health care, as well as veterinarians working in applied behavioural sciences.

# Ongoing pilot projects in Swiss schools to prevent dog-bite incidents

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## **Epidemiological study by Horisberger**

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Available statistical data (Horisberger, 2002) indicate that the risk of children being hospitalised because of bite injuries is double that for adults. Small children often suffer serious injury particularly to the head. The cause of the accident can frequently be traced back to how the child interacted with the dog. The study defined the risk groups and risk situations clearly such that suitable prevention could be developed.

## **PAB-CH (Prevent A Bite – Switzerland)**

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PAB (Prevent A Bite) is a prevention programme designed to teach children how to avoid dog bite accidents. The programme addresses a clearly defined risk group and deals with risk situations and interactions; it also draws parents' attention to the problem.

PAB was developed in Britain over 10 years ago by John Uncle. It was first introduced into German-speaking Switzerland as part of the training for leaders of puppy playgroups. The project was later adapted to meet specific local needs by the groups in the Bern and Schaffhausen regions and called PAB-CH. In the Berne area, the programme is currently being used to instruct school classes (1st to 4th primary school classes and classes with foreign children). The Berne Animal Protection League provides a financial support. In Schaffhausen, the school authorities are also involved and so all kindergarten classes are able to benefit from the training offered. In French speaking Switzerland, PAB-CH became PAM [Prévention des Accidents par Morsure (Prevention of Biting Accidents)] and

courses are carried out in the canton of Vaud – supported by the Vaud Animal Protection League – and by the authorities in the cantons of Neuchâtel, Valais and Geneva and the city of Lausanne. However, most of the courses are run by volunteers and are held only sporadically depending on the canton.

## Aims of PAB-CH

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The programme has two main priorities: to teach children how to approach and behave correctly toward dogs (familiar or strange) and to train them how to react if confronted with a threatening or aggressive dog. Although the manner in which the course is held and the methods used have to be adapted to the age of the class, the principal aim remains the same, that is to help children learn interactively how to behave in specific key situations. The course consists of two periods of 45 minutes. Depending on the age of the children, the principles are demonstrated using a toy dog, puppets or actors clothed as ‘Wooly Woof’. Then the children act out how they should behave in the specific situation. Finally, when the animators judge the class to be ready, real dogs are introduced. The same exercises are then repeated with the dogs.

In this course children learn to do the following when confronted with familiar dogs:

- a. Keep their distance and call the dog over if they want to pet it.
- b. Keep their distance and leave the dog in peace if it is eating or in its basket.
- c. Keep their distance and leave the dog in peace if it growls or snarls.

In addition they learn to do the following when confronted with a strange dog:

- a. Ask the owner for permission before they touch the dog (correct method of making contact).
- b. If it is alone or tied up, keep away from it and calmly walk past.
- c. If a dog jumps towards the child (and the child is afraid) or if the dog wants something the child has in its hand: stand still, remain motionless, lower the hands, look away, drop any object the dog wants (toy, food), and if the dog knocks the child down, curl up and protect the head.

In each lesson in the PAB courses, the welfare of the child is paramount. No child is forced to participate – on the contrary: the course is planned to provide sufficient space so that children who do not wish to get close to the dogs may keep their distance. They are encouraged to participate and benefit from the course as they wish and at their own pace. Reactions may vary greatly depending on the cultural background or past experience of the child participant. Each course takes the form of a game involving the class and the team of animators so each PAB course is unique just as each class is unique. However, the planning and the goals remain the same.

The welfare of the dog is also an important factor: stress in dogs can provoke an incident, even if the dog is usually harmless. Stressful situations are therefore avoided.

The animators have to meet strict criteria as do the dog handlers and the dogs. The dog and the owner have to serve as role models for the children. PAB-CH contributes to improved integration of dogs into society and leads to animals being treated with more respect.

## Here, Tapsi ... ! (annex)

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'Here, Tapsi ... !' is the title of a booklet developed and published by the Swiss Federal Veterinary Office to prevent dog-bite accidents involving children. It is based both on the epidemiological study of Horisberger and on the experiences of the PAB-CH group in Berne. The booklet has been published in Switzerland's four official languages, German, French, Italian and Rhaeto-Romansh.

'Here, Tapsi ... !' is designed for children from the age of four upwards (with parental assistance). The prevention booklet was also distributed during the PAB-CH courses. It explains simply and clearly how children should behave when confronted with either a familiar or a strange dog. The message is deliberately kept in the affirmative so that children learn what to do to master a specific situation (not what they should NOT do). A number of school classes were involved during the compilation of the booklet to ensure the text was both readable and comprehensible and to make an appropriate choice of illustrations, thus guaranteeing it optimum acceptance among children. Experts from the Service Santé de la Jeunesse (Geneva) and Equiterre (Geneva) children's welfare programmes also provided support.

PAB-CH and 'Here, Tapsi ... !' are a constructive response to the risks to which children are exposed. The efficiency of such programmes has been confirmed (Chapmann 2000; Spiegel 2000).

## References

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- Chapman S., Cornwall J., Righetti J., Sung L., *Preventing dog bites in children, randomised controlled trial of an educational intervention*. *bmj.com*, Rapid responses for Chapman et al., 320 (7248) 1512–1513.
- Horisberger U., *Medizinisch versorgte Hundebissverletzungen in der Schweiz: Opfer – Hunde – Unfallsituationen*, Inaugural Dissertation, Faculty of Veterinary Medicine of the University of Berne, Swiss Federal Veterinary Office, Switzerland 2002.
- Spiegel I. B., Pilot study to evaluate elementary school-based dog bite prevention programm, *Anthrozoös*, 13(3), 2000.

# Presentation of the ANMVI-SISCA project about the prevention of biting dogs

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This project came into existence as a result of the need for veterinary surgeons to be able to inform the owners of puppies or adult dogs about the behaviour of their pets. It can be argued that the veterinary surgeon is the most appropriate professional figure to be involved in the prevention of behavioural problems (pathologies) and the selection of appropriate behavioural therapies, since they are able to rule out the organic problems that need to be considered in the differential diagnosis of behavioural change.

The chapters of this booklet are authored by a number of veterinary surgeons, ANMVI-SISCA members, who have drawn on their experience in the field of behavioural medicine in order to produce a booklet which aims to reduce the incidence of dog bites. The basis for this booklet is that if owners are educated correctly about selecting a puppy for their family and about providing adequate and appropriate socialisation, both with dogs and people, it will be possible to reduce aggressive behaviour in the canine population. Furthermore, if the general public are aware of the different body postures of dogs, they will be able to better understand the dogs' messages and thereby avoid possible risk situations.

During routine veterinary visits for annual vaccinations or parasite control, the veterinary surgeon is in a position to offer owners a wealth of information concerning their pet and its behaviour. Possible topics that could be covered include:

- a.** The dog as a good citizen
- b.** Appropriate puppy selection
- c.** Appropriate socialisation with dogs and people
- d.** The correct approach to the post-adoption period
- e.** Games to play and games to avoid
- f.** Dealing with aggressive behaviour

- g. Understanding how dogs speak to us
- h. How to anticipate accidents with dogs
- i. The rights and responsibilities of the citizen and the dog-owner

## References

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- Colangeli R. and Giussani S. (2004) *Medicina comportamentale del cane e del gatto*, Poletto Editore, Gaggiano.
- Coppinger R. and Coppinger L. (2001) *Dogs. A new understanding of canine origin, behaviour and evolution*, The University of Chicago Press, Chicago.
- Overall K. L. (2001) *La clinica comportamentale del cane e del gatto*, Edizioni *Medico Scientifiche*, Torino.
- Pageat, P. (2000) *La patologia comportamentale del cane*, Edition du Point Vétérinaire, Milano.

# ANMVI-SISCA project on didactic zooanthropology in schools

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The ANMVI-SISCA project on didactic zooanthropology has now reached 21 provinces in Regions of Northern and Central Italy and has been started in 69 primary schools involving 240 classes, for a total number of 4907 children.

The project uses a class pack, which has been sponsored by Purina Petcare and comprises 25 handbooks for the students and two brochures for the teachers. The pack is based on both the dog and cat and includes information about the diversity of the living world, the value of the process of domestication, behavioural issues in domestic pets and communication and management aspects of pet-ownership.

The project, which has been developed from an Applied Zooanthropology perspective, has been based on two specific targets:

- 1) To encourage and improve the child-animal bond, with a particular reference to pet-ownership and relationships with dogs and cats
- 2) To use the relationships with animals to give children some educational and didactic opportunities for growth

The projects are composed of about 6 lessons, which are delivered by a veterinary surgeon who is responsible for didactic zooanthropology in the school. Occasionally the lessons are delivered in a dedicated centre rather than a school environment. Each lesson is composed of the following phases:

- a) formal lesson
- b) practical activities;
- c) amusing and conversational activities.

The ANMVI-SISCA project is composed of 5 lessons, based on lectures that relate to the practical exercise that is scheduled for the last day of project. Generally the practical exercises relating to the children's interactions with animals take place in the school courtyard, which has been specifically prepared beforehand. These activities can be classed into various aspects of interaction with the animal, such as:

- 1) observational activities
- 2) interactive guided activities
- 3) activities concerning pet management

The various activities within the project are guided by a common underlying theme, but each activity focuses on a particular educational and didactic target. The most requested targets included:

- a) to promote self-esteem
- b) to improve the processes of social and didactic integration
- c) to decrease aggressive and competitive elements of behaviour
- d) to improve the skills of accuracy and dedication as well as those of methodological organisation in the education process
- e) to enrich the students' imagination
- f) to foster the processes of decentralisation and enhance the understanding of empathetic social interactions

In order to assess the success of the various activities in achieving the proposed targets a series of behavioural and didactic variables have been selected. The methods used for the monitoring process varied between institutions and included cameras, evaluation of papers and a behavioural table compiled by an evaluator. In order to accurately assess the success of the project the collected material still requires cross-evaluation for the different variables and therefore this presentation represents a provisional insight into the project rather than a completed study.





# Part 3

## Tenth annual meeting of the European Society of Veterinary Clinical Ethology Understanding emotional disorders in companion animals

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# Developmental basis of emotional responses in companion animals

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*“Toutes les grandes personnes ont été d’abord des enfants”  
Le petit prince, A. De Saint Exupéry.*

## Introduction

In human developmental psychology, complete life cycles are described including the period of growth to adolescence, the following period of stagnation till the age of 60 and the involution period. From those studies, theories and classifications it seems that the period of childhood is the most important period in development (Verhofstadt, Van Geert, Vyt, 1995).

Tinbergen proposed 4 questions that should be asked of any animal behaviour, which included ‘how does the behaviour change with age?’ and ‘what early experiences are necessary for the behaviour to be shown?’ (Word IQ Website).

