

FONDAZIONE INIZIATIVE ZOOPROFILATTICHE E ZOOTECHNICHE
BRESCIA - ITALY



UNIVERSITÀ DEGLI STUDI DI MILANO

**PROCEEDINGS OF THE 6th INTERNATIONAL VETERINARY
BEHAVIOUR MEETING & EUROPEAN COLLEGE OF VETERINARY
BEHAVIOURAL MEDICINE – COMPANION ANIMALS
EUROPEAN SOCIETY OF VETERINARY CLINICAL ETHOLOGY**

Riccione, Italy - June 17 – 20, 2007

Editors: G. Landsberg, S. Mattiello, D. Mills

**International Veterinary Behaviour Meeting
2007**



**EUROPEAN COLLEGE OF
Veterinary Behavioural Medicine
Companion Animals**

ESVCE



**EUROPEAN SOCIETY
OF VETERINARY
CLINICAL ETHOLOGY**

EDITO A CURA DELLA
FONDAZIONE INIZIATIVE ZOOPROFILATTICHE
E ZOOTECHNICHE - BRESCIA

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PROCEEDINGS OF THE 6TH INTERNATIONAL
VETERINARY BEHAVIOUR MEETING

(Riccione, June 17-20, 2007)

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- 4 - 1980 Gli antibiotici nella pratica veterinaria
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- 6 - 1981 La «Scuola per la Ricerca Scientifica» di Brescia
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- 11 - 1983 Immunogenetica animale e immunopatologia veterinaria
- 12 - 1984 5° Congresso Nazionale Associazione Scientifica di Produzione Animale
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- 32 - 1992 Gestione e protezione del patrimonio faunistico
- 33 - 1992 Allevamento e malattie del visone
- 34 - 1993 Atti del XIX Meeting annuale della S.I.P.A.S., e del Convegno su Malattie dismetaboliche del suino
- 35 - 1993 Stato dell'arte delle ricerche italiane nel settore delle biotecnologie applicate alle scienze veterinarie e zootecniche - Atti 1a conferenza nazionale
- 36 - 1993 Argomenti di patologia veterinaria
- 37 - 1994 Stato dell'arte delle ricerche italiane sul settore delle biotecnologie applicate alle scienze veterinarie e zootecniche
- 38 - 1995 Atti del XIX corso in patologia suina e tecnica dell'allevamento
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- 51 - 2002 La valutazione del benessere nella specie bovina
- 52 - 2003 La ipofertilità della bovina da latte
- 53 - 2003 Il benessere dei suini e delle bovine da latte: punti critici e valutazione in allevamento
- 54 - 2003 *Proceedings of the 37th international congress of the ISAE*
- 55 - 2004 Riproduzione e benessere in conigliicoltura: recenti acquisizioni scientifiche e trasferibilità in campo
- 56 - 2004 Guida alla diagnosi necroscopica in patologia suina
- 57 - 2004 Atti del XXVII corso in patologia suina e tecnica dell'allevamento
- 58 - 2005 Piccola storia della Medicina Veterinaria raccontata dai francobolli
- 59 - 2005 IV Congresso Italiano di Storia della Medicina Veterinaria
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- 61 - 2006 Atlante di patologia cardiovascolare degli animali da reddito
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- 63 - 2006 Guida alla diagnosi necroscopica in patologia del coniglio
- 64 - 2006 Atti del XXIX corso in patologia suina e tecnica dell'allevamento
- 65 - 2006 Proceedings of the 2nd International Equitation Science Symposium
- 66 - 2007 Piccola storia della Medicina Veterinaria raccontata dai francobolli II edizione
- 67 - 2007 Il benessere degli animali da reddito: quale e come valutarlo

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E ZOOTECNICHE - BRESCIA



UNIVERSITÀ DEGLI STUDI DI MILANO

PROCEEDINGS OF THE
6th International Veterinary Behaviour Meeting
&
4th Annual Meeting of the European College of
Veterinary Behavioural Medicine-Companion Animals

13th Annual Meeting of the European Society of
Veterinary Clinical Ethology

Sunday 17th to Wednesday 20th June, 2007
Palazzo del Turismo, Riccione, Italy

Editors:

G. Landsberg, S. Mattiello, D. Mills

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PROCEEDINGS

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PROGRAMME

TIMETABLE

Sunday 17th June

14.30 – 16.30	Registration
16.30 – 17.00	Introduction/Welcome C. Palestri
17.00 – 19.30	Poster Session & Welcome Cocktail Coordinators: C. Palestri & L. Notari

Monday 18th June

	IVBM MEETING Moderators for the morning sessions: D. Horwitz & G. Landsberg
08.30 - 09.00	BREED DIFFERENCES IN BEHAVIOURAL DEVELOPMENT IN KITTENS <u>Marchei P.</u> , <u>Diverio S.</u> , <u>Fatj3 J.</u> , <u>Ruiz de la-Torre J. L.</u> , <u>Manteca X.</u>
09.00 – 09.30	PUPPY BEHAVIOUR DURING PHYSICAL EXAMINATION AT THE VETERINARY CLINIC: A PILOT STUDY <u>Godbout M.</u> , <u>Palestrini C.</u> , <u>Beauchamp G.</u> , <u>Frank D.</u>
09.30 – 10.00	PUPPY BEHAVIOURS WHEN LEFT HOME ALONE <u>Cannas S.</u> , <u>Frank D.</u> , <u>Minero M.</u> , <u>Palestrini C.</u>
10.00 – 10.30	EFFECT OF ABANDONMENT ON ATTACHMENT BEHAVIOUR OF ADULT PET DOGS <u>Prato Previde E.</u> , <u>Valsecchi P.</u>
10.30 – 11.00	<i>Coffee Break</i>
11.00 – 11.30	ACCURACY OF DOG OWNERS TO DESCRIBE AND INTERPRET THE CANINE BODY LANGUAGE DURING AGGRESSIVE EPISODES <u>Correia C.</u> , <u>Ruiz De La Torre J.L.</u> , <u>Manteca X.</u> , <u>Fatj3 J.</u>
11.30 – 12.00	OWNERS' PERCEPTIONS OF BEHAVIOUR PROBLEMS AND BEHAVIOUR THERAPISTS IN ITALY: A PRELIMINARY STUDY <u>Notari L.</u> , <u>Galicchio B.</u>
12.00 – 12.30	THE RELATIONSHIP BETWEEN MEASURES OF OWNER COMPLIANCE AND THE SUCCESS OF BEHAVIOUR THERAPY FOR DOMESTIC CATS WITH 'PROBLEM BEHAVIOURS' AS MEASURED BY OWNER AND CLINICIAN GLOBAL SEVERITY SCORES <u>Casey R.A.</u> , <u>Bradshaw J.W.S.</u>
12.30 – 14.00	<i>Lunch</i>

	IVBM MEETING Moderators for the afternoon sessions: E. Prato Previde & M. Verga
14.00 – 14.30	A PRELIMINARY STUDY ON THE VALIDITY OF THE SOCIABLE ACCEPTABLE BEHAVIOUR TEST AS A CANINE TEMPERAMENT TEST <u>De Meester R.</u> , De Bacquer, Vermeire, Peremans, Coopman, Planta, Audenaert
14.30 – 15.00	APPLYING ETHOLOGICAL MEASURES TO QUANTIFY A DOG'S TEMPERAMENT: ARE ETHOGRAMS A VALID INSTRUMENT? <u>Schoening B.</u> , Bradshaw J.W.S.
15.00 – 15.30	SEARCH FOR TEMPERAMENT-ASSOCIATED GENES IN GUIDE DOGS <u>Arata S.</u> , Kaneko F., Momozawa Y., Ogata N., Yoshizawa S., Fukui R., Tawada S., Nakamura T., Kikusui T., Takeuchi Y., Mori Y.
15.30 – 16.00	<i>Coffee Break</i>
16.00 – 16.30	INFLUENCE OF ADOPTION ON TEMPERAMENT IN SHELTER DOGS <u>Pimpolari L.</u> , Di Traglia M., Fantini C., <u>Natoli E.</u>
16.30 – 17.00	IS BREED SPECIFIC LEGISLATION JUSTIFIED? STUDY OF THE RESULTS OF THE TEMPERAMENT TEST OF LOWER SAXONY <u>Schalke E.</u> , Ott S.A., Von Gaertner A.M., Hittmann A., Hackbarth H.
17.00 – 17.30	PLACEBO-CONTROLLED DOUBLE-BLIND COMPARATIVE STUDY ON THE EFFECTS OF DEXTROAMPHETAMINE ON MOTOR ACTIVITY, CARDIAC FREQUENCY AND BEHAVIOUR IN BEAGLES <u>Stiles E.</u> , Palestrini C., Beauchamp G., Frank D.
19.00	<i>Social Dinner</i>

Tuesday 19th June

	IVBM MEETING Moderators for the morning sessions: D. Frank & K. Seksel
08.30 - 09.00	THE RELATIONSHIP BETWEEN TRAINING METHODS AND THE OCCURRENCE OF BEHAVIOUR PROBLEMS IN A POPULATION OF DOMESTIC DOGS Blackwell E.J., Twells C., <u>Seawright A.</u> , Casey R.A.
09.00 – 09.30	INTELLIGENT ACTIVITY FOR DOGS AS A TOOL IN BEHAVIOURAL THERAPY <u>Dehasse J.</u>
09.30 – 10.00	PREDICTING THE OUTCOME OF DETECTOR DOG TRAINING BASED ON THEIR BEHAVIOUR AND GENETIC CHARACTERISTICS <u>Ogata N.</u> , Vandelloo J., Kikusui T., Takeuchi Y., Mori Y.

10.00 – 10.30	THE EFFECTS OF TRAINING AND ENVIRONMENTAL ALTERATIONS ON ADOPTION SUCCESS OF SHELTER DOGS <u>Luescher A.U.</u> , Medlock R.T., Beck A.M.
10.30 – 11.00	<i>Coffee Break</i>
11.00 – 11.30	ON THE COMMUNICATIVE ASPECT OF BARKING <u>Miklósi Á.</u> , Pongrácz P., Molnár C.
11.30 – 12.00	A SURVEY OF BARKING DOGS IN SOUTH EAST QUEENSLAND, AUSTRALIA <u>Perry G.</u> , Seksel K.
12.00 – 12.30	IS THERE A DIFFERENCE? COMPARISON OF GOLDEN RETRIEVERS AND DOGS AFFECTED BY BREED SPECIFIC LEGISLATION REGARDING AGGRESSIVE BEHAVIOUR <u>Ott S.A.</u> , Schalke E., Von Gaertner A.M., Hackbarth H.
12.30 – 14.00	<i>Lunch</i>
	ECVBM-CA MEETING Moderators for the afternoon sessions: S. Heath & M. Minero
14.00 – 14.30	EVALUATION OF AGE-RELATED COGNITIVE IMPAIRMENT IN PET DOGS <u>Osella M.C.</u> , Girardi C., Re G., Badino P., Bergamasco L., Ghi P., Orsetti M.
14.30 – 15.00	A COMBINATION OF ACETYL-L-CARNITINE AND ALPHA LIPOIC ACID IMPROVES LEARNING, BUT NOT MEMORY, IN AGED BEAGLE DOGS <u>Araujo J.A.</u> , Milgram N.W., Landsberg G., Hagen T., Treadwell B., Ames B.
15.00 – 15.30	THE EFFECTIVENESS OF FLUOXETINE CHEWABLE TABLETS IN THE TREATMENT OF CANINE SEPARATION ANXIETY <u>Landsberg G.</u> , Simpson B., Neilson J., Melese P., Clark T., Zimmerman A.
15.30 – 16.00	<i>Coffee Break</i>
16.00 – 16.30	AN ANALYSIS OF THE RELATIONSHIP BETWEEN THE HISTORY OF DEVELOPMENT ON SENSITIVITY TO LOUD NOISES AND BEHAVIOURAL SIGNS IN DOMESTIC DOGS <u>Iimura K.</u> , <u>Mills D.S.</u> , Levine E.
16.30 – 17.00	BEHAVIOURAL CORRELATES OF STEREOTYPIC BEHAVIOUR IN HORSES: A PILOT STUDY <u>Lethbridge E.</u> , Pollux P.M.J., Mills D.S.
17.00 – 17.30	IMPAIRMENT OF COGNITIVE CAPABILITIES IN AGEING HORSES: PRELIMINARY RESULTS OF AN EXPERIMENTAL AND CLINICAL STUDY <u>Pageat P.</u> , Bonnafous L., Lecuelle C., Mariette C., Falewee C., Gaultier E.