Research into behavioural development in dogs and cats began in the 1950’s with work by such researchers as Scott, Marston and Fuller, and since then a number of researchers have continued to work on this subject (Pluijmakers, Appleby, Bradshaw, 2003). As in human development all of the researchers describe an important identifiable sensitive period in the development of dogs and cats.

## Influences on behavioural development

Some researchers conclude that environmental factors determine the development process, while others emphasise the influence of hereditary factors; but the most common conclusion is that the development is a complex interaction between a nature and a nurture pool. (Tachuki, Houpt 2003). All behaviour has an element of plasticity in its development. The differences in extent of plasticity are a consequence of the variability of environmental factors with which the genetic

programmes interact (Broom 1981). There are 4 major roles for environmental factors in the development of behaviour: maintenance of the developing system in a sufficient state for adequate function, facilitation of the development, inducement of the development in a certain direction and inhibition of a developmental process (Broom 1981).

## Emotion

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Emotion describes a state; examples of emotions are fear, anger, joy and sorrow. Emotional state is related to mood and is sometimes even identified with it. Emotions are generally considered more transient than moods. (Word IQ Website). Emotion is to be considered as a broader concept than motivation. Motivation can be described as an impulse that translates into behaviour, which is aimed to satisfy certain needs such as hunger or thirst. Motivations arise from an internal need while emotions are provoked by external events (Vingerhoets, Lannoo 1998).

Pageat (1995) defines emotion as behavioural and neurovegetative reactions that are the consequence of exposure to stimuli.

Emotion has an important physiological aspect. Emotional behaviour can be measured by physiological reactions: heartbeat, pupil dilatation and skin reactions. Metabolic and hormonal changes are also used as parameters of emotions. (Vingerhoets, Lannoo 1998)

Emotion is also accompanied by visible behavioural changes; this is the social aspect of emotion. Furthermore there are the cognitive processes of emotion, where subjective awareness plays an important role (Vingerhoets, Lannoo 1998).

Overall (1997) mentions that there have been many debates as to whether animals know that they act in a bizarre or abnormal way when they are confronted by a stimulus that induces an emotional response. She highlights the fact that we cannot ask them what they are feeling and yet it seems likely that dogs and cats do experience emotionality or subjective awareness of an emotional response.

## Response

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Organisms receive stimuli that provide information from the external environment. In a response there is the output component of the behaviour, which results from the receiving of a stimulus and the integration of it. (Nelissen 1996)

Emotional response is a bodily response due to the emotional effect of some forgoing stimulus or agent. It is a normal reaction to a trauma or a stressful life event. It may appear immediately and may continue for a period of time after that event. (University of New Hampshire, Website of the Counseling Center).

Stimuli have to be perceived before there is a reaction to them. People and

animals are overwhelmed by the information from the surrounding world and a selection must be made from all those stimuli, because there is a fundamental restriction to the information processing system. Before one can observe and receive the stimulus, there is a need for an arousal or an orientation reaction (Vingerhoets, Lannoo 1998). This orientation reaction suggests that there is a kind of internal image of the outer world and that this outer world is compared constantly with that internal image (Vingerhoets, Lannoo 1998).

The strength and the type of responses that animals display are variable. For example a stimulus that provokes fear can lead to different types of response: fight, flight, freeze, flirt or appease (Bowen, Heath 2001). The choice of the response varies significantly with the species and breed, but also depends upon the situation. (Bowen, Heath 2001). In addition it will be influenced by the individual and by its previous experiences and learning. In a litter of pups or kittens we can observe different types of responses to the same stimulus (Tacheuchi, Houpt 2003). It is very difficult to explain why this happens, as there are a lot of elements involved.

The fact that a kitten or puppy reacts in a certain way determines its individuality and the conclusion can be made that each kitten or puppy is unique.

The salience of the response depends on a number of factors. Anxious animals will already react to weak stimuli (Bowen, Heath 2001). The strength of the reaction to a stimulus is not always in proportion to the stimulus (Pageat 1995) and a disproportionate reaction is one of the features of hypersensitive animals.

## Development

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During embryogenesis neural connections are developed. The genetic programme starts the formation of the neurites. The interaction with the environment works on the connections between the neurones (Pageat 1995).

After birth the synaptogenesis continues. At that moment external stimuli are extremely important. A synapse fully develops only when it is stimulated externally. Only connections that have been stimulated will survive. This mechanism is referred to as the selective stabilisation theory (Pageat 1995).

Stimulation is therefore necessary for normal neuronal development. When there is hypostimulation of the sensorial system the nervous system will be less discriminative and the animal's reactions will not modify appropriately in proportion to the intensity of the stimulus. It seems that development in a hyperstimulant environment will have the same effect (Pageat 1995). A normostimulant environment will produce a modulation of the response and the dog or cat will develop the capacity to adapt to an average level of stimulation for every sensorial channel (Pageat 1995). This is sensorial homeostasis; the stimulus will not evoke an abnormal emotional response or level of arousal.

Pluijmakers, Appleby and Bradshaw (2003) define homeostasis as a neuro-physiological stability. When the conditions were not optimal to develop that homeostasis, the dog or cat will react to every alteration in their environment, and fail to adapt (Pageat 1995).

The capacity to remain in emotional homeostasis develops throughout the sensitive period and homeostatic control is achieved through exposure to a wide variety of stimuli (social stimuli, noises, and experiences) during this important developmental period. This results in the creation of an internal image of the environment.

Pluijmakers, Appleby and Bradshaw (2003) state that before an animal is in the position to identify a stimulus or event as being novel, it must have formed a cognitive representation of the world in which it lives. They describe a mechanism that enables comparison between stored representations of stimuli to which the animal has been exposed and incoming stimuli which in turn facilitates the detection of novelty.

During the period of development, a number of other factors influence the emotional response. They can be listed as: maternal care, attachment to the mother, contact and interactions with littermates and localisation of the litter (Pluijmakers, Appleby, Bradshaw 2003). The attachment to the mother and the localisation of the litter offers puppies and kittens a safe physical area, together with a safe emotional environment and a source of appeasement. From there they can explore the world and experience the necessary stimuli. The contact with littermates teaches them the social aspects of emotions. By communicating with each other they learn to recognise appropriate communication signals and their accompanying emotions.

Research in rodents shows that cognition problems that are caused by insufficient maternal care can be partially reversed by environmental enrichment. (Bredy et al). A similar process appears to be possible for dogs and is described by Fox (1971) and also by Scott and Fuller (1974).

The experience of some stress, challenge and difficulty appears to be necessary during the period of development in order to prime the emotional responses and enable individuals to develop appropriate coping strategies which enable them to cope with more difficult situations later on in life (Fox 1971) (Cyrulnik 1999). Cyrulnik (1999) describes the concept of 'resilience' and cites the example of children who have been raised in very difficult circumstances but go on to develop a power that enables them to escape from their situation and become solid adults.

## Conclusions

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The period from before birth until 12 weeks of age is a very important one; it forms the basis for later life. Every puppy or kitten is unique and will not necessarily

react to situations in the same way as his littermates, even if they have been influenced by common genetic and environmental factors.

In the literature the concept of emotion in companion animals is often related to fear and little is written about other emotional states such as joy, sorrow and anger. Indeed there is still some debate as to whether these states can be identified in dogs and cats and if so what the developmental basis for these emotions is.

One of the most important conclusions is that careful attention must be paid to the sensitive period of behavioural development and every effort must be made to maximize the developmental potential of puppies and kittens at this time. Therefore it is essential not only to reduce negative genetic influences but also to maximise positive environmental influences during the first 3 months of life since by doing so it is possible to prevent the development of various behavioural pathologies.

## References

- Bowen J., Heath S. (2001) 'Management of canine fear and phobias'. *Proceedings VDWE meeting March 2003 St. Niklaas*.
- Bredy T. et al (2003) 'Partial reversal of the effect of maternal care on cognitive function through environmental enrichment'. *Neuroscience* 118.
- Broom D. (1981) 'Behavioural plasticity in developing animals'. Development in the nervous system, British Soc. For developmental Biology, Symposium 5.
- Cyrulnik B. (1999) *Un merveilleux malheur*. Editions O. Jacob.
- Fox M. (1971) *Development of social relationships*. Harper and Row Publishers.
- Kandel E., Schwartz J., Jessell T. (1995) *Essentials of neural science and behaviour*. Prentice Hall International Inc.
- Nelissen M. (1996) *Lexicon van de gedragsbiologie*. Garant Leuven Apeldoorn.
- Overall K. (1997) *Clinical Behavioural Medicine for Small Animals*. Mosby.
- Pageat P. (1995) *Pathologie du comportement du chien*. Editions du Point Vétérinaire. Paris.
- Pluijmakers J., Appleby D., Bradshaw J. (2003) 'Sensitive periods in the development of behavioural organization and the role of emotional homeostasis' *4th International Vet. Behavioural Meeting Caloundra*.
- Tacheuchi Y., Houpt K. (2003) 'Behaviour genetics' *Vet Clin Small Animals* 33.
- Scott J. P. Fuller J. L. (2003) *Dog behaviour: the genetic basis*. University of Chicago Press 1965, Phoenix edition 1974.
- Verhofstadt-Denève L., Van Geert P., Vyt A. (1995) *Handboek ontwikkelingspsychologie*. Bohn, Stafleu Van Loghum Houtem Diegem.
- Vingerhoets G., Lannoo E. (1998) *Handboek neuropsychologie*. Acco Leuven.

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# Mechanisms and consequences of fear and stress in dogs and cats

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Understanding the mechanisms and consequences of fear and stress responses is an essential part of diagnosing and treating behavioural disorders in domestic pets, because it is these responses that underlie the majority of these problem behaviours. However, although we tend to discuss fear and stress as negative influences and causes of problems in our pets within a clinical context, they are actually highly adaptive responses that are essential for survival.

Fear is an emotion that induces an adaptive response enabling an animal to avoid situations and activities that could be dangerous. The emotional response (which may or may not involve a conscious component) is initiated when an animal perceives a stimulus that is interpreted as potentially harmful, and results in the initiation of the stress response and appropriate motor activity. Although the terms fear and anxiety tend to be used interchangeably, fear is actually the direct emotional response to a potentially harmful stimulus, and 'anxiety' is the emotional response to a stimulus that *predicts* a harmful or dangerous stimulus. The stress response is an adaptive mechanism that enables an animal to react rapidly to an event that changes its homeostatic status. In everyday use, the term 'stress' is used to refer both to the physiological stress response and, particularly within the human context, to an event or situation that causes a chronic negative impact on behaviour, health and welfare. Strictly the term 'stress response' should be used to describe the physiological response that occurs to a range of emotional and motivational changes, and the term 'stressor' used to denote an event or situation that has either an acute or chronic impact on an individual and that precipitates the stress response.

The internal 'emotional' response is an essential element in the initiation of any behavioural response to a stimulus. As humans we tend to think of emotions in terms of our conscious awareness of the subjective state that we are feeling, and name the various emotions in accordance with the context in which they occur.

We cannot know, however, if animals are equally aware of their emotions, although we instinctively feel that they are. Conscious awareness is not necessary, though, for emotional changes to impact on behaviour and learning. Emotional states act as discriminative stimuli in learning – i.e. it is the emotional response associated with an external stimulus that determines whether that particular stimulus is associated with a positive or negative outcome, and hence directs the appropriate behavioural response, and the degree of response that determines the salience of the stimulus. Negative emotional responses (i.e. fear or frustration) are conditioned to previously unimportant stimuli through classical conditioning, and to an animal's own actions through operant conditioning. Hence, a fear response is a highly adaptive mechanism for ensuring that an animal learns that certain stimuli predict something unpleasant and that some actions have a detrimental outcome. In consequence of this learning, the stimuli are avoided and the actions are not repeated.

The behavioural response of an individual animal to a fear provoking stimulus will depend on:

- The biological importance of the particular stimulus to that species
- The genetically determined motor patterns present in its species, breed or line ('species specific behaviours')
- The animal's experience of the stimulus during developmental stages
- The animal's previous learning about the success or otherwise of its own behavioural strategies in similar situations.
- Individual differences in reactivity

The stress response system is best adapted for enabling animals to deal with acute stressors that they are able to deal with by using an immediate behavioural response. Stress responses to external stimuli only become problematic when an individual animal is unable to control the situation or to escape from the stressor through an appropriate behavioural response. In these instances, where the physiological stress response becomes chronic, there are prolonged negative effects on both the emotional and physiological health of the individual. Because the stressor persists, the negative emotional response also persists. The output from this system continues to create a neuroendocrine response in the expectation of activity. The major pathological consequences of stress occur in such situations where individuals are unable to employ a behavioural mechanism to reduce their physiological stress response.<sup>1</sup> The potential physiological effects of prolonged stress include increased blood pressure, diabetes, infertility, growth inhibition, loss of libido, decreased attention span and ability to concentrate on tasks, long term changes in memory, inhibition of inflammatory responses, and changes in immune function.

The stress response of an individual animal to a stimulus will depend on:

- The level of emotional response (fear or anxiety)
- Individual differences, through genetic and experiential variability
- Developmental effects, through the ‘priming’ of the HPA axis pre and post nately, and the matching of the animal’s environment in developmental stages with that experienced in adult life.

Fear responses and stress responses, then, are essentially normal adaptive responses in an animal to enable it to deal with variety and change in its environment, and the kind of stimulus that precipitates these responses depends on:

- Genetic factors determining species, breed and ‘individuality’
- Experiences during development
- The success or otherwise of previous responses to the stressor.

The majority of fear or anxiety related ‘behaviour problems’ that are encountered in dogs and cats actually fall into the category of ‘normal adaptive’ responses. Hence, they are not abnormal or pathological; it is just that they are inconsistent with the animal’s environment. For example, it is normal for dogs and cats to show significant fear responses to stimuli that they have not encountered previously (e.g. were not socialized to). It is normal for both species to display aggressive behaviour when faced with an individual perceived as threatening and from which they cannot escape. It is normal for them to learn to select aggression progressively earlier in such encounters. Changing the responses of animals that are responding in this way involves changing their perception of the stimulus, such that it is no longer associated with a negative emotional response, and also changing the consequence of the behavioural response, such that the inappropriate response is no longer ‘successful’ for the animal but an alternative incompatible response is successful.

A smaller proportion of fear or anxiety related clinical cases can be described as ‘abnormal’ because the behaviour pattern is not an adaptive one for the species. In these cases the neuroanatomical and physiological changes in brain have reached a point where the fear response is initiated ‘automatically’ whenever the particular stimulus, or predictive stimuli, are encountered. The fear response in these animals has also often generalized to other similar stimuli. The commonest example of this would be extreme fear responses, or ‘phobias’, such as in extreme noise phobias in dogs. In these cases it is more difficult to re-establish ‘normal’ patterns of response to stimuli, and hence they more frequently require pharmacological intervention in conjunction with behaviour therapy.

Stress responses can also become a problem in companion animal medicine either where the learned behavioural response to an acute stressor is inappropriate within a human environment (such as avoidance or aggression) or where individuals are unable to perform a behavioural response to resolve their situation and the stress response becomes chronic. Where the stress is chronic or

unpredictable in nature, animals will often display inappropriate or excessive behavioural responses in order to reduce the level, and hence the deleterious effect, of a prolonged physiological stress response<sup>2</sup>.

Hence, uncontrollable stress can have a number of consequences for the individual animal:

- The development of alternative behaviours that direct the animal's energy into another activity, termed 'displacement activities', such as licking or grooming.<sup>3</sup>
- The development of repetitive, stereotypical or compulsive behaviours.<sup>3</sup>
- The continuation of the physiological stress response, which can have deleterious or pathological effects on the animal, such as in the development of idiopathic feline lower urinary tract disease.<sup>4</sup>

It is essential to understand the normal processes that underlie fear and stress responses in domestic pets in order to understand why particular behaviours develop in certain circumstances, and the most effective methods by which such behaviours can be changed. It should also be recognised that the developmental period in dogs and cats plays an important part in the regulation of fear and stress responses, and hence is a vital period in the prevention of behavioural disorders. One of the most important parts that a veterinary surgeon in general practice can play in behavioural medicine is to educate owners and breeders about how to ensure that dogs and cats have adequate opportunities to learn positive associations in their developmental stages, and right through their lives, so that the development of negative associations is inhibited.

## References

1. Sapolsky R. M., *Why zebras don't get ulcers*. New York: WH Freeman. 1994.
2. Dantzer R. and Mormede P., Pituitary adrenal consequences of adjunctive behaviour in pigs. *Hormones and Behaviour*, 1981; 15:386–395.
3. Mason G., Stereotypies: a critical review. *Animal Behaviour*, 1991; 41:1015–1037.
4. Cameron M. E. et al., A study of environmental and behavioural factors that may be associated with feline idiopathic cystitis. *Journal of Small Animal Practice*, 2004: 45, 144–147.

# The treatment of emotional disorders

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## Introduction

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Sometimes the concepts of emotion, feeling and emotional disorders are difficult to introduce into a veterinary context and yet everyday we come across examples of situations in which their existence and the options for their treatment impact in a very real way on veterinary practice.

An owner may visit the clinic due to their dog's inappropriate elimination when left alone in the house: semiology will define this undesired behaviour as territorial marking and you may discuss it with the owner in terms of it being a symptom of a hierarchical ambiguity. Another owner brings in a dog that is affected by sensorial deprivation and is particularly phobic towards waste bins on the street; even before leaving the building this dog will begin to display signs of tachypnoea, trembling, and ptialism and when he eventually goes outside he heads straight for the opposite side of the road from where the bin is located thus displaying classic avoidance behaviour. Even my own dog Arturo started whirling his tail, barking and whining, when he recognised the sound of my motorbike when I pulled up outside my house!

## Emotion and feeling

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The ancient concept of emotion affirmed that 'emotion and reason mix no more than oil and water do' and, in combination with an absolute lack of evidence of a relationship between emotion and cognition, this viewpoint emphasised the potential damage that the former could do to the later.

As a result of work by Damasio this concept was reversed and he stated that, 'in evolution and in every single individual, the strategies of human reason did not develop without the guiding force of biological regulation mechanisms, of which

emotions and feelings are remarkable expressions'. Modern neurophysiology explained that neuronal networks intertwine and thereby allowed the concept to develop that emotions do affect the cognitive aspect of an individual 'for better **and** for worse'. Joy is an emotion that aids reasoning, while anger or fear are emotions that are traditionally regarded as negative influences that are imposed by nature and are undesired companions of rational thinking.

## Just what is an emotion?

Back in 1690 we find the following definition of emotion in the *Dictionnaire de De Furetière*: "Emotion: exceptional movement that agitates the body and the spirit, and disturbs temperament and equilibrium. Fever begins and ends with a slight disturbance of the pulse. When a violent exertion is made, emotion is felt throughout the body. A lover feels emotion at the sight of the loved one, a coward at the sight of the enemy".

In the antiquity of the definition we find, on the contrary, some modern characteristics:

- emotion is movement (from the Greek: *move from*): this fosters the concept of sudden change from a state of initial immobility;
- there is a physiological component to emotions: *they are experienced in the whole body*;
- a cognitive component of the emotions also exists: *they upset or reinforce reason*;
- emotion is reaction to an event;
- a behavioural component of emotions is identified: it prepares us and prompts us to take action (*fight or flight, freeze or appease*) as underlined by Christine Halsberghe in her presentation).

Damasio expands on these characteristics of emotion by transforming them into a current neurophysiological language:

1. the brain and the rest of the body constitute an inseparable integrated organism, due to the action of interacting neuronal and biochemical regulatory circuits, which include the endocrine, immune and autonomous nervous components;
2. the organism interacts with the environment as a union between brain and body;
3. the physiological processes we call mind, derive from structural and functional components and not just from the brain;
4. emotions are a configuration of complicated neuronal and chemical reactions, each one with a function, and with a defined target: they can be

advantageous for the organism producing them (as well as being outwardly visible);

In spite of the fact that expressions of emotions acquire a different meaning due to learning and social structure, emotions are biologically determined processes, predisposed in an innate manner, through a long evolutionary history;

1. emotions are produced by systems that occupy a limited set of sub-cortical regions, from the encephalic trunk going upwards;
2. these systems can be triggered independently, without passing through the cognitive pathways; furthermore emotions have stereotyped and automatic characteristics;
3. all emotions, aside from using the body as a theatre (internal *milieu*, visceral system and skeletal muscle), they also influence the manner of functioning of numerous cerebral circuits: the emotional replies are responsible for the changes that make up the substratum of the neural configurations that we define as the '*feeling of emotions*'.

Damasio concludes: *emotions are not a luxury but a kit for survival and well-being.*

## What are the differences between emotion and feeling?

In a 'virtual tree' of the homeostatic mechanism of every organism, Damasio places as roots the *basic regulations of life* (where we find impulses and motivations: appetites), followed by a trunk where we find *emotions*, followed in turn by *feelings* and all dominated by a foliage which corresponds to the *awareness of having feelings*.

While emotions are visible on the outside, therefore public and capable of being catalogued by the observer, the feelings of an emotion are hidden and private, since they are neuronal images of a stimulus or of its emotional state. In humans there is the added dimension of 'the awareness of having feelings'.