Wednesday 20th June

	ESVCE MEETING (Invited speakers) Theme: Challenges in veterinary behavioural medicine Moderator for the morning sessions: J. Dehasse
08.30 - 09.30	THE CHALLENGE OF DEALING WITH THE HUMAN DIMENSION <u>C. Béata</u>
09.30 – 10.30	THE CHALLENGE OF MEDICAL DIFFERENTIALS <u>S. Heath</u>
10.30 – 11.00	<i>Coffee Break</i>
11.00 – 12.00	THE CHALLENGE OF BEHAVIOURAL MODIFICATION <u>J. Bowen</u>
12.00 – 13.00	THE CHALLENGE OF SELECTING MEDICATION <u>D. S. Mills</u>
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WELCOME

It is a pleasure to welcome you to the 6th International Veterinary Behaviour Meeting (IVBM 2007), here in Riccione, Italy.

It has been an honour and a challenge to organise the 6th International Veterinary Behaviour Meeting (IVBM) in cooperation with the 4th European College of Veterinary Behavioural Medicine-Companion Animals (ECVBM-CA) and the 13th European Society of Veterinary Clinical Ethology (ESVCE).

You will appreciate that the organisation of congress is a huge task and when multiple events are being co-ordinated at one venue the challenge increases even further.

In our opinion in organising this congress now in Italy, where the development of behavioural medicine has brought about a noticeable and increased interest in the argument, bringing about thus new professional figures with various competences, not always officially recognised, has represented a great stimulus for the development of the behavioural medicine.

It also contributed to the cohesion and collaboration among the different groups operating in this field (AISEAB, ASETRA, Universities of di Milano, Torino, Padova, Bologna, Parma, Pisa, Bari, Perugia, Azienda USL Roma, Istituto Zooprofilattico Sperimentale Umbria e Marche). We welcome you all.

The numerous oral and poster communications speak about a lot of themes in behaviour, behavioural medicine and clinical ethology: behavioural development, the relationship and the influence of owners on behaviour, the assessment and evaluation of temperament, training methods and the effect of the environments on behaviour, cognition, ethological traits and the treatments of behavioural disorders.

We believe that the interchange between the scientific and practical sectors is not only useful but necessary. It may facilitate and accelerate progress in this field and we sincerely hope that it will offer you an enjoyable experience.

Behavioural medicine is a multi-factorial discipline which brings together elements of internal medicine, psychology and learning theory, human behaviour and psychopharmacology. Each of these areas brings its own specific challenges and the 2007 ESVCE congress will explore each of them with the aim of deepening our understanding of the patients and clients in our care.

We would like to thank all those who submitted abstracts for this meeting and the members of the review panel who took time to read the same.

Each paper was reviewed by at least three reviewers. The programme was then generated on the basis of a consensus on merit and diversity. With almost one hundred submissions to the review panel, we decided in the interest of maintaining diversity that is the characteristic of these meetings, to limit presenters to a maximum of a single spoken presentation. With the meeting spread over two and half days some who wished for spoken papers have been asked to create posters instead. All are included in this volume and equally deserve attention.

A special thanks to Daniel Mills, Gary Landsberg, Silvana Mattiello for their assistance in editing the papers.

Besides we want to thank ESVCE boards, the International Organising Committee for their contributions to the organization of this event. A personal and sincere thank-you to Debbie Horwitz.

We want also express our gratitude to the “Fondazione Iniziative Zooprofilattiche - Brescia” for publishing the Proceedings and to Karen Overall who gave to all the participants the great opportunity to submit their abstracts to be published in special volume of JVB-CAR dedicated to this major behavioural event.

Another special thanks to Norman Blackman who created the IVBM logo, which has been used for the first time in Caloundra in 2003 and which represents perfectly the meaning and the spirit of each IVBM: illustrating the diversity of ongoing research in the field, and the importance that all have to play in this discipline.

Finally, the time we have dedicated to this project would have only been possible with the support of our colleagues at work: Simona Cannas, Angelica Bassi, Laura Volontè, Elisabetta-Sabrina Scaglia, Greta Berteselli, Sara Barbieri. We owe you a lot. Thanks again!

We worked hard to organise the best Congress possible. We sincerely hope that all our efforts help to produce an enjoyable experience. Once again, welcome!

Clara Palestrini and the Scientific Committee

IVBM & ECVBM-CA
Oral Sessions

BREED DIFFERENCES IN BEHAVIOURAL DEVELOPMENT IN KITTENS

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Key words

behavioural development, breed differences, domestic cat, Open Field Test.

Introduction

The selection process of pure breed cats has introduced profound differences in morphology and diseases susceptibility. Breed-related differences in behaviour have been suggested but, to the best of our knowledge, not fully investigated. The aim of the present study is to explore behavioural differences between two groups of pure breed cats during the developmental period using the Open Field Test (OFT).

Materials and methods

OFT behavioural responses of Oriental/Siamese/Abyssinian (OSA) kittens (n = 43) were compared with those of Norwegian Forest (NFO) kittens (n = 39). Breeds were selected and grouped on the basis of deep morphological differences and divergent geographical origin. After an initial interview with the breeder, kittens were individually tested weekly from the 4th to the 10th week of age. Kittens were placed in a rounded arena with a novel object (a cylindrical metal container - NO) for 6 minutes (OFT-A). Then, as a potentially fear triggering stimulus, a metal spring was suddenly released from the NO and the response of cats was evaluated for 6 minutes (OFT-B). The behaviour of cats was videotaped for the duration of the test to allow later analysis following a focal animal sampling rule. Analyzed parameters included the number of squares entered, as well as behaviours like vocalizations, time spent in locomotion, exploring walls, floor and the novel object, escape attempts, inactivity, grooming and rubbing. In addition, kittens' heart rate and rectal temperature were measured weekly before and after the OFT. Differences in behaviour and physiological parameters were analysed for breed, week, OFT-A and OFT-B effects using the PROC MIXED procedure and Tukey's multiple comparison of SAS 9.1 statistical package.

Results

Significant differences were found between both breed groups. NFO kittens opened eyes later ($p < 0.0001$) than OSA kittens, but reached the physiological adult temperature earlier ($p < 0.05$). More episodes of hypothermia were observed in OSA kittens (37,19% OSA vs. 21,74% NFO). Throughout the experimental period, OSA kittens presented higher emotional tachycardia ($p < 0.05$) and locomotion ($p < 0.0001$), while NFO kittens spent more time exploring the arena ($p < 0.01$) and attempting to escape ($p < 0.0001$). The reduction in exploratory behaviour and locomotion was more gradual in NFO than in OSA kittens, the later showing an earlier and more abrupt decline. Significant breed differences were also observed for

resting postures: sitting was higher ($p < 0.05$) in NFO kittens while OSA kittens spent more time standing ($p < 0.05$).

Discussion

An earlier opening of the eyes, higher locomotion and a longer standing time observed during the first experimental weeks in OSA kittens may indicate a more precocious neurological development. Similarly to other mammals, cats from northern areas (NFO) might develop thermoregulatory competence before breeds originating from warmer zones (OSA). Inter breed differences recorded for exploratory and locomotion behaviour could suggest divergences in coping strategies. According to our results, OSA kittens displayed a very passive behaviour when challenged, whereas NFO kittens chosen a more active strategy.

Conclusion

OFT seems to be a valuable tool for investigating differences in behavioural responses during the early stage of development in cats. Although the genetic selection that yielded OSA and NFO breeds was mainly based on morphological criteria, some basic behavioural differences could be also introduced.

PUPPY BEHAVIOUR DURING PHYSICAL EXAMINATION AT THE VETERINARY CLINIC: A PILOT STUDY

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Key words

behaviour, dogs, physical examination, puppy, veterinary clinic.

Introduction

New owners usually have many questions regarding their puppy's behaviour during the first physical examination but only few data about "normal puppy behaviour" are available for veterinarians to answer these questions. The purpose of this study was to document puppy behaviour during physical examination at the veterinary clinic as well as to describe the variability of the behaviours expressed by puppies when confronted with a new environment and different manipulations.

Material and methods

A total of 102 eight to sixteen week-old puppies of various breeds were filmed during a standardized physical examination at the veterinary clinic. The study included an observation of the puppy free on the floor (FF) followed by a physical examination on a table (PET) and various manipulations on the floor (MF). During FF, the behavioural categories recorded were: motor activity, exploration, facial expression, puppy solicitation of interaction with the veterinarian, and vocalisation. During PET and MF, type of interaction with the veterinarian, facial expression and ear position were examined.

Statistical analysis

The effect of independent variables (origin of the puppy, estimated future adult weight, sex, age and heart rate during the examination) on the mean proportion of time allocated to different behaviour was analysed using a linear model in the three different contexts. Pearson's correlation was used to investigate the association between the duration of different behaviours within and between contexts for the common state variables. Event variables were compared with an exact chi-square test. Finally, the association between prevalence of the event variables and the duration of state variables was examined with an unequal variance T-test.

Results

The distribution of the puppies' behavioural response in a new environment and during manipulations within a veterinary clinic was very wide but most puppies behaved in a similar fashion. During FF, most puppies were silent, did not pant, were very active and oriented to the

environment but interacted little with the veterinarian. During PET puppies were not panting extensively, usually kept their ears in a normal position and showed passive behaviour. The distribution of behaviours observed during the manipulation on the floor was almost the same as the one observed on the table but puppies panted more and were less passive. However, passive dogs on the table were also passive on the floor ($p < 0.0001$) and most of the dogs panting during the manipulation on the floor were also panting in the two other contexts ($p < 0.0001$) indicating that some puppies can be differentiated from the majority with regards to these behaviours. Panting puppies also showed more flattened ears ($p = 0.01$), lip licking ($p = 0.026$) and yawning ($p < 0.0001$). Other behaviours exhibited by a few individuals only included vocalisation during FF and avoidance during PET and MF.

Conclusion

Several correlations identified between behaviours within and between the three contexts suggest that a behavioural syndrome might exist in puppies even at a young age. Whether or not these individuals are at higher risk of developing behavioural disorders as adults remains to be investigated.

PUPPY BEHAVIOURS WHEN LEFT HOME ALONE

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Key words

dog, puppies, home alone, behaviour.

Introduction

Problems involving destruction, self inflicted-trauma, vocalization and house-soiling by dogs that occur during the owner's absence are common and constitute a significant portion of the caseload of the behavioural specialist. There are a large number of differential diagnoses for separation-related problems that do not have a basis in anxiety of separation; therefore, the condition can be difficult to diagnose correctly (Flannigan and Dodman, 2001).

The potential causes of separation anxiety are numerous, may not be exclusive and may overlap; these include "overattachment" to the owner, negative early experience such as too early separation from their dam, a traumatic experience while alone, and a change in family circumstances (Flannigan and Dodman, 2001). Most studies to date on early behavioural development in dogs have been based on various laboratory tests (Scott and Fuller, 1965) and unfortunately very little information is currently available on puppies observed in the human social environment (Lund and Vestergaard, 1998).

The study is divided in two parts: first an exploratory study with the aim to investigate which behaviours puppies exhibited when left home alone within the initial weeks (0–16 weeks) after adoption and a second study, evaluating how puppies' behaviours change over the first few months following adoption.

Materials and methods

For the first study, 18 puppies (9 aged less and 9 aged more than 90 days) were filmed home alone for 90 min after the owner left.

In the second study, 16 puppies were filmed home alone for 60 min after the owner left. The videotaping was repeated again after 1 and 2 months. In both studies, owners were asked to complete a brief questionnaire including information on the puppy's characteristics and history as well as on the physical and social environment of the dog.

Results

The PCA revealed two underlying components whose Eigen values were greater than 1, which together explained 63.87% of the variation between puppies. The puppies tended to separate in two groups depending on acquisition source; in particular the puppies adopted by breeders were more reactive and oriented to environment.

We analyzed the puppies' behaviours during three repeated video recordings. In puppies adopted from private sources "exploration behaviour" was significantly affected by time ($p \leq 0.05$) and age ($p \leq 0.05$) and the age of the puppies significantly affected "oriented to envi-

ronment” behaviours ($p \leq 0.05$). Play behaviour was significantly affected ($p \leq 0.01$) by the age of the puppies in all of the three repeated video recordings.