Returning to the examples, which were given at the beginning of this paper, we can say that the animals we are dealing with express emotions (the direct and indirect organic manifestations are presented in P. Pageat's psychopathological model): but we are left with another question. Do they have feelings? My own opinion is that they do have feelings, though they are closely linked to the *here and now*, i.e. mindsets that induce emotions; however the neo-cortex, which is present in man due to the evolution of the species, is less significant in pets and this structural difference is likely to obstruct the *awareness of self*.

The dog who marks territory with urine is often described as being ill at ease. Yet his pack mentality explains the feeling of frustration and anger linked to his inability to manage the rest of the social group, which, having granted him some

social privileges, has elevated him to the role of leader. In the phobic dog, on the other hand, emotional anticipation is linked to the neuronal image of the rubbish bin and to the consequent feeling of fear-panic which manifests itself through the emotional symptomatic system leading to outward displays of tachypnoea, trembling, and ptyalism.

My dog Arturo associated the sound of my motorbike with the positive neuronal image of his owner, who in turn is responsible for his feeling of happiness.

The concept of emotion (and feeling) leads me to make the statement that any behaviour pathology is attributable to an emotional disorder.

## Treatment of emotional disorders

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The cerebral regions responsible for the generation and control of emotions find expression through the production of neurotransmitters and neuropeptides; they activate the cortical regions associated with cognitive aspects on the one hand, while on the other they stimulate the hypothalamus, which induces the production of the hormones that direct the body towards adaptive responses.

The first conclusion that can be drawn is that the therapy of emotional disorders must be based on three inseparable principles: pharmacological, pheromonal and non-biological. The latter term refers to intervention using various behaviour modification techniques, on a cognitive, emotional and communication-relationship level. The decision not to use pharmacological, pheromonal and non biological therapies for emotional disorders is ethically unacceptable, and is also a conceptual error on the part of the veterinary behaviourist. After all they have a duty to use all tools available to them in order to bring the organism back to an adaptive behavioural plasticity, or at least accelerate the phases of improvement.

Non biological therapy can be compared to the improvisation of a jazz musician: the beauty of a piece is linked to the nuances, to details, but this is only possible thanks to a thorough knowledge of the basics of music and to constant improvement of the use of the musical instrument. The success of therapy is also linked to details and nuances that characterise the uniqueness of the case being examined. The therapist however must base their work on the study of neuronal mechanisms, and psychopharmacology (including clinical medicine) and then, through relying on the application of punctual semiology they can achieve a diagnosis, which, although not necessarily nosographic, is certainly functional. The diagnosis, which defines the pathological state and neurotransmitter systems involved, allows selection of the most appropriate psychotrope and/or pheromone. Another aspect of a diagnosis is the contextual one; this takes into consideration the functions and limitations of the domestic system in which the animal lives. The role of the different aspects of the therapeutic intervention is not



to be underestimated: firstly there are the emotions and feelings of the therapist (likes, dislikes, anger, fear which must be controlled and transformed into empathy), as well as their cultural, social and professional background; secondly the owners, with their mindsets, their convictions and beliefs, their emotions and feelings (fear, anger, disappointment, frustration) that influence their self-therapeutic and system capabilities (*problem-solving*); and finally the patient with his pathological state and his often inadequate individual homeostatic development, which increase the emotional disorder.

The awareness of the influence of each single component of the therapist-owner-dog triad allows us to give a prognosis for each individual case, and establish the therapy from it, endorsed by a therapeutic contract that underlines objectives, execution times, intervention strategies and expectations. I stress that this means that each therapy is unique, like in the jazz player's jam session, but it only happens thanks to the soundness and thoroughness of the previous steps of the behavioural consultation.

In my therapeutic toolbox I have a number of different techniques which I regularly use:

1. Reframing (defined as cognitive restructuring in CCT): the first therapeutic step in transforming the mindsets of the owners, which we deem to be wrong or negative
2. Guided social regression (the cognitive process that, for example, will cure the dog of urinary marking)
3. Communication and proxemics (the study of spatial distances between individuals in different cultures and situations)
4. Mood and play (since it is an *educational means*) – the similarity with cognitive-behavioural therapies in children is amazing, where, abandoning the assertive role, the therapist compares himself to a *coach*: “I am here to teach you new game patterns, prepare you athletically, create a group, but it is you players who will enter the field to win the game!”

In my therapeutic interventions, strictly behavioural techniques are not considered obsolete. On the contrary concepts of reinforcement (particularly the positive one), extinction (through negative punishment such as indifference) and techniques such as desensitising and counter-conditioning fit perfectly in the restructuring of the cognitive processes of the owner and the animal, in the transformation of their feelings and in reducing the symptoms linked to emotional disorders.

## References

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- Andrè C. and Lelord F., *La forza delle emozioni*, Corbaccio Pub., Milan, 2002.
- Colangeli R. and Giussani S., *La medicina comportamentale del cane e del gatto*, Poletto Pub., Milan, 2004.
- Damasio A., *L'errore di Cartesio*, Adelphi, Milan 1995.
- Damasio A., *Emozione e coscienza*, Adelphi, Milan 2000.
- Damasio A., *Alla ricerca di Spinoza*, Adelphi, Milan 2003.
- Dobson K. S., *Psicoterapia cognitivo comportamentale. Teorie, trattamenti, efficacia: lo stato dell'arte*, McGraw Hill, Milan, 1995.
- Pageat P., *Patologia comportamentale del cane* Le Point Veterinaire Italie, Milan, 1999.

# Preventing anxieties, fears and phobias; the role of emotional homeostasis and learning during the sensitive period of behavioural organisation of the dog

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It is fashionable to consider anxiety, fear and phobia as functionally different from each other with clearly defined parameters based on principles of cognition, classical and operant conditioning. Rather than being the effect of diverse mechanisms both negative and positive emotional states are the result of variability in a single system. Anxiety, fears and phobias are therefore products of this system and reflect the capacity to cope and maintain emotional homeostasis. The function of emotions is to increase the chances of survival. To achieve this it is critical that the individual has the ability to rapidly identify emotionally relevant information in its environment and learns to display appropriate behavioural responses (Darwin 1872; Phillips et al 2003). This results in behavioural organisation that allows it to maintain emotional homeostasis (Pluijmakers, Appleby and Bradshaw 2003). Emotional homeostasis is defined as neurophysiological stability in the autonomic nervous system in a changing environment, providing the organism with an independent capacity to cope and adapt (Vincent 1986).

During pre-natal and early postnatal development there is an vast overproduction of neurones and neural connections which contain little or no information because sensory inputs have not been established. As sensory systems become

functional, from 3 weeks onward, some of these neurones and connections will be lost because they have not been repeatedly activated by the perception of external events (Grossman et al 2002). The result is that during this sensitive period of neurological and behavioural organisation the number of neurones and synapses per neuron decreases but their level of organisation and the information stored within them increases. Thus, between 3 and 5 weeks of age mental representations of stimuli are formed which, in the right conditions, become associated with parasympathetic activity, to become part of a maintenance set. The process is rapid and easily influenced during the sensitive period (Pluijmakers, Appleby, Bradshaw 2003) and because higher levels of neural organisation build upon more primitive ones (Fox 1971) disturbance at an early stage will have negative consequences for subsequent development (Fox 1971).

Between the perception of a stimulus and the behavioural response displayed a process takes place during which (i) the emotional significance of the stimulus is identified; (ii) a specific affective state is produced in reaction to the stimulus including autonomic and neuroendocrine responses and (iii) the affective state and resultant behaviour is regulated, which may involve a modulation of processes 1 and 2 so that the affective state and behaviour produced are contextually appropriate (Phillips et al 2003; Spruijt et al 2001). Each system receives similar information but has its own processing style and filters, combines, associates and otherwise alters information according to a different set of principles (Bond 2004; White and McDonald 2001). The systems interact with each other through simultaneous parallel effect on behavioural output and by directly influencing each other. This interaction can be cooperative and lead to similar behaviours or competitive and lead to different behaviours (White and McDonald 2001; Gray 1971; Panksepp 1998).

## Learning

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Parts of the system are changed as a result of learning, modifying the processing of comparable information on future occasions (White and McDonald 2001; Panksepp 1998). The speed and accuracy with which a system forms a coherent representation of a situation depends on correspondence between the specialised parts of the systems e.g. the identification of harmful stimuli by the amygdala and unpredicted situations by the hippocampus (Spruijt et al 2001). The relationship between the elements involved in any situation and the extent to which learning has taken place determines the degree of control exerted by each system on future behaviour (White and McDonald 2001; Panksepp 1998; Gray 1971).

The extent to which a stimulus is associated with an affective state appears to be dependent upon levels of activity within and the reciprocal relationship between at least 2 neural systems: a ventral neural system (including the amygdala and pre-

frontal cortex), important for the rapid appraisal of stimuli that elicit emotions, production of affective states and autonomic response regulation (process i and ii), and a dorsal system (including the hippocampus and prefrontal cortex) important for effortful, more experience-determined rather than prepared and automatic regulation of affective states and subsequent behaviour (Phillips et al 2003).

The hippocampal system acquires representations of the relationship between cues and contexts. Associations of internal affective state triggered by one stimulus are influenced by associations with others that are present (White and McDonald 2001). Learning in the amygdala system involves classical conditioning to single cues or stimulus arrays that are treated as single cues (Panksepp 1998).

## How experiences during the sensitive period of behavioural organisation can prevent the development of anxieties, fears and phobias

Until recently the role of the hippocampus as a comparator of stimuli, contexts, learnt emotional associations and its modulating effect on the system has been overlooked. Its capacity to achieve this and benefit the welfare of the animal can be enhanced by ensuring sufficient opportunity for the formation of associations between stimuli and positive emotional states (maintenance stimuli) during the sensitive period of behavioural organisation, particularly the 3–5 week period (Pluijmakers, Appleby, Bradshaw 2003). Disruption of emotional homeostasis can be caused by unconditioned (prepared) stimuli, conditioned stimuli, novel stimuli and absence of regularly encountered non-threatening environmental stimuli from the maintenance set. A broad maintenance set enables the animal to have better control over its emotional homeostasis through the inhibition of negative emotions and the engagement of effective coping strategies, both of which limit the potential for the conditioning of fear (Appleby and Pluijmakers 2003). Additionally the amount of stimuli able to disrupt emotional homeostasis due to unfamiliarity is decreased.

## References

- Bond A. H. (2004) A computational model for the primate neocortex based on its functional architecture, *Journal of Theoretical Biology*, 227, 81–102.
- Darwin C. (1872) *The Expression of the Emotions in Man and Animals*. Chicago: University of Chicago Press, USA.
- Fox M. W. (1971) *Integrative Development of Brain and Behaviour in the dog*. University of Chicago Press: Chicago, USA.