Discussion and conclusion

Diagnosis of separation-related problems is generally based on indirect evidence such as elimination or destruction during owner absence rather than on tapes of actual behaviours and body language. These results can serve as preliminary information documenting what behaviours puppies perform when left home alone; the hope is to gain insight on how these behaviours change over the first few months following adoption. This information may prove useful for the early diagnosis, treatment or prevention of separation-related disorders.

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EFFECT OF ABANDONMENT ON ATTACHMENT BEHAVIOUR OF ADULT PET DOGS

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Key words

abandonment, affectional bond, Ainsworth Strange Situation, attachment, domestic dog.

Dogs (*Canis familiaris*) are highly social animals and develop a strong affectional bond with their human partners, showing specific patterns of attachment behaviour (Topàl et al., 1998; Prato Previde et al., 2003; Fallani et al., 2006). Abandonment and bond disruption represent a strongly traumatic experience for a dog as they imply a radical change in the dog's environmental and social conditions. There is evidence that despite the disruption of the affectional bond and the lack of social interaction with humans, adult shelter dogs do maintain the capacity to form new bonds with humans (Gàsci et al., 2001); on the other hand there is also evidence that the experience of being abandoned may affect the relationship with the new owner in a number of different and important ways (Serpell and Jagoe, 1995; Prato Previde et al., 2003). In this study the Ainsworth's "strange situation" Test was used to investigate differences in attachment behaviour between pet dogs that had been adopted from rescue centres and pet dogs that had been reared in the same family home from puppy-hood.

Sixty-three adult dog-owner pairs participated in the study. The dog sample consisted of 32 males and 31 females, both pure and mixed-breeds, whose ages ranged from 1 to 10 years and included subjects with different life experience: Abandoned dogs (n = 33, 13 females and 20 males) and Non Abandoned dogs (n = 30, 18 females and 12 males).

The test consisted of 7 three-minute consecutive episodes in which the dogs were placed in an unfamiliar room (ep. 1), introduced to an unfamiliar stranger (ep. 2), subjected to 3 short separations from their owner (ep. 3,5,6) and to reunion with him/her (ep. 4, 7). The behaviour of each dog during the test was video recorded and subsequently analysed using a 5-second point sampling method, recording 26 different behaviours (i.e. exploration, play, locomotion, support seeking, greeting; see Prato Previde et al. 2003).

We found that abandoned dogs played less than non-abandoned ones with both the owner and the stranger (Mann-Whitney test: owner, $p=0.03$; stranger, $p<0.01$), remained significantly more visually oriented towards both the owner and the stranger compared to non abandoned ones (owner and stranger, $p<0.05$), and engaged significantly more in locomotion throughout the test, in the presence of the stranger and especially when alone in the room ($p=0.001$).

Overall, our findings show that in spite of abandonment and separation from previous attachment figures adult dogs adopted from shelters form with their new owner a strong affectional bond that is similar to that developed by pet dogs who lived with their owners since puppyhood. However we also found a number of interesting differences suggesting that dogs experiencing abandonment tend to be more anxious and perhaps less securely bonded to the owner.

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ACCURACY OF DOG OWNERS IN THE DESCRIPTION AND INTERPRETATION OF CANINE BODY LANGUAGE DURING AGGRESSIVE EPISODES

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Key words

aggression, behaviour problems, communication, dog.

Introduction

The categorization of canine aggression ultimately depends on the owner's accuracy in recognizing and remembering the specific communicative signals occurring during the aggression episodes. A study was designed to evaluate the ability of dog owners to report previously observed aggressive behaviour.

Materials and methods

Twenty eight owners of aggressive dogs and 22 owners of non-aggressive dogs were tested. All participants watched three videos of approximately 1 minute duration, each one containing a dog showing an overt aggressive response. After each video the participant was asked to complete a questionnaire to assess three different aspects of the dog's behaviour:

- (1) the overall interpretation of the situation through a test with 6 different options,
- (2) the identification of specific visual and auditory communicative signals and
- (3) the biological interpretation of those signals, particularly regarding whether they express play, fear or aggression.

The questionnaire was completed in a quiet room at the School of Veterinary Medicine and presented to each owner through a standardized self-driven Powerpoint presentation containing the instructions and the videos. For the first part of the questionnaire, given answers were compared to those previously agreed by the authors. Regarding the second and the third part of the questionnaire, the ability of owners to rate and understand specific signals was compared with a previously established objective analysis of the videos, based on reference publications on canine communication. Mann-Whitney U non-parametric tests were used to compare results from the aggression group with the non-aggression group.

Results

Owners were able to distinguish a clear aggressive episode from play behaviour. Fear signals tended to mask aggression, consequently lowering the perception of danger. Fifty one percent of the communicative signals emitted by each dog were remembered and only 10% were interpreted similarly to the authors' previous description. Growling and barking were remembered more consistently than visual communicative signals, especially when fear was not involved in the aggressive episode. No overall differences were detected between the aggression and non-aggression groups for both, the overall interpretation of the situation and the level of competence in remembering specific body signals.

Discussion

The dog's language during aggression episodes has been described as the most reliable way to understand its underlying motivation. Results from the present study suggest that the information reported by owners regarding the dog's communicative signals during aggression episodes might be very subjective and biased, even when using a closed questionnaire asking for specific signals.

OWNERS' PERCEPTIONS OF BEHAVIOUR PROBLEMS AND BEHAVIOUR THERAPISTS IN ITALY: A PRELIMINARY STUDY

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Key words

behaviour, cat, dog, owner, perception.

Introduction

Qualitative research is considered, in the social sciences, extremely useful in providing initial insights that can lead to more careful formulation of the problems and generate hypothesis (Henkwood, 1996). This method was used to investigate the perceptions that dog and cat owners have of behaviour problems, behaviour therapy and behaviourists (Jargoe and Serpell, 1996; O'Farrel, 1997; Ritvo, 1988).

Material and Methods

A qualitative study was carried out through group discussions. 17 respondents were recruited randomly through telephone screening questionnaires. Quotas were set with the following criteria: all the respondents had to be dog or cat owners, have a direct involvement in their pet management and have pets with behaviour problems; a balanced distribution of different owners' sex and age were required. The respondents were divided into two groups: a dog owner group with 9 respondents and a cat owner group with 8 respondents. The group sessions lasted 2 hours each and were held in Milan. The discussions were observed through a one-way mirror and videotaped.

A discussion guide and informative material were used by a moderator to focus group discussion on:

- Impact of behaviour problems on everyday life
- Direct or indirect knowledge of helpers: trainers, behaviourists, veterinarians
- Attitudes towards professional profiles and roles of pet behaviour helpers
- Perception of the Veterinary Behaviourist professional profile
- Reactions to different therapeutic options

Results

- All dog and cat owners (17 respondents) agreed that pet behaviour problems can have a huge impact on everyday life
- Dog owners spontaneously mentioned trainers (9 respondents) and behaviourists (5 respondents)
- No cat owner spontaneously mention any type of professional helper
- Both dog and cat owners (17 respondents) were unaware of the existence of qualified veterinary behaviourists
- When presented with previously written professional profiles:
 - Both dog and cat owners (17 respondents) agreed that the veterinary behaviourist was the most qualified professional to treat behaviour problems

- Non veterinarian behaviourists were considered less qualified, less credible and reliable compared with veterinary behaviourists both in dog and cat owner group (17 respondents)
- In the dog owner group the professional profiles of trainers were considered as suited mainly for problems related to dog management (9 respondents) and guard-dog training (5 respondents)
- Dog owners considered it acceptable to use psychiatric drugs, as a last resort along with behaviour modifications (8 respondents)
- Cat owners rejected the idea of using psychiatric drugs (8 respondents).

Discussion and conclusion

In this study a relevant difference in perception emerged as to the possibility of treating behaviour problems in the two groups. Cat owners perceived as difficult or impractical the possibility of modifying cat behaviour. In both groups, the veterinary behaviourist professional profile was unknown but, when informed about the academic and professional background of such professionals, all the respondents considered the veterinary behaviourist as the most reliable and qualified helper. A qualitative methodology was chosen in order to analyse in depth owner attitudes and behavioural patterns, but further research should be carried out in a second stage to validate hypotheses through quantitative measurement (Woolgar, 1966).

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THE RELATIONSHIP BETWEEN MEASURES OF OWNER COMPLIANCE AND THE SUCCESS OF BEHAVIOUR THERAPY FOR DOMESTIC CATS WITH "PROBLEM BEHAVIOURS" AS MEASURED BY OWNER AND CLINICIAN GLOBAL SEVERITY SCORES

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Key words

domestic cat, behaviour, clinical, compliance.

Introduction

The importance of owner compliance in following treatment is recognised in all aspects of veterinary and human medicine. However, in behavioural medicine, where the majority of the "treatment" is conducted by the owner after the consultation, compliance is fundamental to the successful outcome of the case. Previous studies have investigated the compliance of new owners in following written programmes of advice aimed at preventing the development of particular behaviour problems in dogs and cats homed from rescue shelters. In both cases, up to half of owners in treatment groups have not followed aspects of the advice given, which has reduced the efficacy of these interventions. In addition, retrospective studies of clinical cases suggest that poor owner compliance results in less successful clinical outcomes. The aim of this study was, therefore, to compare measures of owner compliance with global scores of the severity of problem behaviours, as measured by both the owner and the clinician, before and after the implementation of a programme of behaviour therapy.

Materials and methods

The owners of 85 cats with a range of different "behaviour problems" were recruited to participate in this study, and each owner was visited in their own home. All cases presenting during the study period where the behaviours shown were within the 'normal' behavioural repertoire of the domestic cat were included, such as aggression to other cats and people, urine spraying and inappropriate toileting. Cases with a medical cause, or significant medical component, or behaviours out-with the normal repertoire for the species, such as self-mutilation, were excluded. At this first visit, a full clinical behaviour questionnaire was completed, and the client and clinician independently scored the cat's behaviour for severity on a visual analogue scale. Each owner was then given a treatment programme tailored specifically to the behaviour problem of his or her cat, and the circumstances of the owner. The clinician visited again after eight weeks to evaluate the progress made by owners. Both owner and clinician again rated the global severity of the problem behaviour. In addition, the owner was asked 10 questions that were designed to check their compliance with various aspects of the treatment programme. For each question the owner scored on a scale of 0 to 2, where 0 was no compliance, 1 was partial compliance and 2 was full compliance. Measures of compliance were then compared with changes in severity scores between the two visits.

Results

The combined severity scores for each visit of the clinician and owner were significantly different ($p < 0.05$). The owners reported a decrease in severity after treatment in 92% of cases, and the clinician in 78% of cases. The average compliance of owners to programmes was 61%. The change in severity score as rated by the clinician only was significantly negatively correlated with compliance score ($p < 0.05$).

Conclusions

Although the level of compliance to the behaviour therapy programmes was lower than might be ideal, owners appeared to perceive a high level of success of the treatment programme. This may be due to a better understanding of their cat's behaviour as a result of the clinical process. However, the degree of improvement between the two visits, as rated by the clinician, did correlate with the compliance of the owner to the treatment programme, suggesting that owner compliance is an important factor in the resolution of behaviour problems in cats.

A PRELIMINARY STUDY ON THE VALIDITY OF THE SOCIABLE ACCEPTABLE BEHAVIOUR TEST AS A CANINE TEMPERAMENT TEST

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Introduction

Behaviour tests are used to objectively categorise a dog's temperament. One of the possibilities to define a part of a dog's temperament consists in defining the dog on a shyness/boldness axis. This axis -being a fundamental dimension in humans- can be defined as an individual's general tendency to approach novel objects and willingness to take risks.

In this study, the suitability of the Sociable Acceptable Behaviour (SAB) test, formerly developed to evaluate the tendency for aggressive behaviour in dogs, was investigated to assess the validity of the shyness/boldness axis construct.

Materials and methods

During one year, the SAB test (Planta, 2001) was performed on 82 dogs. Body height scores varying from 1 (very high position) till 7 (extreme low position), combined with the position of the ears and tail were recorded for every dog in all of the 16 subtests. The dogs belonged to 28 different breeds or were mongrels. Their age varied between 1 and 8.5 years (mean 3.27 yrs). Among them 48 were male, 34 female. Thirty eight of the dogs were referred for behavioural problems (5 for fear problems, 23 for aggression, 10 for mixed aggression and fear) and 45 dogs were not reported to have behavioural problems by the cooperating volunteers). Statistical analysis: Factor analysis was used to find common underlying features among the body height scores for the 16 subtests. Factors were identified according to a maximum likelihood extraction method with varimax rotation. In order to look for subgroups of dogs with similar body height scores, hierarchical cluster analysis was performed based on a log-likelihood based distance measure. The number of clusters was determined using the change in BIC values (Schwarz's Bayesian Criterion). Clusters were compared for age, sex and reason for referral according to Fisher's exact test and the Mann-Whitney test. All analyses were done using SPSS software (release 12). A level of alpha = 0.05 was adopted to indicate statistical significance.