- Gray J. (1971) *The Psychology of Fear and Stress*. Cambridge University Press: Cambridge, UK.
- Grossman A. W., Churchill J. D., Bates K. E., Kleim J. A., Greenough W. T. (2002) A brain adaptation view of plasticity: is synaptic plasticity an overly limited concept? *Prog Brain Res.* 2002;138:91–108.
- Panksepp J. (1998) *Affective Neuroscience: The Foundation of Human and Animal Emotions*. Oxford University Press: New York, USA.
- Phillips M. L., Drevets W. C., Rauch S. L., Lane R. (2003) Neurobiology of Emotion Perception I: The Neural Basis of Normal Emotion Perception. *Biol Psychiatry.* 54, 504–514.
- Pluijmakers J., Appleby D. L. and Bradshaw J. W. S. (2003) Sensitive Periods in the Development of Behavioural Organization in the Dog and the Role of Emotional Homeostasis, *Proceedings of the 4th International Veterinary Behavioural Meeting*, No: 32, 18th–20th August 2003, Caloundra, Australia, 119–126.
- Spruijt B. M., Van den Bos R., Pijlman F. T. A. (2001) A concept of welfare based on reward evaluating mechanisms in the brain: anticipatory behaviour as an indicator for the state of reward systems, *Applied Animal Behaviour Science*, 72, 145–171.
- Vincent J. D. (1986) *Biologie des Passions*. Odile Jacob: Paris, France.
- White N. M. and McDonald R. J. (2002) Multiple Parallel Memory Systems in the Brain of the Rat, *Neurobiology of Learning and Memory*, 77, 125–184.

# Aggressiveness and sensory deprivation syndrome in a pit bull

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## Introduction

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Dogs used for fighting often live in awful conditions. These dogs have to undergo intense training in order to become real 'killing machines'. Aggressive behaviour increases in these individuals as a result of exposure to specific stimuli and the encouragement of conditioning (for example operant conditioning). These dogs suffer from a lack of social skills and in addition they often show evidence of obsessive behaviours.

A young male Pit bull, which had been trained and used for fighting, was rejected from the system following some unsuccessful fights and left for dead in the countryside during wintertime. The dog was later found by a family who decided to adopt it and rear it as a companion animal. At the first behavioural examination the dog was diagnosed as suffering from generalized anxiety and several kinds of aggression, some with a genetic basis and others an acquired basis. These included aggression toward dogs, fear related aggression, redirected aggression toward people and objects, pain induced aggression and predatory behaviour. As a result of the limited early life experiences the dog also showed symptoms of sensory deprivation syndrome.

## Materials and methods

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A young male Pit bull (estimated to be 2 years old from dental records) was found abandoned in the countryside and adopted by a family. At the beginning behavioural problems were largely ignored because the dog suffered from serious medical conditions including dehydration, malnutrition, rotten wounds, scabies and Ehrlichiosis. From the first examination the dog accepted medication and treatment by the owners and by the staff of the clinic without resistance, but his

anxiety and fear was exhibited through his crouched body posture, escape behaviours (including avoidance of eye contact) and lack of exploration. However, direct aggression and aggression redirected onto the owner was only evoked by the sight of other animals. When taken outside on walks the dog urinated from a female squatting posture, did not engage in urine marking and startled when he encountered a plastic box.

During the first month the dog remained at the veterinary clinic and the owners visited every day to try to play with the dog and pet it. One month later the dog left the clinic and moved to the owners' house. In this context he destroyed pillows when he was left alone but showed no problems of inappropriate barking or inappropriate elimination. He was happy meeting new people and did not show any signs of aggressive behaviour toward people. However, the dog showed no interest in toys and balls and appeared to have no skills in the context of play.

Introducing behavioural modification was difficult because the dog was not motivated by food. Vocal interaction and physical contact were therefore used as positive reinforcement. Unruly behaviours at first were distracted and then ignored or punished with a slap.

The third month after adoption the dog was diagnosed as suffering from orchitis and orchiectomy was therefore carried out for medical reasons. The fifth month after adoption the dog was introduced to a Gentle Leader. Due to the fact that the dog was still receiving antibiotic medication, and the owners were reluctant to use any other medication, it was decided not to use any psychotropic agent. The owners were experienced dog owners and had a good idea of basic training. They also had a good understanding of behavioural modification techniques and a lot of patience to apply them.

On a regular basis over the following months the dog was fitted with the Gentle leader and brought to the clinic or taken into the city or into the countryside. Every time it met other dogs the reaction was terrible and the dog began to mark with its paws and urine.

The first positive result was observed during the seventh month and occurred in reaction to the neighbour's dog, which was visible through a net partition. From very early on it was noticed that the Pit Bull reacted particularly badly to the sight of dogs with dark coats and this was thought to be linked to the fact that, with the exception of the Dogo Argentino, most breeds used for fighting have dark coats. The neighbour's dog had a white coat and little by little it became possible to leave the dogs sniffing at each other through the net partition. Within a few days the Pit bull learned to go to the net when it arrived at home in order to greet the other dog.

From the ninth month the Pit bull was taken outside for long walks, using the Gentle Leader. He was accompanied by a mature male German Shepherd Dog, which also belonged to the owners but resided in a different house. After an initial few days of 'jealousy' the Pit bull calmed down and it was possible to reduce the



distance between the two dogs. After 3 months it was possible to use a single leash. Little by little aggressive behaviour toward strange dogs also decreased.

By the thirteenth month after adoption: the Pit bull and the German Shepherd were free together in the garden and no aggressive behaviour or anxiety was demonstrated.

The two dogs have lived together since the fifteenth month of this study and they even eat in the same room. When the Pit bull goes out with the German Shepherd it is less reactive towards canine strangers and when in the home it accepts the presence of the owner's cat. However cats outside are still regarded as hostile and induce a certain level of aggression. The Pit bull still does not know how to play with other dogs, but he actively seeks out his German Shepherd companion and will even choose to sleep near to him.

## Conclusions

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In one year of behavioural modification the Pit bull made a complete recovery in respect of his anxiety and emotional disorders. The dog now lives peacefully in the same flat as the German Shepherd and three cats, and aggressive behaviour toward unfamiliar dogs has also decreased.

## References

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Overall K., *La patologia comportamentale del cane e del gatto*. Ed. Medico Scientifiche 2002.

BSAVA, *Manual of Canine and Feline Behavioural Medicine*. BSAVA 2002.

Pageat P., *La patologia comportamentale del cane*. Ed. Masson. Milano, 2000 .

**Keywords:** aggressiveness, fighting dogs, gentle leader, sensory deprivation

# Diagnosis and treatment of cognitive dysfunction syndrome in cats

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## Introduction

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There is some evidence that cerebral ageing changes in cats might adversely affect thought processing and consequently the animal's interactions and functioning in its environment (spatial, temporal and social environments), as previously proposed for dogs (Cummings et al., 1996; Milgram, 1994). Improvements in veterinary medical care (Dairin, 1996) and the strong relationship between cats and their owners are both factors that are responsible for a large increase in the population of ageing cats, and in some cases the behavioural changes due to cognitive impairment may become severe enough to disrupt the animal's function as an appropriate pet (Haupt and Beaver, 1981).

Accordingly, a substantial number of senior cats are at risk of developing age-related behaviour disorders (Mosier, 1989; Landsberg and Ruehl, 1997; Pageat, 1997), including Cognitive Dysfunction Syndrome (CDS)(Landsberg, 2003).

The goal of this study was to evaluate the diagnosis and the treatment of CDS by means of a survey in the Hospital of the University of Torino.

## Materials and methods

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General veterinary practitioners referred the cats to the University Hospital due to the presence of behavioural changes in individuals which had been previously behaviourally unaffected. The cats recruited for the survey had not experienced any traumatic event in the past six months, such as the introduction of a new cat,

moving house, clients divorcing, reintroduction after hospitalization etc., and had not suffered from any primary organ failure.

The study group was composed of 25 cats (males and females, age > 10 years, several breeds, indoor and/or outdoor cats). For each case a complete physical and neurological assessment was performed; an exhaustive work-up was only carried out when suggested by the clinical signs, since economic restrictions and poor owner compliance prevented such work being done on a routine basis. A thorough behavioural history was collected; specifically the information focused on the signs of feline CDS reported in literature.

Depending on diagnosis a therapeutic plan was implemented. Follow-ups were performed through appointments and/or telephone conversations.

## Results and Discussion

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The cats showed signs consistent with CDS (Landsberg, 2003): spatial disorientation and confusion, altered learning and memory, altered activity level and altered social relationships, altered sleep-wake cycles, increased restlessness, altered appetite, altered self-hygiene, altered perception and/or responsiveness to stimuli.

The therapeutic plan included behavioural modification techniques based on learning theories, psycho-socio-environmental modifications, psychotropic drugs.

It should be pointed out that, although there are some drugs that are currently used in practice for the treatment of CDS in cats none of them are presently licensed for that use.

The animal improvement and the owner's degree of satisfaction with the treatment were noticeably age-related.

## Conclusions

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In the literature feline geriatric disorders have been poorly investigated. In a study by Landsberg and Ruehl (1997) inappropriate elimination was the most commonly referred behavioural problem of cats of all ages, while aggression toward people and other cats, fear/anxiety, excessive or inappropriate vocalization/night time restlessness and anorexia were cited as not being unusual in feline geriatrics. Pageat (1996) reported involutive depression and dysthymia of elderly cats as two specific species related diagnoses.

There is some evidence that cats can show behavioural changes, which are attributable to senility in the absence of medical conditions, and these changes are referred to as a diagnosis of CDS (Landsberg, 2003). Further research should focus on the neurophysiology and neuropathology of CDS, including compara-

tive studies in other species (dogs). Finally the clinical findings and the post-mortem lesions of senior cats might be a model for human ageing.

## References

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1. Cummings B. J., Head E., Ruehl W., Milgram N. W., Cotman C. W. (1996) The canine model as an animal model of human aging and dementia. *Neurobiology of Aging*, 17(2), 259–268.
2. Dairin F. (1996) CHAPITRE I: Bien-fondé de la mise en place d'une consultation spécialisée chez l'animal âgé. In: *Gériatrie Canine & Féline*. Merial, Pairault S.A., Lezay, 17–21.
3. Houpt K. A., Beaver B. (1981) Behavioral problems of geriatric dogs and cats. In: *Veterinary Clinics of North America: Small Animal Practice*. 11(4), 643–652.
4. Landberg G. M., Prevalence, Clinical signs and treatment options for cognitive dysfunction in cats. Proceedings 4th International Veterinary Behavior Meeting (IVBM), Caloundra (Australia), 18–20 August 2003.
5. Landsberg G., Ruehl W. (1997) Geriatric Behavioral Problems. In: *Veterinary Clinics of North America: Small Animal Practice*. 27(6), 1537–1559.
6. Milgram N. W., Head E., Weiner E., Thomas E., Cognitive functions and aging in the dog: acquisition of nonspatial visual tasks. *Behav. Neurosci.* 108: 57–68, 1994.
7. Mosier J. E., Effects of aging on body systems of the dog. In: *Geriatrics and gerontology*, eds. R. T. Goldston, *Vet. Clin. North Am. Small Anim. Pract.* 19:1–121, 1989.
8. Pageat P. (1996) CHAPITRE XX: Ethologie. In: *Gériatrie Canine & Féline*. Merial, Pairault S.A., Lezay, 207–217.