Results

A cluster analysis revealed the existence of two groups: a group (A) with systematically high body height scores, meaning low body posture and a second group (B) with consistent lower body height scores. It was demonstrated that these differences could not be explained by differences in age, neither by the fact that the dogs were presented for a behavioural problem or not. Gender was a significant factor, whereby female dogs were more present in group A

(54% vs. 24% in group B, $p < 0.01$). Both groups showed an analogue pattern of evolution in their body height scores during the consecutive subtests.

Conclusion

This preliminary study indicates that the SAB test may be a convenient way to categorise dogs on a shyness/boldness axis when using their body height score. Further research is necessary to confirm these findings, to validate them compared to everyday behaviour and to investigate the correlations between the behaviour shown in a subtest and the options taken by the dog in stressful conditions.

In order to find out if these subgroups are in correlation with a bold or shy behaviour in dog's everyday life, the results will be compared in a later study with the results of the CBAR-Questionnaire. (Hsu and Serpell, 2003).

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APPLYING ETHOLOGICAL MEASURES TO QUANTIFY A DOG'S TEMPERAMENT: ARE ETHOGRAMS A VALID INSTRUMENT?

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Key words

aggression, dog, emotional state, ethogram, temperament test.

Introduction

Ethograms are comprehensive descriptions of all single behaviour patterns that make up the complete behavioural repertoire of an individual species or breed. In the scientific literature on dog temperament tests ethograms are not generally used and if so, are not standardised as there is no general consensus on the dog's ethogram. Rather, these tests use scoring systems, attributing certain behaviours shown or not shown to a numeric scale.

Although such scoring systems are able to quantify certain types of behaviour they do not record the emotional state of the dog whilst being exposed to test stimuli, thus giving little indication for the motivation behind each action.

For conclusions to be drawn from test results (e.g. to breed with a certain dog, to keep a dog permanently muzzled etc.), it is important to examine the motivational background of any behaviour shown, not least for welfare considerations.

This applies also to behavioural medicine, where it is important to base diagnoses and subsequent therapy rationales on sound and comprehensible descriptions of a dog's behaviour that are comparable between different experts.

Material and methods

Over a four year period 254 adult dogs were tested in Hamburg, Germany, using a validated behavioural test for aggression comprising 40 individual test-elements. Dogs were scored between 1 (no aggression shown) and 6 (offensive biting without preceding threats).

Additionally an ethogram widely utilised in Germany was used, comprising 79 different behaviours which will be illustrated in the presentation.

Individual behaviour patterns were grouped as: threatening-, imposing-, play-, flight-, stress-, social approach-, inhibited attack-, uninhibited attack behaviour and behaviour for passive submission.

For each dog the first five behaviours shown as a reaction to the test-stimulus were recorded.

Principal components analysis was used to examine whether the behaviour patterns performed by individual dogs did actually fall into the groups indicated in the ethogram.

Results and discussion

Unrotated PCA revealed 16 components with eigen values exceeding 1, supported by a Kaiser-Meyer-Olkin value of 0.728 and a significant Bartlett's test of Sphericity. The scree-plot suggested a break after the fourth or fifth component.

The grouping of behaviours in the existing ethogram was confirmed. PCA followed by Varimax rotation further confirmed a clear distinction between behaviours for social approach and agonistic behaviours.

Behaviours from certain groups (e.g. behaviours indicative of stress and play behaviour) fulfil several functions and are equally likely to be used in a socio-positive or socio-negative context. Two single behaviours (attention/ uncertainty) could not be attributed to any group and always loaded opposite to each other. "Attention", "play" and "social approach" were significantly negatively correlated (Spearman rank, $p < 0.05$) with an aggression score exceeding 2; "uncertainty", "imposing", "threats" and "attack" were positively correlated with aggression. Behaviours for flight and stress were just marginally positively correlated with aggression.

The results substantiated the grouping of individual behaviours.

This grouping allows the ethogram to be used as an additional tool in defining a dog's temperament. Whether it is justifiable to completely abstain from using individual behaviours in favour of behavioural groups would require further investigation.

SEARCH FOR TEMPERAMENT-ASSOCIATED GENES IN GUIDE DOGS

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Key words

genetic polymorphism, guide dog, temperament assessment.

Introduction

To work as a guide dog for the blind appropriate temperament is required, and thus considerable portion of candidate dogs fail to reach the final stage of training mainly due to their temperament problems. Today, there are more than hundreds of dog breeds through historical selection on their physical and temperament characteristics (Takeuchi and Houpt, 2003). Based on these breed differences, the search for temperament-associated genes was commenced first by comparing different dog breeds (Masuda et al., 2004; Takeuchi et al., 2005; Ogata et al., 2006). As the next step, it is now considered more important to develop an intra-breed research model with a reliable temperament assessment (Momozawa et al., 2005). Guide dog candidates seem to possess certain benefits in such behaviour-genetics studies, because they have more similarities in genetic background than pet dogs and their temperament can be assessed by experienced trainers through long-term observation (Serpell and Hsu, 2001). The aim of this study is to search temperament-associated genes in guide dog candidates by analyzing their temperament assessment scores during the training.

Materials and methods

We investigated 54 Labrador retrievers, out of which 27 were accepted as the guide dogs and 27 rejected (not including dropouts due to illness). Trainers evaluated their dogs on 22 temperament items by 5 levels based on the observation for 3 months through training and other off-times. For the genetic study, blood samples were collected and genome DNA were extracted for genotyping 9 polymorphisms of 4 genes (Serotonin 1B receptor, Glutamate transporter 1; GLT1, Tyrosine hydroxylase and Glutamate decarboxylase 67), and associations between temperament traits and genotypes were investigated.

Results

Factor analysis of 16 temperament items resulted in an extraction of 5 stable factors. By comparing scores of these factors among different genotypes/alleles, the association between the C-allele of GLT1-T471C and factor 4 was identified, i.e., dogs with the C-allele had significantly lower scores in factor 4 (Mann-Whitney U test, with Bonferroni correction, $p < 0.01$). In addition, those with C-allele showed lower 'initiative' and higher 'suspicion' (both are components of factor 4) than those without it (Mann-Whitney U test, with Bonferroni correction, $p < 0.017$). There was no significant association between any genotype or allele frequency and training outcomes, i.e., accepted or rejected.

Discussion

GLT1 is one of the transporters for glutamate, an important excitatory amino acid in neurotransmission. Recently, we have reported that polymorphisms of GLT1-T471C show interbreed difference in Japanese pet dogs and the C-allele frequency was 15% in Labrador retrievers. In this study, however, 79% of guide dog candidates had C-allele. This might be ascribed to the selection of cautious temperament as the present results suggest an association between GLT-T471C polymorphisms and prudence. To test this hypothesis further investigation with larger number of candidate dogs is needed.

Conclusion

We investigated guide dog candidates to search the temperament-associated genes, and found that one polymorphism (GLT1-T471C) showed significant association with a temperament factor (factor 4) which consisted of 'suspicion' and 'initiative' as components. It is suggested that the GLT1-T471C can be one of genetic markers for early prediction of appropriate temperament for breeding and training in guide dogs.

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INFLUENCE OF ADOPTION ON TEMPERAMENT IN SHELTER DOGS

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Key words

adoption, shelter dogs, temperament.

Introduction

Dog shelters are common in western societies and provide a valuable service, housing homeless dogs and seeking subsequent adoption for these dogs (De Palma et al., 2005). Nevertheless, limited attention has been devoted to the determination of the temperament of dogs housed in a shelter, and to the eventual influence of adoption on temperament itself. The aim of this study was to detect the modification, if any, of dog temperament due to adoption by private citizens.

Materials and methods

Seventy-four healthy mixed-breed dogs housed in the Municipal Dog Shelter were studied using ethological methods (Altmann, 1974); the ethogram utilised consisted of more than 100 behavioural patterns. Their temperament was assessed by mean of a Principal Component Analysis (PCA) applied to behavioural frequencies. The temperament of thirty-five out of the seventy-four was determined after the adoption, by means of a PCA applied to scores obtained from a questionnaire filled in by the owners. The results of the two PCAs on the same behavioural categories were compared. The differences were evaluated by means of the sign-test. Furthermore, the differences found between the temperament assessed before and after adoption were correlated with the number of years of adoption (Spearman rank correlation test) in order to evaluate the effect of time spent in the new house and the modification of the behaviour.

Results

The Principal Component Analysis of the behaviour of the 35 dogs before adoption identified four primary factors that explained 59% of the total variability. The first factor was characterized by three behavioural categories:

1. subordination towards dogs;
2. subordination towards humans;
3. aggressivity towards humans.

After the adoption, the PCA identified three primary factors that explained 58.6% of the total variability. The first factor was characterized by behavioural categories completely different:

1. activity;
2. excitability;
3. playfulness and
4. attention.

In other words, the individual scores of dogs, before and after the adoption, were completely different, and the difference was significant for 14 of the 16 behavioural categories. Furthermore, it is interesting to note that there was no correlation between the number of years of adoption and the modification of the behavioural patterns identified by the first factor of the PCA after the adoption (activity, excitability, playfulness and attention).

On the contrary, the differences found before and after adoption for subordinate and aggressive behaviour (that can be due to fear) increased with the years since adoption.

Conclusion

The results of this study showed that the “positive” characteristics of dog temperament (in anthropomorphic terms) increase as soon as the dog is homed (within a week), independently from the time spent in the new house. In fact, there was no relationship between the number of years of adoption and the difference “before-after” adoption for activity, excitability, playfulness and attention. On the contrary, subordinate and aggressive behaviour decrease, and the longer the dog lives in a private house, the greater was the decrease of these behavioural patterns.

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IS BREED SPECIFIC LEGISLATION JUSTIFIED? STUDY OF THE RESULTS OF THE TEMPERAMENT TEST OF LOWER SAXONY

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Key words

aggression, temperament test, legislation, breed lists.

Introduction

On July 5th 2000 a decree came into effect in Lower Saxony restricting the keeping of Bullterriers, American Staffordshire Terriers, Pit-bull Terriers and 11 other breeds. Exemption was possible if a temperament test especially developed for the purpose was taken. This test was developed to detect individuals that displayed no indication of exceptional aggressive communication or aggressive behaviour in inappropriate situations.

The tests were statistically analyzed for:

- Breed predisposition for abnormal levels of aggressive communication or aggressive behaviour in inappropriate situations
- Difference in behaviour between breeds
- Factors that make it possible to differentiate between biting and non-biting dogs.

Materials and methods

The results of 415 tests were analyzed (SigmaStat 1.0 for Windows). All 415 dogs were kept in private ownership. Their owners attended the tests and completed a questionnaire about their dog.

The tests were conducted in a special area of the University of Veterinary Medicine, Hannover by two observers, to minimise subjective errors and videoed. These observers analysed the video and evaluated the questionnaires. All people involved in the tests were not known to the dogs or owners.

The test order was:

1. veterinary examination
2. learning and frustration test
3. 21 situations of dog-human-contact
4. 14 situations of dog-environment-contact
5. dog-dog-contact
6. control

A scale of 1-7 was used to score levels of escalation in aggressive behaviour.

Normality was analyzed, with parametric data analysed accordingly and non-parametric data analysed by means of a Kruskal-Wallis-Test. A Chi-Square-Test was applied in pairwise comparisons.

Results

One-hundred and fifty-eight dogs (38.07%) showed no aggressive behaviour (score 1). Two-hundred and one (48.43%) showed visual and/or acoustic signals of threat while stationary (score 2). 18 dogs (4.34%) reacted with biting from a distance (score 3 and 4). 37 dogs (8.92%) showed biting with contact after threat signals (scored 5), only one dog (0.24%) bit without previous use of threat signals (score 6).

Concerning score 1 the pairwise comparison of the breeds showed significant differences between Bullterriers and American Staffordshire Terriers ($p=0.004$), Pit Bullterriers ($p=0.01$), Dobermans ($p=0.003$) and Rottweilers ($p=0.009$). Concerning scores 2-7 no significant differences between the breeds were found.

Ninety-five per cent of the animals reacted appropriately in the test situation, while 5% displayed excessive aggressive communication or aggressive behaviour in inappropriate situations. These situations were associated with unusual movements by the testers and the dogs' apparent apprehension. The owners of these dogs jerked on the leash and misinterpreted their dogs' behaviour significantly more often than the owners of the other dogs. These dogs also scored higher for trying to elude physical manipulation.

No significant difference in behaviour between breeds could be detected.

Discussion and conclusion

The results show the test to be appropriate for detecting aggressive behaviour in dogs. It is not adequate to prevent biting incidents, though, since any test is only a snap-shot in a dog's life and cannot screen all day-to-day situations.

Only 5% of all dogs reacted with inappropriate behaviour so no indicators of specific dangerousness associated with breed were found.

The results of the dog-owner-relationship and causes for aggressive behaviour point to a need to lay the emphasis for the avoidance of biting incidents on understanding the cause and improving the dog-owner-relationship.

Justification for breed specific lists in the legislation was not shown.

A PLACEBO-CONTROLLED DOUBLE-BLIND COMPARATIVE STUDY ON THE EFFECTS OF DEXTROAMPHETAMINE ON MOTOR ACTIVITY, CARDIAC FREQUENCY, AND BEHAVIOUR IN BEAGLES

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Key words

activity, canine, dextroamphetamine, heart rate, hyperactivity, hyperkinesis.

Introduction

According to several American veterinary behaviourists, hyperactivity (“hyperkinesis”) can be distinguished from over activity by the physiological and behavioural response of dogs given central nervous system (CNS) stimulants such as dextroamphetamine or methylphenidate.

In the case of hyperactivity, the dog receiving an oral dose of dextroamphetamine (0.2 mg/kg) or methylphenidate (0.2 mg/kg up to 1 mg/kg for an aggressive dog) will calm down, and its heart rate (HR) and respiratory rate will decrease by at least 15% from initial basal rates.

This “paradoxical” effect of CNS stimulants is observed 30-90 minutes post-administration of the medication.

The primary purpose of this explorative study was to measure the effects of dextroamphetamine on cardiac frequency, motor activity, as well as document associated general behaviour changes in Beagles.

Material and methods

A total of 12 entire dogs, 6 males and 6 females, belonging to the dog colony of the Veterinary School, and ranging in age from 13 to 20 months were used for the study.

The beagle dogs were observed prior to the study and physical exam results and behaviour observation recordings were within normal limits.

Each dog was placed individually in a room for 90 minutes, to be video-recorded.

Heart rate (HR) and gross motor activity were followed using a Polar® heart monitor and an Actical®.

Dogs were randomly allocated to dextroamphetamine (0.2 mg/kg) or placebo treatment. Following administration of the treatment, dogs were again recorded by video, Polar® and Actical® software. Each dog received each treatment with a 10 day interval based on the estimated wash-out period for dextroamphetamine in dogs.

Data were recorded for each dog during a total of three hours per treatment. The video-recorded behaviours were compiled using The Observer® (Noldus).

Results

Polar® HR results were analysed using a balanced repeated measures model. The model indicates a significant effect of treatment (dextroamphetamine) on HR, with treatment HR's (mean

= 99.07 bpm) being significantly ($p=0.044$) lower than placebo group (mean = 112.4 bpm). Individuals allocated to the two sequences of treatments (10 days apart) did not differ in HR values overall and post-HR values did not need to be corrected with baseline values. Gross motor activity will be analysed in a similar method using the Actical® data as well as observational data collected using the Observer®.

Conclusion

Although not all results are completed at this time, the preliminary results seem to indicate that administration of dextroamphetamine may not be a reliable indicator of “hyperkinesis”.

THE RELATIONSHIP BETWEEN TRAINING METHODS AND THE OCCURRENCE OF BEHAVIOUR PROBLEMS IN A POPULATION OF DOMESTIC DOGS

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Key words

obedience training, behaviour problems, domestic dogs, training methods.

Introduction

The benefit of obedience training in relation to “behaviour problems” in dogs has been investigated in a number of studies, but the results appear to give conflicting evidence. Voith et al. (1992) found no difference in the number of problem behaviours following obedience training, while Clark and Boyer (1993) found a significant reduction. Similarly, Jagoe and Serpell (1996) found that attendance at obedience training significantly reduced specific problem behaviours. The aim of this study was to investigate further the relationship between types of training methods and attendance at different categories of training classes with the occurrence of “behaviour problems” in domestic dogs.

Materials and methods

Questionnaires were distributed to members of the dog-owning public at pet stores, veterinary practices and dog walking locations in two geographical locations in the UK. The questionnaire asked owners the frequency with which their dog showed 36 behaviours that are commonly perceived to be ‘problematic’ by owners. They were also asked to rate whether they perceived these behaviours to be a problem themselves. In addition to other background information about dog and owner, respondents were asked about the type of training class they had conducted with their dog (e.g. puppy socialisation, agility, ringcraft, etc.), and which specific training techniques they had used (e.g. sound distraction, verbal praise, shutting away, etc.)

Results

One-hundred and ninety-two questionnaires were returned, and 88% of respondents’ dogs had received some form of training. Of these dogs 58% had done informal training at home; 27% had attended puppy socialisation classes; 40% had attended obedience classes; 12% had been to agility or flyball classes; and 5% had attended ringcraft/showing classes. Only 16% owners used purely positive reinforcements in their interactions with the dog: the remaining 84% used some combination of positive reinforcement; negative reinforcement; negative punishment and positive punishment. There was a significant relationship between type of training aids used and the number of behaviour problems displayed by dogs, with dogs trained only with positive reinforcement showing less behaviour problems (Mann-Whitney $U=1552.500$, $p<0.005$). Dogs were also found to be significantly more likely to show a fear response to other dogs where owners used punishments of any kind in their training (Mann-Whitney $U=2976.000$, $p<0.02$). Attendance at agility classes was significantly associated with a reduction in total number of problem behaviours ($p<0.005$). Interestingly, dogs that had only re-

ceived informal training at home showed significantly more problem behaviours ($p=0.002$). These owners were also more likely to use physical corrections (Mann Whitney $U=3363.000$, $p=0.003$), and more likely to be inconsistent with their dogs (Mann Whitney $U=2568.500$, $p=0.048$).

Conclusions

These results suggest that, attendance at any form of training class is likely to reduce the number of behaviour problems shown by dogs, with agility classes being particularly beneficial. In addition, as found in previous studies (e.g. Hiby et al., 2004), the use of positive reinforcement training appears to also be associated with a reduction in behaviour problems. However, because this survey was conducted in two relatively restricted geographical locations within the U.K, larger studies are needed to confirm that these results apply across a broader population.

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INTELLIGENT ACTIVITY FOR DOGS AS A TOOL IN BEHAVIOURAL THERAPY

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Key words

activity, cognition, behaviour therapy.

Introduction

A quick survey of the level of activity in city dogs showing behavioural problems suggests that 80% of them do not get enough activity to fulfil their needs. I hypothesise that giving more structured activity might help reduce all kinds of behavioural problems.

Methods

I developed a subjective equation of activity:

Activity (in general) = locomotor activity + vocal activity + chewing activity + intelligent activity.

Locomotor activity is walking (on a leash), running, retrieving...

Vocal activity is all kinds of vocalizations.

Chewing activity is eating, chewing on toys or bones.

Intelligent activity is an activity in which the dog has to “think”, such as discriminating games, for example discriminating between toys, balls, odours...

A dog can learn more than 200 codes related to movements or objects. I observed that intelligent games are 10 times more demanding and tiring than locomotor activity.

The average dog knows only a dozen codes or less; his intelligence is not exercised appropriately. Teaching the dog to play is no problem, but teaching the owner to play with the dog is the challenge.

There are no references for the minimum activity level required for family dogs and it may vary for breed to breed or dog to dog. It is conceivable that the average dog might need 4 hours of activity a day, and 80% of the city dogs, presented for behavioural problems, do not get it.

In behavioural therapy, I proposed to increase chewing and intelligent activity for hyperactive dogs at first, and then generalized the proposal to all dogs suffering from behavioural problems.

Results

The results were more interesting than anticipated. All dogs, presented for behavioural problems, who were submitted to intelligent activity improved beyond expectation.

A subjective evaluation suggests that the improvement was far better than results obtained for years previously.

Not only did the plan improve the animals' behaviours and well-being, but intelligent games improved the relationship between dog and the participating owner.

Conclusion

The activity equation has been a helpful tool in making owners understand the need for various activities for their dog, and making them realize how to supplement the classic walking (on a leash) with other, more satisfying activities.

PREDICTING THE OUTCOME OF DETECTOR DOG TRAINING BASED ON THEIR BEHAVIOUR AND GENETIC CHARACTERISTICS

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Key words

behaviour traits, detector dog, genetic polymorphisms.

Introduction

It has been suggested that the behaviour traits of individual dogs affect their performance as working dogs (Svartberg, 2002). It is therefore preferable if we can objectively define suitable behaviour traits for certain tasks. In this study, we first investigated what were the suitable behaviour traits for detector dogs by combining behaviour evaluation and analyses of genetic polymorphisms. Then we assessed the feasibility of predicting the end results of detector dog training based on these data.

Materials and methods

At the detector dog breeding center two types of behaviour tests i.e. the “Chase, Retrieve and Hunt (CRH) test” and the “Temperament test” have been carried out for evaluating candidates at 3, 6 and 12 months of age (Champness, 1996). The center also records the response of dogs to the exercise every month, which reinforces dogs to grab a towel dummy. We conducted a factor analysis (FA) on the records of CRH test and also a principal component analysis (PCA) on those of the temperament test and the exercise (Goddard and Beilharz, 1984). Along with the behaviour data, we examined 16 polymorphisms of 9 neurotransmitter related genes, supposed to be connected with canine temperament (Masuda et al., 2004; Masuda et al., 2004; Hashizume et al., 2005; Takeuchi et al., 2005; Ogata et al., 2006). Then we applied discriminant analysis to 46 dogs with complete records in an attempt to predict the end result based on the combined behaviour and genetic data of these dogs.

Results and discussion

From FA of the CRH test three factors were extracted, whereas from PCA of the temperament test and the exercise only one component for each was extracted. By comparing these factors and components with the end result, one factor in the CRH test and each component of the temperament test and the exercise at 12 months old were significantly correlated with the end result.

As we could reveal significant relationships between some types of genetic polymorphisms and certain behaviour traits, it appears likely that the genetic analysis could provide useful information that reinforce behavioural data. Therefore, we tried to predict the end result using the discriminant analysis employing these behaviour and genetic data. When we used the behaviour data alone the discriminant score was 70.2% at the age of 12 months but only 53.2 % at earlier age of 6 months. However, if genetic information about polymorphisms of the tyrosine hydroxylase gene and the catechol-O-methyltransferase gene were added, together with

the exercise scores, the prediction rate was elevated to 71.7 % even at 7 months old, suggesting the feasibility of this kind of application to improving the efficiency of working dog training. However, as the sample size of the present study is limited, further research on a larger scale is required to confirm the present finding.

Conclusion

Assessing for suitable candidates of detector dogs effectively and accurately at a younger age is important for both practical reasons and animal welfare reasons. This study has demonstrated that genetic analyses in combination with behaviour evaluation could be a potential new tool for predicting the suitability of candidate detector dogs.

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THE EFFECTS OF TRAINING AND ENVIRONMENTAL ALTERATIONS ON ADOPTION SUCCESS OF SHELTER DOGS

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Key words

adoption, Canis familiaris, relinquishment, shelter, training.

Introduction

This study evaluated the effects of basic obedience training and environmental alterations on increasing adoption rate of shelter dogs.

Animals and methods

One-hundred and eighty dogs housed at the Tippecanoe County Humane Society were randomly assigned to the trained (1 daily clicker training session) or control group. Dogs were desensitized to wearing a Gentle Leader, taught to come to the front of the cage when approached, walk on a leash, sit and not jump up on people.

The 8 weeks of the study were randomly assigned to modified or control environment. Modification consisted of blankets and toys in the kennels, colored cage cards and artificial plants. Treats were given to the dogs whenever an employee/volunteer passed by the pen.

Statistical analysis (SPSS 11.5) included descriptive statistics; forward stepwise logistic regression for binary outcome variables to assess the effect of various dog characteristics and training on being adopted; chi square to assess effect of environmental modification.