**Keywords:** Ageing, Cats, Cognitive dysfunction, Diagnosis, Therapy

# Results of behaviour assessments of 100 Rottweilers in accordance with the Dangerous Dogs Act in Bavaria, German

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In 2002, the dangerous dogs act in Bavaria was changed and the Rottweiler breed was added to the list of the so-called category-II-dogs. This means that for thirteen breeds and their mixes owners now have to demonstrate that their dog is not over-aggressive or potentially dangerous. Once the required test is completed, the owner receives certification from the local authority or municipality.

Since 2002 about 100 Rottweilers have been tested by the author.

Aggressive behaviour directed towards human beings has been categorized into 5 groups: increased aggressive, offensive aggressive, defensive aggressive, slightly defensive aggressive and non-aggressive.

17% of the Rottweilers showed defensive aggression due to manipulation or distress. 6% reacted in an offensive aggressive manner toward humans. In comparison to other breeds that the author has tested, and which showed less than 10% defensive or offensive aggression against humans (poster ESCVE-Meeting Salzburg 2003), the Rottweiler ranks very highly.

Aggressive behaviour against other dogs has been classified as increased aggressive, inappropriate aggressive, species typical aggressive, minor species-typical aggressive and non-aggressive. 8% of the Rottweilers showed inappropriate aggression toward other dogs, none showed increased aggression. In 21% of the cases it was recommended that the authority required that the dog is leashed in public and is only allowed to run free in open areas. For 21% of the Rottweilers it was recommended to have the animal leashed in built-up areas. 8% of the Rottweilers should be muzzled when running free or in crowds. The behavioural history of the Rottweilers showed that 10% had already caused complaints regarding public safety, e.g. bitten a person or another dog or killed cats.

The paper will consider additional results, such as gender distribution, obedience of the dogs or the attitude of the owner towards public security, as well as the problems the authorities have in in-forcing the law.

**Keywords:** Bavaria, behaviour assessment, dangerous dog act, Rottweiler

# Behavioural testing for good citizen dogs

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In the last two years, in Italy, newspaper and television reports have highlighted many episodes of dog aggression. However, it is difficult to state if dog bites have really increased throughout this period and indeed local data from different Italian Regions seem to demonstrate a slow decrease in the last three years. Despite this the Minister of Public Health, in September 2003, released an Urgent National Order for Dangerous Dogs. This urgent action, along with other restrictions, imposed the compulsory use of leash and muzzle in all public places to all dog breeds belonging to Group 1 and 2 of Federation Cynologique International (F.C.I.).

As a result of this sort of legislation it became essential to have a means of identifying individual dogs which are potentially dangerous in outdoor contexts, in order to give docile and sociable dogs from these two groups, and their owners, a normal social life (1, 2, 3, 4, 5, 6, 7, 8, 11, 18,).

E.N.C.I ( Ente Nazionale della Cinofilia Italiana – Italian Kennel Club) supported the study for the development of a test to identify potentially dangerous dogs and the test was developed to identify dogs with potentially dangerous reactions to different outdoor stimuli.

On the basis of previous temperament and behavioural tests reported in the literature (9, 10, 13, 14, 15, 16, 17, 19, 20), a three-step test was developed. In step one the dog was held on a lead by the owner and, for safety reasons, tied to a fixed pole; in the second step the dog was walked on a lead with the owner along a short stretch of a public road; in the third step the dog was left free in a fenced area. During each step a variety of stimuli (subtests) were presented and the dog's reactions were assessed. The owner management was also assessed, in order to

develop a complete judgement of the potential contextual danger.

A veterinary behaviourist carried out behavioural consultations at the end of the tests and that person did not witness the tests as they were performed. To validate the test the results of the behavioural consultation and the tests were compared. The study was carried out with 80 dogs and their owners.

The comparison between test results and behavioural consultation results showed a significant relationship to the behavioural history.

All subtests demonstrated high reliability (Alfa Cronbach  $\geq 0.70$ ) and unidimensionality with values over 20%, which allow an adequate measurement of the latent variable (12).

On the basis of these results we consider the test to be a useful instrument for the assessment of potentially dangerous dogs in urban contexts and, through pairing behavioural tests and behavioural visits as assessment tools, it should be possible to further increase the reliability of these tests.

## References

1. Allen C. & Bekoff M. (1997) *Species of Mind*. Massachusetts Instit. of Technology Press.
2. Barnard C. J. & Hurst J. L. (1996) 'Welfare by design: the natural selection of welfare criteria' *Animal Welfare* 5 pp. 405–433.
3. Bateson, P. (1991) 'Assessment of Pain in Animals' *Animal Behaviour* 42 pp. 827–839
4. Broom D.M. (1988) 'The Scientific Assessment of Animal Welfare' *Applied Animal Behaviour Science*, 20, pp. 5–19.
5. Broom D. M. (1989) 'Psychological Problems of Companion Animals' *The Welfare of Companion Animals: proceedings of the BVA Animal Welfare Foundation* May pp. 46–51 British Veterinary Association.
6. Clutton-Brock J. (1996) 'Competitors, Companions, Status Symbol or Pests: a Review of Human Associations with other Carnivores' in J. L. Gittleman (ed) *Carnivore Behavior Ecology and Evolution*. Cornell University Press. Ithaca, N.Y.
7. Dawkins M. S. (1990) 'From an Animal Point of View : Motivation, Fitness and Animal Welfare' *Behavioural and Brain Sciences* 13 pp. 2, 3, 1–61.
8. Hare B., Brown M., Williamson C., Tomasello M. (2002) 'The Domestication of Social cognition in Dogs' *Science*. 298 pp. 1634–1636.
9. Kubinyi, E., Miklósi, A., Topál, J. & Csányi, V. (2003) 'Social Mimetic Behaviour and Social Anticipation in Dogs: Preliminary Results' *Animal Cognition* 6 (1) pp. 57–63
10. Netto W. J., Planta D. J. U. (1997) 'Behavioural testing for aggression in the domestic dog' *Applied Animal Behaviour Science*, 52, pp. 243–263.
11. Notari L. (2001) 'Benessere Animale: da che punto di vista?' *Progresso Veterinario* n. 09/2001 (periodico Della FNOVI).
12. Petrie A., Watson P. (1999) *Statistics for Veterinary and Animal Science*. Blackwell Publishing, Oxford.
13. Planta D. J. (2001) 'Testing dogs for aggressive biting behaviour; the Mag-Test (Sociable Acceptable Behaviour Test) as an alternative for the Aggression-Test' Proceedings of the CABSG Day.



14. Scott J. P., Fuller J. L. (1965) *Genetics and the Social Behavior of the Dog*. The University of Chicago Press, Chicago.
15. Scott J. P., Bielfelt S. W. (1976) 'Analysing the puppy-testing program' in C. J. Pfaffenberger et al., eds. *Guide Dogs for the Blind: Their Selection, Development, and Training*. Elsevier, Amsterdam. pp. 39–76.
16. Svartberg K., Forkman B. (2002) 'Personality traits in the domestic dog (*Canis familiaris*)' *Applied Animal Behaviour Science* 79 pp. 133–155.
17. Wilsson E. & Sundgren P. E. (1997) 'The use of a Behaviour test for the Selection of Dogs for Service and Breeding, I: Method of Testing and Evaluating Test Results in the Adult Dog, Demands of Different Kinds of Service Dogs, Sex and Breed Differences' *Applied Animal Behaviour Science* Vol 53 pp.279–295.
18. Wiepkema P. R. & Koolhas J. M. (1993) 'Stress and Animal Welfare' *Animal Welfare* 2 pp. 196, 195–218.

#### **Web Pages references**

19. Canine Good Citizen Program American Kennel Club, [www.akc.org/love/cgc/testprocedures.cfm](http://www.akc.org/love/cgc/testprocedures.cfm)
20. The Kennel Club Good Citizen Dog Scheme. British Kennel Club, [www.the-kennel-club.org.uk](http://www.the-kennel-club.org.uk)

**Keywords:** dog, aggression, tests

# The short-term effect of a foraging device, the Equiball™, on the heart rate of stereotyping and non-stereotyping horses

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This study investigated whether a foraging device, the Equiball™, influenced the heart rate of 10 stallions (8–10 years), among which were two established wind-sucking horses. The 'Equiball™' is a modified version of the 'Edinburgh Foodball' (British Patent No 9200499.3). It consists of an internal cylinder with a hole into which a suitable amount of pellets are placed and an external casing with two holes. When the horse moves the device, it causes the dispersal of the food through the hole in the inner casing.

The study was divided in six phases. Baseline (B: Days 1–7) when normal management was maintained. A four-week period in which the usual ration was given daily in an Equiball™ during one hour at 11:00h and 17:00h (EB1: day 8–14, EB2: day 15–21, EB3: day 22–28 and EB4: day 29–35). A similar two-week period with an Equiball( in combination with a hay net hung once daily at 20:00h (EB+HN: day 36–49).

In order to teach the horses how to use the Equiball™, shaping started at 10:00h on day 8. A small amount of 'Spillers Coarse Mix' was first shown to each horse and then placed underneath the Equiball( in order to encourage its maneuver. A horse was considered trained when it received four consecutive food rewards by pushing the device without assistance (Winskill et al., 1996). All horses involved in

the study, learned how to use the Equiball™ within one hour. In the EB+HN-period, hay nets with conventional mazes were introduced at 20:00h. The purpose of the additional hay net was to investigate whether this enrichment increases the effect of the Equiball™. Heart rates were measured during 10 minutes, at the last day of every phase, using the Polar Horse Trainer SW 3.0. During the recording sessions, horses were restrained using a halter in front of their box.

To compare the baseline session with the five treatment periods, one-way ANOVA for repeated measures was carried out followed by post-hoc Dunnett's test for comparison with a control group (5% significance level). Heart rate was significantly lower ( $p < 0.001$ ) during all EB and HN periods than during the B-period. Comparisons between the EB1-period and the other periods showed that heart rate during EB1-period was significantly lower than EB3-period ( $t = -3.640$ ;  $p = 0.005$ ) and EB4-period ( $t = -2.688$ ;  $p = 0.025$ ). There was no significant difference between EB1 and EB2 ( $t = -1.436$ ;  $p = 0.185$ ).

The global heart rate of stereotyping horses was significantly higher ( $t = 6.921$ ;  $p < 0.001$ ) compared with those of non-stereotyping horses. Results from the two stereotypes were similar.