Results

One-hundred and sixteen dogs were adopted, 57 were euthanized, 4 went to a rescue organization, 2 were returned to their owners, and 1 died. One adopted dog was re-relinquished. Trained dogs were 1.4 times more often adopted ($p=0.007$). Among individual factors, only being good with other dogs was significant ($p=0.035$). Being good with children ($p=0.043$) did not remain statistically significant in the logistic regression model ($p=0.519$). There were 42 dogs adopted during weeks of environmental modification, and 33 during control weeks ($p=0.299$).

Discussion

The study demonstrated that training shelter dogs increased adoptability.

ON THE COMMUNICATIVE NATURE OF BARKING

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Key words

bark vocalisations, acoustic communication, dogs.

Introduction

There have been repeated claims about the communicative nature of barking in dogs but others have dismissed such a role. Most curiously experimental approaches to solve this apparent confusion has been lacking up to recent times.

Methods

We set out to investigate the possible function and message content of barking by experimentally testing whether humans are able to categorize this vocalisation, by looking at correlation between acoustic features of the vocalisation and its assumed emotional content.

For the experiment, barks from 19 Mudi were recorded in 7 predetermined situations (approaching stranger, left alone, Schutzhund trial, before going for a walk, “requesting” ball, “requesting” food, playing with owner). At the lab three groups of people (Mudi owners, dog owners, humans living without dogs) were tested by playing back the barks. Their task was to categorize the barks into one of the seven categories, and at the same time describe the emotional content (aggressive, despaired, happy, playful, fearful).

Results

Overall there was no difference among the human listeners on the basis of whether they owned a dog. People in all three groups were able to categorise the barks significantly above the chance level (17%) being correct around 40% of the time (one sample t test, $p < 0.01$ in all cases). However, the listeners most accurately categorized the barking of dogs in the stranger, Schutzhund, and alone situations.

The analysis of the acoustic parameters of the barks by one-way ANOVAs with Student Newman–Keuls post hoc test showed that inter-bark interval was longest in the case of “Alone” barks ($F(5, 66) = 8.98$, $p < 0.001$) and the average peak frequency was the lowest in the case of “Stranger” and “Schutzhund” barks ($F(5, 66) = 4.69$, $p < 0.001$). We have also found that barks with shorter inter-bark intervals were judged as being more aggressive (Pearson $r = -0.31$, $p < 0.01$), and with longer inter-bark intervals were found more playful ($r = 0.26$, $p < 0.01$). Barks with lower average peak frequency were described as more aggressive ($r = -0.31$, $p < 0.01$), and in parallel higher average peak frequency was associated by human listeners with despair (Pearson $r = 0.26$, $p < 0.05$) and playfulness ($r = 0.42$, $p < 0.01$).

Discussion

These findings show that, in contrast to earlier beliefs, barks seem to have a communicative function in the case of dog-human relations. Moreover the acoustic features of the dog barks are in line with those predicted by the structural-motivational rule proposed by Morton

(1977), suggesting that vocalisations with lower frequency indicate an aggressive/agonistic inner state, while a higher frequency of sounds reflect friendly/submissive intent. The use of high pitched barks seems to be a novel behaviour in dogs, since wolves do not emit barks in friendly situations.

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A SURVEY OF BARKING DOGS IN SOUTH EAST QUEENSLAND, AUSTRALIA

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Key words

barking, multidog households, training, arousal.

Introduction

Barking is the most common complaint to Local Authorities in Queensland, Australia. When a complaint is made of noise nuisance against a dog, south east Queensland Councils issue a standard letter which informs the owner of the complaint and seeks rectification.

If the complainant claims the problem persists, a Council officer visits the premises to speak to the owner.

Materials and methods

A questionnaire was designed to be completed by the Council officer on this visit.

This questioned owners about the dog and where it was kept.

The complainant was also interviewed and asked whether the dog barked when the owner was present and the time of day or night it occurred.

Data were collected on 92 dogs and analysed using Texasoft WINKS 4.8 (Windows Kwik-Stat).

Results

Seventy seven percent of the dogs in the study barked during the day with the majority being kept outside (38).

Twelve (13%) had access to both house and yard, 10 (11%) were kept inside and no information on where 11 (12%) were kept was recorded.

Thirty four dogs (37%) barked at night, with 10 of these barking at night only. Barking was most frequent when the owner was out (53 dogs, 58%) while 17 dogs (18%) barked when the owner was home.

Ten dogs (11%) barked both when their owner was present and absent. The majority of dogs reported to bark (50 dogs, 54%) came from households with 2 or more dogs. Sixteen of these households contained 2 dogs (3 5% of dogs), two contained 3 (7%) and two 4 dogs (9%). Seven dogs (8%) in the study lived with another dog which did not bark.

The National People and Pets Survey (1995) found that 70% of dogs lived in a single dog household compared to 46% (42) in this study.

Fifty seven owners (62%) gave an explanation of the reason for the barking.

This was usually associated with a view (of people, dogs, cats, birds) or noise (of people or dogs). Some owners felt the dog was bored (9) and others ascribed it to fear and loneliness (3).

Fifty people (54%) had tried one or more options to manage the barking.

These included training the dog themselves, employing a dog training company, locking the dog up, bark collars (citronella and electric) and environmental enrichment. One dog was now muzzled.

Discussion

In the area of the study many dogs are kept outside, either totally or when their owners are absent – partly due to the temperatures (South east Queensland is subtropical) but this is still seen as the norm culturally.

Adequate fencing to contain the dog is required of all dog owners by local authorities but many homes have chain wire fencing which allows the dog to see and hear stimuli to barking. While a view can be enriching it can also be arousing.

While people may acquire a second dog to provide company for a dog already owned, this may not be advisable if barking is already a problem as it is a potential issue.

Conclusion

Barking is an important and emotive issue for owners, local authorities and the community in south east Queensland and enforcement alone has not resolved it.

There have been few data examining the issues and presenting management and training options for owners.

This paper provides an analysis of the problem and suggested strategies for its management.

IS THERE A DIFFERENCE? COMPARISON OF GOLDEN RETRIEVERS AND DOGS AFFECTED BY BREED SPECIFIC LEGISLATION REGARDING AGGRESSIVE BEHAVIOUR

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Key words

aggression, temperament test, legislation, breed list.

Introduction

Between July 2000 and July 2002, legislation was in force in Lower Saxony, Germany that insinuated that certain breeds of dog were especially dangerous and controls were imposed upon them. Exemption from these restrictions was only possible if dogs passed a standardized temperament test.

In a previous study, results of tests for 415 dogs belonging to the breeds affected by the legislation were analyzed. In 95% of the dogs no indication of exceptional aggressive communication or aggressive behaviour in inappropriate situations could be found.

Since a control group was not available at that time, these results referred to a comparison between the affected breeds. For this reason, Golden Retrievers were tested and used as a control group.

The results of this study were evaluated for significant difference in the occurrence of aggressive behaviour between the dogs affected by the decree and Golden Retrievers.

Materials and methods

A total of 70 Golden Retrievers and their owners were tested in the standardized temperament test mentioned above. The tests were performed at the test site of the University of Veterinary Medicine Hannover by one observer and a number of test assistants. Observer and test assistants were not known to the dogs.

Order of testing:

1. general medical examination
2. learning and frustration test
3. 21 situations involving dog-human contact
4. 14 situations involving dog-environment contact
5. dog-dog contact
6. obedience

All tests were videotaped. The dog's behaviour in each situation was scored (1-7), classifying aggressive behaviour according to six steps of escalation.

The owners completed a questionnaire on whether and how their dog had performed a temperament test of their kennel club. This questionnaire was evaluated after the standardized temperament test of this study.

Statistical analysis was carried out using GraphPad Prismen 4. Concerning pairwise comparisons between the Golden Retrievers and the 415 dogs belonging to the breeds affected by the legislation, the significance between groups was tested with the Chi-Square test.

Results

41 Golden Retrievers (58.57%) did not show signs of aggressive behaviour (score 1). 28 Golden Retrievers (40.00%) displayed visual and/or acoustic threat signals without approach (score 2). One dog (1.43%) showed biting with complete approach after threat signals (score 5).

In total, 98.57% of the dogs of this study reacted appropriately considering the test situation and only 1.43% displayed aggressive behaviour in inappropriate situations. In the previous study concerning the dogs affected by the legislation 95% of the animals reacted appropriately in the test situation, while 5% displayed excessive aggressive communication or aggressive behaviour in inappropriate situations.

When comparing the Golden Retrievers and the breeds affected by the legislation, no significant difference was found in the occurrence of aggressive behaviour in inappropriate situations.

The 70 Golden Retrievers were subjected to a total of 2,380 test situations. In 68.9% of the situations the dogs showed signs of insecurity. These situations involved unusual movement.

Discussion and conclusion

When comparing the results of the previous study and those of the Golden Retrievers, no significant difference in the occurrence of aggressive behaviour in inappropriate situations was found. This result showed that there was no scientific basis for breed specific lists. Therefore the Ministry of Lower Saxony changed the legislation and withdrew these lists. It is striking that the Golden Retrievers and the dogs previously tested mainly reacted in situations involving unusual movements. In both groups, fear was found to be the main cause of the behaviour. This underlines that the emphasis for preventing biting accidents should be consideration of the emotions in the dog and the effect of eliciting stimuli rather than affiliation with a particular breed.

EVALUATION OF AGE-RELATED COGNITIVE IMPAIRMENT IN PET DOGS

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Key words

cognitive evaluation, cognitive impairment, curiosity test, dogs, open field test, reversal learning test.

Introduction

Currently a diagnosis of canine cognitive dysfunction syndrome (CCDS) is based on clinical symptoms by collecting owner's opinions and observations. In the present work a battery of tests have been developed (Open Field, Curiosity Test, Reversal Learning) as an adjunctive tool for the assessment of cognitive decline in pet dogs.

Materials and methods

Forty dogs (26 males and 14 spayed females, pure and mix breeds, over 15 kg of weight) have been enrolled in the present study. The dogs have been divided in two groups: 14 adults (2-10 ys old) and 27 aged dogs (10-15 ys old).

After a clinical and behavioural preliminary evaluation, all the dogs were submitted to the battery of tests. In the Open Field, various locomotion indices were recorded in a 3 x 3 m testing room for a fixed time (3 min). The Curiosity Test allowed the dog to examine and play with a variety of toys to assess the animal's exploratory behaviour. In the Reversal Learning, the animal should discriminate between two positions to obtain a food reward: once the dog learnt which position was correct, the food reward was switched to the previously un-rewarded position and the animal should then inhibit its learned behaviour. Each test has been video registered and then analysed.

The cognitive data were processed using Student t-test for unpaired data ($p < 0.05$).

Contemporary the behaviours were rated as normal or abnormal, scored 0 (normal) to 3 (severe abnormal) accordingly in subsequent analysis; Fischer's Exact Test has been applied ($p < 0.05$; GraphPad Instat).

Results

From a cognitive evaluation the results of the Open Field test indicate no significant difference in locomotor activity ($p < 0.05$) between the group of young-middle aged pet dogs (2-9 years) and the group of aged pet dogs (over 10 years). Similar results have been obtained in the Curiosity Test. Conversely, the performance of the two groups was significantly different both during the acquisition and the reversal session of the reversal learning test. Aged dogs took more time than young-middle aged dogs to discriminate between two positions to obtain a food reward (267 ± 9.4 sec Vs 227 ± 14 sec; $p < 0.05$, Student t-test for unpaired data) or to inhibit their previous learned behaviour (255 ± 13 sec Vs 135 ± 15 sec; $p < 0.05$). Final-

ly a linear relationship and a significant correlation between chronological age (independent variable) and the progressive impairment of cognitive performance (dependent variable) in both sessions of the reversal learning have been obtained (acquisition: $y=8.02x+178$, $r=0.732$, $p<0.05$; reversal: $y=17x+51.5$, $r=0.856$, $p<0.05$).

Behaviourally in the Object Discrimination Learning ($p=0.0253$) and in the Reversal Learning ($p=0.0253$) Test a significant difference was found for socio-environmental interaction and general activity, supporting the cognitive results.

Discussion and conclusions

The results showed a significant correlation between aging and the progressive impairment of cognitive performance in dogs.

The suggested protocols, together with accurate anamnesis and specific geriatric examination, could be valuable and effective tools to formulate a diagnosis of cognitive impairment in aged pet dogs.

A COMBINATION OF ACETYL-L-CARNITINE AND ALPHA LIPOIC ACID IMPROVES LEARNING, BUT NOT MEMORY, IN AGED BEAGLE DOGS

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Key words

acetyl-l-carnitine, allocentric spatial ability, alpha lipoic acid, canine, cognition, visuospatial memory.

Introduction

Dogs demonstrate aged-dependent cognitive decline and brain pathology (Adams et al., 2000; Cummings et al., 1996; Head et al., 1998). These cognitive changes may be linked to mitochondrial dysfunction and are likely to contribute to behavioural signs associated with a diagnosis of cognitive dysfunction syndrome in aged dogs (Landsberg and Araujo, 2005). The present study examined the effects on cognitive function of a combination of acetyl-l-carnitine (ALCAR) and alpha lipoic acid (LA), a treatment intended to improve mitochondrial function (Liu et al., 2002).

Materials and methods

Twelve aged beagle dogs between the ages of 7.6 and 8.8 years of age and of both sexes were used. Subjects were placed into 2 cognitively equivalent groups based on performance of a delayed-non-matching-to-position task (DNMP; Chan et al., 2002; Studzinski et al., 2006). After a five-day wash-in on either placebo (methylcellulose) or the treatment (27.5 mg/kg ALCAR and 11 mg/kg LA), learning of two versions of an allocentric landmark task (Christie et al., 2006; Milgram et al., 1998; 2002) over a maximum of 55 days was assessed. All subjects were then tested on a variable-delayed DNMP for 14 days. For the landmark task, subjects were required to respond to a coaster located closest to a landmark, a yellow wooden peg, to receive a reward. In the first version of the task, the landmark was placed directly on the coaster (land-0). In the second, the landmark was located 1 cm away from the coaster (land-1). The learning criteria on both phases required subjects to perform consistently at 70% or greater accuracy. For DNMP testing, subjects were initially presented with a block over one of three possible positions. Following a delay, the subject was presented with two identical blocks and was required to respond to the one block in the position not previously seen. Delays of 5, 55 and 105 seconds were used equally within a single test session. Subjects remained on their respective treatment throughout the study. Errors to learn the landmark tasks and performance accuracy on the DNMP were analyzed using analysis of variance (ANOVA).

Results

The ANOVA indicated a significant treatment effect such that the treatment group committed fewer errors on both landmark tasks compared to the control group. Additionally, the control group committed more errors on land-1 than land-0; the opposite was true of the treatment group. By contrast, the treatment group did not differ significantly from the control group performance on the DNMP.

Discussion and conclusion

The present study showed that the LA and ALCAR treatment combination improved performance on two different versions of the landmark task, but not on the DNMP task. This finding is consistent with previous work demonstrating that short-term administration of a combination of mitochondrial cofactors and antioxidants that included LA and l-carnitine improved allocentric spatial learning but not DNMP performance (Araujo et al., 2006). The results support the investigation of the treatment in clinical trials for canine cognitive dysfunction syndrome.

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THE EFFECTIVENESS OF FLUOXETINE CHEWABLE TABLETS IN THE TREATMENT OF CANINE SEPARATION ANXIETY

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Key words

behaviour modification, canine separation anxiety, destructive, fluoxetine, inappropriate urination.

Introduction

Separation anxiety (SA) is the second most commonly reported behavioural disorder in dogs, ranking only behind aggression in reported occurrence at behaviour referral practices (Denenberg et al, 2005). The most common signs associated with separation anxiety are destruction, vocalization, excessive salivation, inappropriate defecation and urination (Lund and Jorgensen 1999; Voith and Borchelt, 1996). Often signs of anxiety may begin as the owners prepare to depart, with clinical manifestations generally arising within the first thirty minutes of departure. Many pets show excessive attachment or stay in close proximity to the owners when they are at home (Lund and Jorgensen, 1999; Voith and Borchelt, 1996). Treatment is generally most successful when a combination of behaviour modification and drug therapy are utilized concurrently. In fact, of the products presently licensed for separation anxiety, clomipramine and DAP have been found to be effective in placebo controlled or comparative studies when combined with a behaviour modification program (King et al 2000; Gaultier et al 2005).

Fluoxetine, a selective serotonin reuptake inhibitor, widely used in human medicine for anxiety disorders, compulsive disorders and depression, has been recently licensed for the treatment of separation anxiety in combination with a behaviour modification program. In addition to licensing data on file with FDA, publication of the pivotal studies are in preparation (Simpson et al, in press). However, to date there have been no studies evaluating the effects of fluoxetine on SA in the absence of concurrent behaviour modification.

Materials and methods

This was a multi-center, placebo-controlled, double-blind, parallel-arm study performed in client-owned dogs diagnosed with SA (n=171). During a 14-day pre-treatment period, dog owners recorded the occurrence of four SA behaviours: destructive or rearranging, excessive salivation, inappropriate defecation, and inappropriate urination. At the end of this period, daily treatment with either Fluoxetine Chewable Tablets (FCT) at 1-2 mg/kg or placebo was initiated for 42 days. Owners recorded SA behaviours each day and at the end of each week scored the severity of overall and individual SA behaviours. Efficacy was determined by the incidence of improved SA severity scores versus pre-treatment scores.

Results

At each weekly treatment interval, at least 58% of fluoxetine-treated dogs showed improvement in overall SA severity scores versus their mean pre-treatment score. Compared to placebo, fluoxetine-treated dogs had a higher incidence of improved overall SA severity scores at every weekly treatment interval, with significant differences occurring at weeks 1 ($p < 0.044$) and 4 ($p < 0.021$), when all study sites were evaluated collectively. There were significant differences favoring fluoxetine-treated dogs in incidence of improvement of destructive/rearranging behaviours and inappropriate urination. One dog given several concurrent medications had a seizure 9 days after beginning fluoxetine, and was subsequently diagnosed with vestibular ataxia and geriatric vestibular disease. Seizure was also reported in a placebo-treated dog. No other serious adverse effects were observed.

Conclusion

FCT given to dogs at 1-2 mg/kg once-daily were effective in improving SA scores in dogs. Although this study is the first to suggest that pharmacotherapy alone may improve canine SA behaviours, other controlled studies have confirmed that optimal benefits accrue when FCT is administered in conjunction with behaviour modification (Simpson et al., in press).

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AN ANALYSIS OF THE RELATIONSHIP BETWEEN THE HISTORY OF DEVELOPMENT OF SENSITIVITY TO LOUD NOISES AND BEHAVIOURAL SIGNS IN DOMESTIC DOGS

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Key words

anxiety, dog, fear, noise, signs.

Introduction

Noise sensitivity is widely recognised as one of the most common behaviour problems in domestic dogs, and as a serious cause for welfare concern. There are many forms of presentation of noise sensitivity (potentially relating to a fearful, anxiogenic or phobic response) and also many potential causes, but to date no study has sought to investigate if there is any relationship between these. Such information may be of both diagnostic and potentially therapeutic and prognostic value.

Subjects and methods

Two-thousand five hundred and seventy-seven owners of noise sensitive dogs were recruited internationally through a web-based questionnaire, which requested demographic details and information about the dog's response to a range of noises and history of onset. Subjects with a noise sensitivity were then categorised into having acute onset (problem noticed on first known encounter) or non-acute onset (problem developed some time after first exposure) for each type of noise problem. Distribution of onset pattern among the different types of noise sensitivity was assessed by means of a chi-squared test. The relationship between the history of onset and 23 specific responses to loud noises were investigated by calculating odds-ratios with 95% confidence intervals and using Chi-squared tests with a Bonferroni correction for multiple testing (adjusted level of significance $p=0.0022$). The relationship between demographic factors and type of onset was also investigated by means of a Chi-squared test.

Results

The most commonly reported noise sensitivities were to fireworks ($n=836$), followed by thunderstorms ($n=817$) and gunshots ($n=430$) and there was an association between onset pattern and specific noise fear among the 9 scenarios examined ($p<0.001$). A history of non-acute onset ranged from 23% (37/160) amongst those dogs scared of party poppers to 61% for thunderstorms (497/817). For only the latter sensitivity was the proportion with non-acute onset greater than 50%. There were some consistent findings associated with the two types of onset regardless of specific noise sensitivity. Dogs with non-acute onset typically showed signs such as panting, pacing, looking around the whole time and being restless more frequently (i.e. anxiety associated with autonomic arousal). However, dogs with a history of acute onset reportedly tended to show signs such as hiding, cowering and being jumpy to noises more frequently (i.e. more overt fear avoidance strategies). There were significant associations between the two different types of onset and breed, source, the age obtained and the age of onset of the problem.

Discussion and conclusion

Acute and non-acute onset processes appear to have different behavioural consequences in relation to noise sensitivity problems in dogs. Acute onset appears to be associated with a greater likelihood of a true fear, but non-acute onset appears to be more typically associated with signs of anxiety. The therapeutic implications of this remain to be investigated.

BEHAVIOURAL CORRELATES OF STEREOTYPIC BEHAVIOUR IN HORSES: A PILOT STUDY

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Key words

blink, dopamine, equine, horse, stereotypy.

Introduction

The terms stereotypy and stereotypic behaviour are frequently used to describe repetitive, relatively invariant behaviour with no obvious function and in horses, the term “stable vices” is also commonly used to describe a number of behaviours with these characteristics, e.g., cribbing, weaving, stall walking and self mutilation. However, these terms are generally used as descriptive labels of a phenotype which may reflect a range of aetiologically and mechanistically varied conditions, unlike in the human psychiatric and psychological literature, where greater attention is paid to the neurological basis of terms used in relation to repetitive behaviour for example an obsessive compulsive disorder or true stereotypy. Evidence helping to differentiate mechanistic hypotheses in companion animal species is quite limited and tends to focus on performance in complex learning tasks. An alternative approach is to look at other simpler behavioural correlates of brain functioning. In this study we examined blink rate in horses with and without repetitive behaviour problems (cribbing and weaving), since differences in blinking have been noted in humans with certain psychiatric disorders especially those related to dysfunction of dopaminergic pathways.

Methods

In this pilot study 6 control (C) and 6 stereotypic (S) subjects were used. Horses displaying either oral stereotypic behaviour (wind-sucking) and/or locomotor stereotypic behaviour (weaving) were included. No selection constraints were applied to age, gender and breed. The control group consisted of 5 geldings and 1 mare, and ranged in age from 8 to 20 years old. In the Stereotypic group there were 3 mares and 3 geldings, ranging in age from 12 to 20 years old, 5 of whom displayed weaving behaviour and 1 who wind sucked. The subjects were recorded on two occasions for one minute between the hours of 10am and 3pm. Average blink rate per minute was calculated from these recordings.

Results

Correlation between samples at different times was found to be very high (>0.978 for both controls and stereotypic subjects). A 2-sample t-test based on average blink rate for each sample revealed a highly significant ($p=0.008$) difference between the two populations with stereotypic subjects exhibiting less blinking.

Discussion

The difference between groups seen in this study is the converse to what might be expected if stereotypic behaviour in horses was analogous to autistic spectrum disorders in people as has been suggested in other species, but is consistent with the lower blink rate found in Parkinson's disease patients, a disorder which is also believed to affect the dopaminergic pathways of the basal ganglia, although Parkinson's affects to a greater extent the areas which control motor behaviour and motor patterns, such as the caudate nucleus. A further study is currently underway to investigate this phenomenon further and data from this will be presented.

IMPAIRMENT OF COGNITIVE ABILITIES IN AGING HORSES: PRELIMINARY RESULTS OF AN EXPERIMENTAL AND CLINICAL STUDY

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Key words

horse, cognitive impairment, aging, stress, learning abilities.

Aim

The aim of this study is to describe the possible impairment of cognitive skills in aging horses and to analyse the possible correlations between aging and development of behaviour problems.

Materials and methods

Forty-eight saddle horses belonging to different breeds (mainly French Saddle Horse and Lusitanian) were enrolled in this study. They were divided into 4 groups according to their age. Group 1: 7 to 14 yrs; Group 2: 15 to 20 yrs; Group 3: 21 to 29 yrs and Group 4: more than 30 yrs. Learning abilities were studied by means of memory tests. The horses were trained to obtain carrots when they put their nose in touch with either a blue triangle or a yellow circle. Each training session lasted 10 min and the horses carried a Polar System Heart Rate Monitor® in order to measure their heart rate. The number of sessions (S1) to reach a score of 80% correct responses and the cardiac parameters: SDNN (Standard Deviation of the interval between two sinus beats) within LF and HF (Low and High frequency) spectra were the key parameters for this first step. When this first exercise is achieved, we modify the situation by rewarding only on the yellow circle. The number of training sessions to reach a score of 80% correct responses (S2) and the same cardiac parameters are our measures for this second step. For each horse, a questionnaire is given to both the owner and groom. The purpose of this questionnaire is to identify any recently observed behaviour (in work or in box) like: stereotypies (weaving, cribbing), reactions to novelty, autonomic reactions. Differences between groups were assessed using Student t test if there was a normal distribution or a Wilcoxon test. Significance is considered for $p < 0.05$.