The Equiball™ has a significant calming effect on the heart rate of horses. It hence seems to improve the welfare of horses stabled when grazing is not possible, at least on a short-term basis. Long-term effects should still be evaluated.

## Acknowledgements

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## References

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Winskill L. C., Waran N. K. and Young R. J. (1996). The effect of a foraging device (a modified 'Edinburgh foodball') on the behaviour of the stabled horse. *Applied Animal Behaviour Science* 48, 25–35.

**Keywords:** behaviour, enrichment, Equiball™, foraging, horse, stereotypes

# The short-term effect of four stimuli on behaviour and heart rates of stereotyping and non-stereotyping horses

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Prolonged exposure to various frustrating conditions can lead to stereotypic behaviour in horses (Redbo et al., 1998). Little is known about immediate triggers inducing stereotypic bouts. This study investigated whether some stimuli present in daily management might influence the frequency of stereotypic behaviour in horses.

Twenty-one geldings (seven weavers, seven crib-biters and seven control horses), aged between 5 and 20 years, were stabled in individual boxes, which allowed visual contact with other horses. All crib-biters and weavers had been heavily stereotyping for at least three years. Behaviours were observed using a Psion LZ64 configured with the Observer 3.0. Heart rates were measured using the Polar Horse Trainer SW 3.0.

Each horse was exposed once to four consecutive stimuli, using a Latin square design with one repetition. The 10-minute observation period was split as follows: (a) two initial minutes of stimulus presentation followed by (b) 8-minutes observation period without stimulus presentation. The four stimuli were: (1) presence of the observer, (2) a handler entering the stable and rubbing the horse's neck with ether-moistened cotton wool, (3) the same handler leading a neighbouring horse away, (4) the same handler feeding the horse carrots from a bag and subsequently withdrawing the bag but keeping it within the horse's sight.

Data were analysed using a repeated measures ANOVA or Kruskal-Wallis test.

The Newman-Keuls test was used as a post-hoc test.

Crib-biting was significantly lower after stimulus 2 but higher after stimulus 4 ( $p < 0.001$ ). Stimulus 2 induced an increase in nibbling (mainly bedding), whereas stimulus 4 caused a decrease. Weaving was not significantly influenced by any stimulus. Weavers and crib-biters nibbled significantly less than controls after stimulus 1 ( $p < 0.001$ ), 3 ( $p < 0.05$ ) and 4 ( $p < 0.05$ ).

Control horses remained significantly more immobile than both types of stereotypers after stimulus 2 ( $p < 0.005$ ). All three groups differed significantly after stimulus 1, weavers being more immobile than controls and controls being more immobile than crib-biters ( $p < 0.001$ ). Crib-biters had significantly lower heart rates than weavers and control horses during stimulus 1 ( $p < 0.001$ ) and stimulus 3 ( $p < 0.001$ ). Controls had significantly lower heart rates than weavers after stimulus 3. Leading a horse away, strongly increased heart rate in controls and weavers during stimulus presentation but not in crib-biters.

Minero et al (1999) found that crib-biting decreases the higher basal heart rate of affected horses. This study seems to confirm those results. Weavers tend to react differently from crib-biters depending on the type of stimulus. The food-related stimulus in particular seemed to stimulate stereotypies in crib-biters.

## References

- Minero M., Canali E., Ferrante V., Verga M., Ödberg F. O. (1999). Heart rate and behavioural responses of crib-biting horses to two acute stressors. *The Veterinary Record* 145, 430–433.
- Redbo I., Redbo-Torstensson P., Ödberg F. O., Hedendals A., Holm J. (1998). Factors affecting behavioural disturbances in racehorses. *Animal Science* 66, 475–481.

**Keywords:** behaviour, crib-biting, heart rate, horse, stereotypies, welfare

**POSTER**

# Overcrowding and its behavioural consequences

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## Introduction

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Overcrowding reduces the available personal space for dogs and can be responsible for generating high levels of stress. Submission postures are not successful in terminating aggression encounters between dogs and as a result there is a lack of ritualised behaviour and an increased risk of overt aggression

The classic posture of submission is accompanied by an averted gaze and can be characterised as active or passive.

**Active submission:** The dog crouches down, ears back, tail lowered.

**Passive submission:** The dog rolls on its side with one leg in the air exposing the inguinal region in a characteristic posture.

Dominance is expressed by: Meeting another dog's gaze; Standing with ears forward and tail up. The hair on the neck may be raised and the lips forward in a characteristic expression. A dog can express its dominance over another by standing over it, typically at right angles, with its forepaws on the other's back.

It is common to see puppies who take up this position during play.

## Materials and methods

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This study involved direct observation of the different behavioural postures as well as photographic representations.

## Study

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The study was carried out in one shelter of street dogs in Ayvalik city (Turkey) with a population of 1200 dogs. The 1200 dogs were in 12 enclosures. Each enclosure housed different sizes of dogs. All dogs was mixed breed dogs. The groups were only segregated according to their sex (males and females were housed separately). The animals were not neutered and the enclosures were only separated by wire mesh.

The distribution of the cages in the left area of the shelter were as follows:

- Cage 1: males,
- Cage 2: females
- Cage 3: females
- Cage 4: males
- Cage 5: females
- Cage 6: males.

The distribution of the cages in the right area of the shelter were as follows:

- Cage 7: males
- Cage 8: females
- Cage 9: males
- Cage 10: males
- Cage 11: females
- Cage 12: females.

The size of the each cage was approximately 7 metres by 20 metres. In each cage there were approximately 100 dogs.

The problems of aggression were greater in the male cages.

The cases of aggression were often savage and violent and even included some fatal injuries.

Every day there was at least one dog which had died from its bite wounds and four dogs which were hospitalised in the shelter as a result of their injuries.

It was observed that in aggressive encounters between two or more dogs there was often noticeable victimisation of one dog in the group. When that individual was down on the ground another dog would bite it and then the rest of the group would join in and also bite the victim (collective behavior). In the enclosures were it was possible to observe the different postures of the dogs (submission, attack, aggression, fear and panic) these were recorded through the use of photographs. The most problematic enclosures were numbers 4, 6 and 9, all of which were male enclosures.

## Conclusions

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Overcrowding generates a high state of stress which leads to behavioural changes which can culminate in very severe aggression. Aggression is more prevalent in

the cages of male dogs and overcrowding is the principal causal factor in the majority of the fights. It is therefore very important in institutions housing large numbers of dogs to avoid problems of overcrowding and to ensure that a minimum amount of space is allocated for each dog.

## References

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Beaver B., Ed., *Dog behavior: Guide for Veterinarians*, Saunders.

Manteca X., *Etología clínica Veterinaria del Perro y del Gato*. Ed Multimédica.

O' Farrell V., *Manual of canine behaviour*.



**POSTER**

# Feeling toward animals: a survey among veterinary students of Pisa University

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## Introduction

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The human relationship with animals has altered dramatically over the centuries, leading to the acknowledgment of animal rights in relation to both physical and psychological welfare. In this relationship the role of the veterinarian is extremely important since this professional figure has the difficult task of advising owners about animal welfare, whilst avoiding any dangerous tendency toward anthropomorphism. It would therefore be of interest to have information about the attitude of veterinary students toward animals and also to trace any alterations in that attitude during their undergraduate education. For this purpose a questionnaire of 51 questions was distributed to the students of the Veterinary School of the University of Pisa, in order to evaluate some of the aspects of their relationship with animals and to gather information about their cultural and household backgrounds. Data were analysed by using the Chi square test.

## Results

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Among the 228 questionnaires examined, 76.5% were completed by female students, which reflected the sex distribution of veterinary students within the University. A high percentage of the students had previously received a high school degree in a scientific (60%) or humanistic (20%) field and 90% of the participants expressed the view that they had chosen the veterinary course as a result of their strong interest in animals. A high percentage of respondents stated

the view that a life without animals nearby was an 'empty' life (56%), and this view was expressed more frequently by the female students (39%) than the male students (15%;  $\chi^2 = 9.26$ ;  $p < 0.01$ ).

A significant statistical difference in the answers of male and female students was also noted in the responses to other questions in the study. The percentage of female students who owned animals and were able to demonstrate feelings in relation to their pets (78%) was statistically higher ( $\chi^2 = 7.55$ ;  $p < 0.01$ ) than that of the male students (57%) and the same difference could be noted in the answers regarding the animal's ability to understand human feelings: the male percentage (23%) was in fact statistically lower ( $\chi^2 = 14.84$ ;  $p < 0.001$ ) than the female one (55%). No difference was noted between those students in the preclinical or the clinical years of study.

The questionnaire included a multiple choice question which evaluated the types of feelings that the students believed an animal could experience. In addition to physiological sensations like hunger (99%), thirst (98%) and excitement (91%), the most common feelings attributed to animals were affection (85%), boredom (80%), pain (79%) and joy (58%).

Another interesting difference between the responses from the different sexes of veterinary students was found in their preference for pure-bred animals over mixed breeds. 25% of male students prefer to have a pure bred animal and which was significantly higher than the 8% of the female students ( $\chi^2 = 9.49$ ;  $p < 0.05$ ). Finally a question was posed regarding the most suitable species as a companion for people and 68% responded that the dog was considered to be the best friend for a human being. Once again there was a discrepancy between the responses from the male and female students with 83% of the female students nominating the dog compared to 51% for the male students ( $\chi^2 = 7.6$ ;  $p < 0.01$ ).

## Conclusions

The data from this study suggests that veterinary school students are highly motivated in their professional choice and that the choice is influenced by a great interest in animals. It also suggests that the students consider the animals to be capable of experiencing such feelings as friendship, affection and joy. Interestingly significant differences are evident between male and female students in relation to their perception of animals' ability to express feelings.

**POSTER**

# Prevention of behavioural problems in dogs: A Flemish campaign

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## Introduction

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In March 2000 the Belgian Ministry of Public Health, in conjunction with the VDWE and the GERC (two Belgian veterinary behaviour groups), organised a congress on canine aggression. The result of this congress was the formation of different multidisciplinary workgroups. One of these groups was working on guidelines for breeders, shopkeepers and new dog owners. One of the conclusions was that there was a need for support material aimed towards the different people involved with puppies and that the provision of such material could be an important aspect of a larger project for the prevention of behavioural problems in companion animals.

## The campaign: organisation and content

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The first step involved working on optimising the socialisation period of the pups. The VDWE co-ordinated this aspect of the project and the aim was to reach the different groups of people involved with pups. They can be listed as: dog breeders, pet shop keepers, new owners, veterinarians in general practice and trainers in puppy training clubs.

The last two groups have a key role since they are also involved in offering advice and support to the first three groups.

The campaign is entitled '**een goede start**' which means '**a good start**'.

Three different brochures were developed: for breeders (and pet shop keepers), vets and new dog owners. These brochures explain the process of canine develop-

ment and outline those steps which need to be taken to ensure that puppies receive the best possible start in the life. These steps include socialisation, habituation, control and education. In the brochure for new owners a socialisation schedule is included to allow the owners to follow the progress they have made with their new puppy. This list is as complete as possible whilst trying to avoid problems of discouraging new owners by overwhelming them with the amount of work that is involved in successful socialisation.

Additional guidelines are offered especially for vets and these include advice on how to support breeders, pet shop keepers and owners.

Two sponsors were willing to help us set up our information campaign. One sponsor, a pharmaceutical company, helped us to reach the veterinarians. The other firm, a dog food company assisted in the introduction of the project to dog breeders. So two pathways were established by which the brochures could reach the puppy owners: the veterinarian and the breeder.

The dog food company also created a web site: [www.eengloedestart.be](http://www.eengloedestart.be) and the launch of this site enjoyed a lot of media attention in newspapers, magazines and on the radio. This was due to the fact that a well-known pop star supported our campaign. On the web site people and especially new dog owners, are able to download and purchase the different brochures. New owners can also receive their brochure when they have their first consultation with the vet.

In Belgium, it is not common for puppy parties to be organised in veterinary practices and therefore the campaign concentrates on what a vet can do during the puppy vaccination consultations. He/she can give information on the behaviour of the pup and can make owners aware that they can help them when they have questions or problems with the behaviour of their dog. Vets play a key role and it is important to persuade them to fulfil that role.

In support of our campaign, one of our sponsors (the pharmaceutical company) organised four local conferences for vets in which we talked about the importance of the prevention of behavioural problems and explained the role that the vet can play in the process. There was no fee for these meetings and we reached 350 vets, which is a good result for the Flemish part of Belgium.

## Plans

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At the present time, dog trainers are being contacted to work on the content of puppy courses and results will be available in the near future.

An evaluation of the campaign is planned so that adjustments can be made to improve the impact.

The campaign '**un bon départ**' will be launched in the French speaking part of Belgium at the end of 2004. There will be a French web site and all the brochures will be translated into French.

In addition VDWE will also continue to promote the ideas of the campaign since a great deal of work remains to be done.

## Conclusions

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This poster offers a unique opportunity for exchanging ideas amongst different countries on what can be done towards the prevention of behavioural problems.

## References

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- Appleby D. L. (1992). *How to have a happy puppy A complete guide to socialisation and environmental conditioning*. Pet Behaviour Centre.
- Appleby D. L., Bradshaw J. W., Casey R. A. (2002). Relationship between aggressive and avoidance behaviour by dogs and their experience in the first six months of life. *Vet. Rec.* 2002 Apr 6, 150 (14), 434–8.
- Halsberghe C. (2001). Maximaliser le potentiel d'un chiot. La prévention des troubles du comportement au niveau de l'élevage et de l'achat. Mémoire pour l'obtention du diplôme de vétérinaire comportementaliste des ENVF.
- Kabinet Minister van Consumentenzaken, Volksgezondheid, Leefmilieu en Dierenwelzijn (2000). Aggressive honden problematiek: een multifactoriële behandeling.
- Kabinet Minister van Consumentenzaken, Volksgezondheid, Leefmilieu en Dierenwelzijn. (2001). Beheersen van hondengressie: een verantwoorde multidisciplinaire benadering.

**Keywords:** Behaviour, Campaign, Prevention, Pups, Socialisation

**POSTER**

# The importance of play for the welfare of the companion dog

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The companion dog might be considered a 'working dog' for people who want a friend to share their home and daily life. Such a concept might imply different requirements both from the practical and emotional points of view and it is important to ask how dogs are prepared for this important role? Both genetic features and correct social and physical stimulation during the sensitive period of development are fundamental (2, 4, 5, 6, 10, 11); furthermore, early training also has great importance if a dog is to be raised with the necessary adaptation skills for its adult environment: the human family and human society (8, 12, 16, 17). What should be stressed is that these skills are not less difficult to develop than others, such as hunting skills, searching skills, guarding skills and so on. A good companion dog is expected to play properly without hurting playmates, to follow the owner, to be tolerant of manipulation by different kinds of people, to remain lying quietly for hours, often alone, waiting for its owner, to behave in a controlled manner in the presence of other dogs, to soil in the proper place and at the proper time and many other things.

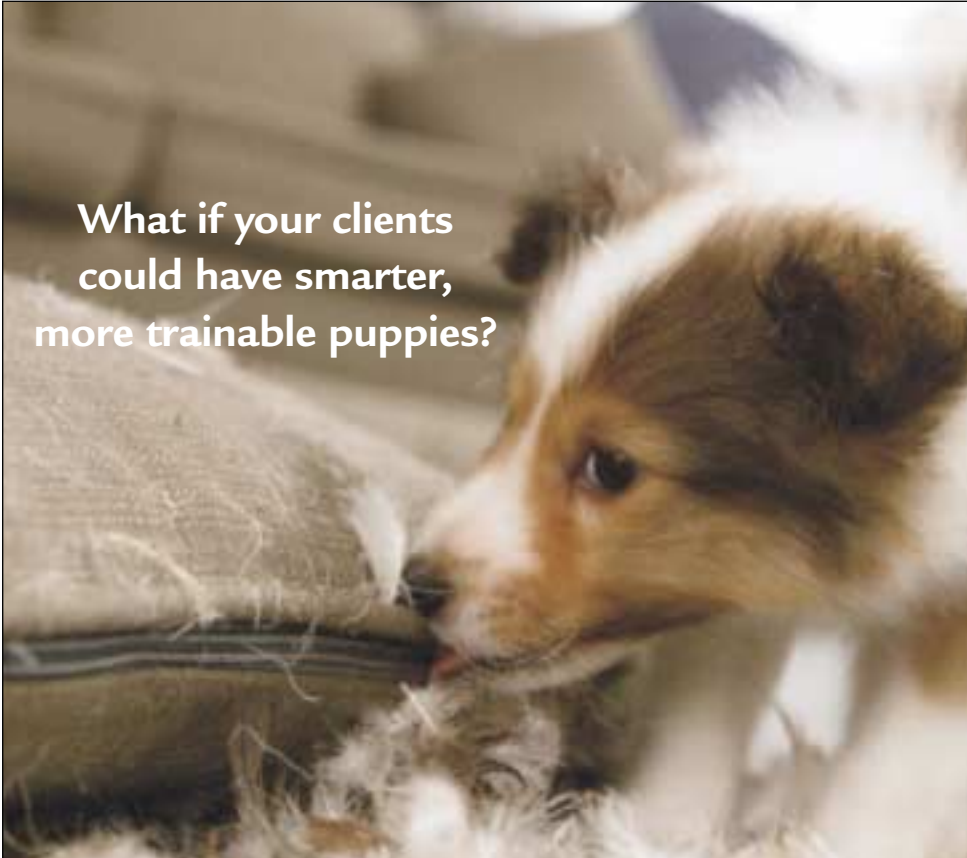
The behavioural characteristics of dogs, generally, include that of being a playful animal throughout life, although these playful attitudes vary significantly between different breeds. Play cannot be considered just as a part of the ontogenetic development of the individual but as a constant component of its life (1, 3). Although the role of play in the adaptation skills of animals has been largely debated for many species and is not fully demonstrated, it is likely that a wise use of training during play sessions can increase the adaptation skills of companion dogs to their environment (7, 9, 13, 14, 15). This poster will illustrate, with both written explanations and pictures, different ways of playing with dogs or letting them play with other dogs and explain how these interactions can be used in order to increase the adaptation skills to the human family and human society and to the variations that so often occur in such contexts. The more an animal is able to adapt to its environment and to the changes that occur in it, the more its welfare is preserved.

## References

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1. Baldwin J. D., Baldwin J. I. (1973) 'The role of play in social organization: Comparative observations in squirrel monkeys' *Primates*, **14**, 369–81.
2. Barret P. B., Bateson P. P. G. (1978) 'The development of play in cats' *Behaviour*, **66**, 106–20.
3. Bateson G. (1956) *The message 'This Is Play'* Josian Macy Jr foundation, Princeton.
4. Beaver B. V., (1999) 'Canine Behaviour: a guide for veterinarians' W. B. Saunders Company, Philadelphia pp.58–64.
5. Bekoff M. (1972) 'The development of social interaction, play and metacommunication in mammals: an ethological perspective' *Quarterly Review of Biology*, **47**, 412–34.
6. Coppinger R., Schneider R. (1995) 'Evolution of working dogs' in *The Domestic Dog, Its Evolution, Behaviour and Interaction with People* Cambridge University Press, 1995.
7. Liebermann D. A. (1993) *Learning, Behavior and Cognition*, CA: Brooks/Cole, Pacific Grove.
8. Lindsay S. R. (2000) *Applied Dog Behavior and Training*, Iowa State University Press, Vol. One pp. 73–126, 233–287.
9. MacLean P. D. (1986) 'Culminating developments in the evolution of the limbic system: the Thalamocingulate division' in Doane, B. K. and Livingston K. E., *The limbic sistem: Functional Organization and Clinical Disorders* New York: Raven.
10. Martin P. (1984) 'The (four) whys and wherefores of play in cats: a review of functional, evolutionary, developmental and causal issues' in Smith, P.K. (ed.), *Play in Animals and Humans*. Basil Blackwell, Oxford, pp. 71–94.
11. Oppenheim R. W. (1999) 'Ontogenetic adaptations and retrogressive processes' in *The development of Animal Behavior, a reader* (ed.) Bolhuis, J. J., Hogan, J. A., Blackwell Publishers, Oxford.
12. Overall K. L. (1997) *Clinical Behavioral Medicine for Small Animals* Mosby, St. Louis (USA).
13. Panksepp J., SiviY. S., Normansell L. (1984) 'The Psychobiology of Play: Theoretical and methodological perspectives' *Neurosc. Behav. Rev.*, **8**, pp. 465–492.
14. Premarck D. (1965) 'Reinforcement Theory' in Levine, D., *Nebraska Symposium on motivation* University of Nebraska Press, New York.
15. Rooney N. J., Bradshaw J. W. S., Robinson I. H. (2001) 'The importance of play signals during dog-human games' in *Proceedings of the Third Internation Congress on Veterinary Behavioural Medicine* Vancouver, BC, Canada, 7–8 August 2001 ed. K. L. Overall, D. S. Mills, S. E. heath, D. Horwitz UFAW.
16. Scott J. P., Fuller J. L. (1965) *Genetics and the Social Behavior of the Dog* The University of Chicago Press, Chicago.
17. Serpell J., Jargoe J. A. (1995) 'Early experience and the development of behaviour' in *The Domestic Dog, Its Evolution, Behaviour and Interaction with People* Cambridge University Press, 1995.

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