Results

There was no significant difference for S1 between Groups 1 and 2 or 2 and 3 ($p=0.081$), the difference was significant between Groups 1 and 3 ($p=0.043$), as well as Groups 1 and 4 ($p=0.0016$) and Groups 2 and 4 ($p=0.024$). There was no significant difference for SDNN1, LF1 and HF1 between the groups except for Group 1 and 4 for SDNN1 ($p=0.018$) LF1 and HF1 ($p=0.02$). There was no significant difference for S2 between Group 1 and 2 but this difference was significant between Group 1 and 3 ($p=0.004$) or 4 ($p < 0.001$); as well as between group 2 and 3 ($p=0.03$) or 4 ($p=0.002$). The differences were also significant for SDNN2 for the same groups. The horses showing poorest performance showed a higher frequency of stereotypies ($p=0.0012$) and autonomic reactions in the case of a novel stimulus ($p=0.004$).

Discussion

These results show that aging has detrimental consequences on the behaviour of horses. According to the differences observed in our population, 20 yrs seems to be the critical age: the impairment of the cognitive skills becomes visible after this age. The correlation with a higher sensitivity to stress (higher SDNN, HF and higher occurrence of stereotypic behaviours or autonomic reactions) should lead owners and riders to modify the management of aging horses in order to prevent emotional disorders.

ESVCE MEETING

Invited Speakers

THE CHALLENGE OF DEALING WITH THE HUMAN DIMENSION

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The human dimension is a true challenge for the behaviourist veterinary surgeon. No animal is able to come alone and ask for a consultation. No animal is able to describe all its behaviours and so the presence of the owners is compulsory. In the mind of many people, behaviour disorders of pets are often triggered by owners misbehaviours or misunderstandings. And as a behaviourist veterinarian, one of the most difficult task is to make clear that even we deal with the human dimension, we never have the treatment of humans as a goal.

After underlining this point, we can address two different issues :

- the human dimension in the genesis of behaviour disorders in pets
- the human dimension in the treatment of these disorders.

Genesis of behaviour disorders

To evaluate the impact of the human dimension the first step is to have a sure diagnosis of the problem.

In most of cases that we see, owners are often more the solution than the problem. In all development disorders such as deprivation syndromes and hypersensitivity-hyperactivity syndromes, quite always, we need to congratulate owners for their will and for their patience. Anyway, it could be said that in some of these cases, developmental conditions are part of the problem and that they have been defined by other humans, the breeder.

Even when we can suspect that the human beings are part of the problem, it is really different to consider them as guilty or as a factor that has to be modified.

Key-points in the relationship between the practitioner and the client.

Each case is different because of this unique relationship in which confidence and communication are so important but we can look at some points that often make the difference between success and failure

1/ motivation: about behaviour disorders more than about any other field in veterinary medicine, the owner's motivation is a key factor. If people don't even think that there is a problem, there is no way to treat it. It is a classical error for enthusiastic students just coming back from behaviour courses to try and treat all the problems they discover. This might unleash anger. Customers could be upset because they don't want somebody else, even a practitioner, to decide that their way of life is abnormal. We have to come along with them on the way of realising that there is a problem and that something can be done. The transtheoretical model of Prochaska and Di Clemente (1983) defines different stages on the way of behaviour change: precontemplation, contemplation, preparation, action and maintenance. This tool is really helpful to know if you must invest energy to treat or if you have just to wait and to try and raise the attention of the owners on the problem

2/ alliance: this is known to be the most important factor which is going to determine the outcome of a treatment. Whatever the model, whatever the treatment plan, the feeling of alliance at the end of the first consultation is the key factor to succeed. Alliance does not mean to be kind with people, it means to agree with them on three points:

- the professional relationship: why are we here and who is in charge of what?
- the goals: what do we want at the end of the treatments?
- the tasks: what must we do to reach these goals? Does everybody know clearly what he has to do and does everybody agree on that?

3/ resistance: in spite of our will to build a strong alliance, sometimes outcomes are not what we hope and we can feel resistances in the way to apply the therapy or to give the drug. Sometimes practitioners resent resistances as a personal insult when we must see them as an advisability of discovering the right way of the cure.

Establishing the diagnosis of a behaviour disorder is far less difficult than dealing with the human dimension but this is a very exciting challenge. At the beginning and all along our professional life, it is helpful to seek advices from psychiatrists and/or psychologist, once more not to treat people but to understand the different ways to manage the cases.

THE CHALLENGE OF MEDICAL DIFFERENTIALS

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Key words

behavioural change, medical differentials, history, parameters, pain.

Behavioural medicine is a relatively young veterinary discipline and one that has been slow to be accepted as part of mainstream medicine. However, one of the daily challenges of the behavioural consultation is the need to consider medical differentials for the behavioural symptoms presented, which confirms the fact that behaviour is indeed at the heart of veterinary medicine. Furthermore, behavioural change is often the outward signal of internal disease and owners will frequently report alterations in their pet's behaviour as the major presenting sign when they fear that their companion is unwell (Overall, 2004).

In order to ensure that all potential medical differentials have been considered, a combination of medical and behavioural history will be essential and the use of a chronological approach to the gathering of this information will be particularly important. These histories must then be evaluated in the light of the medical and behavioural examination and where doubt exists about the origins of the behavioural changes a range of further investigations such as a neurological examination, haematological and biochemical parameters, urinalysis, imaging and even more specialised tests such as ECGs and EEGs may be necessary (Reisner, 1991; Horwitz, 2000).

One of the most obvious areas of overlap between behaviour and medicine lies in the field of neurology and the consideration of differentials such as epilepsy, space occupying lesions, congenital neurological defects and inflammatory processes within the nervous system may be readily apparent, especially in cases where the behavioural presentation is severe. Indeed, many owners are searching for a medical explanation for dramatic alterations in their pet's behaviour and when the outcome of their behavioural response is particularly unpalatable for human society, for example in cases of canine aggression or feline house soiling, the need to exclude medical explanations may be almost instinctive (Aronson, 1998; Neilson, 2004). However, where behavioural symptoms are more subtle the temptation to rush to a behavioural diagnosis without adequate consideration of medical differentials may be increased and contributions from medical factors such as endocrine disorders, infectious diseases, immune-mediated conditions, metabolic disorders, inflammatory processes and trauma are often overlooked. Behavioural changes have been recognised as one of the most appropriate parameters for the assessment of pain in dogs (Holton et al., 2001) and yet the role of pain as a significant factor in the initiation and maintenance of behavioural problems is often underestimated.

It is certainly true that many of the behavioural conditions that are presented to the veterinary profession are natural species specific behaviours which are incompatible with the demands and expectations of the domestic environment. Others are the result of unintentional and inappropriate learning and are exhibited by individuals that are entirely healthy from a physical perspective. However, exclusion of medical factors always needs to be considered and in cases

where behavioural symptoms are sudden in onset, show an unexpected form of progression or a poor response to conventionally accepted forms of behavioural modification, the potential for an underlying medical reason for the behavioural change should not be ignored.

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THE CHALLENGE OF BEHAVIOURAL MODIFICATION

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Key words

evidence based medicine, behavioural modification, ethology, training, learning theory.

Behavioural modification is the foundation of veterinary behavioural medicine, since the client's, and society's, greatest concern is that the animal's behaviour be reformed. The animal may be destructive, aggressive or impossible to control, and at a superficial level this is what we want to resolve. However, the animal's behaviour is merely the outward manifestation of internal emotional and motivational states. Changing these is more likely to produce a permanent and successful change in behaviour, rather than merely squashing or displacing behaviour. Otherwise improvements are likely to be transient.

There is an absolute necessity for an evidence base for all forms of treatment. The majority of behaviour modification techniques are based in fundamentals of learning theory, which has its own evidence base. The use of specific behaviour modification techniques in animals are rather less well validated, because it is difficult to fund or create suitable controlled studies. The literature contains more studies related to the use of medication or pheromones, with or without behavioural therapy, because these are far easier to finance and design.

As a substitute for a large body of formalised evidence for the effectiveness of different behavioural therapies it is important to apply a logical approach to the design of therapies. Behavioural therapy should be:

1. Ethologically appropriate for the species being treated
2. Individually appropriate to the animal's physical condition, past experience and ability to cope with change
3. Minimally damaging to the animal's immediate or long-term welfare
4. Considerate to the animal's needs

While evidence for the overall effectiveness of a particular approach may not be available it is possible to look at evidence from other fields that support decisions made within each of these guidelines.

As clinicians we also have a responsibility to standardise and refine treatments and undermine arguments put forward in favour of methods, such as the use of excessive positive punishment or surgical interventions, which may go against the guidelines above. For example, there is some ongoing concern regarding the use of electric shock collars for behavioural therapy. Evidence is accumulating for the problems that the inappropriate use of these devices may cause, but the rapid effect they have on the animal's behaviour is undeniable. Instant effects are easily perceived and hard to measure against those of other training methods.

If we want to see behaviour modification methods develop and replace the use of methods such as shock collars then we also need to be willing to formalise the way that we approach cases, report on successes and failures and work together in order to generate an evidence base that can be used to counter methods that are unacceptable.

I will consider the challenges of using behavioural therapy in a theoretical and practical context, with reference to literature from the human and veterinary fields, and make some suggestions for the way forward.

THE CHALLENGE OF SELECTING MEDICATION

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Key words

drug, evidence based medicine, placebo, prescribing cascade, psychopharmacology.

The challenge of selecting medication begins with the question: is medication indicated? And there are both scientific therapeutic and welfare related considerations in this regard which need to be addressed. The use of medication is not without potential risk, however, these need to be weighed against the benefits medication can bring to the animal both through reducing the time taken for the animal to respond to a training programme aimed at improving its perception of a poor environment as well as in terms of a direct effect on mood. Anecdotally, it appears that the effects on mood elevation generally appear much sooner in companion animals than in humans and this may relate to reduced abstract cognitive associations associated with negative affect in the former.

Assuming that medication is potentially indicated the next question must be: which drug to use? The European “prescribing cascade” provides some guidance, but there is some controversy over the appropriateness of nomenclature used to describe behaviour problems and so it might be argued that the demands of this system can be easily circumvented. Thus whilst clomipramine hydrochloride (Clomicalm, Novartis Animal Health) is licensed as an aid in “the treatment of separation-related disorders in dogs ...in combination with behaviour modification techniques”, there is some disagreement amongst experts as to what should be labeled a “separation-related disorder” (Sheppard and Mills, 2004). It might be argued that what might be described by some as a “separation related disorder” and so clearly covered by this somewhat descriptive indication is in fact primarily a disorder of attachment, with the distress at separation being a sign of a broader problem rather than disorder in its own right. Such an argument might then theoretically exclude the clinician from the obligation to use this drug. Problems relating to ambiguous or unreliable diagnostic terminology are ubiquitous amongst the licensed veterinary behavioural pharmacological agents. Thus the only other psychopharmacological agent currently licensed in Europe for behaviour problems, the mono-amine oxidase inhibitor, selegiline (Selgian, Ceva Santé Animale) is licensed for “the treatment of behavioural disorders of purely emotional origin” in dogs without much consideration of when it may be the most appropriate treatment given our knowledge of the diversity of these conditions. Thus Pageat et al. (in press) have suggested that a differential response to fluoxetine and selegiline may be obtained among dogs with chronic anxiety on the basis of underlying prolactinaemia. Thus for some subjects Selegiline is clearly not the preferred treatment for clinical efficacy even if it is the licensed product.

A further challenge arises with the prescribing cascade, when the licensed product is widely avoided by specialists due to its lack of specificity and potential side-effects as occurs in the case of megestrol acetate (Ovarid, Schering-Plough Animal Health) for the management of “aggression... excitability ... (and) destructiveness”.

Another challenge to the prescribing cascade comes when there are cheaper generic or relat-

ed compounds available. Clearly there appears to be a legal obligation towards the licensed medication, but if the price means the owner is unwilling to use medication, what should the clinician do in the interests of animal welfare?

Licensed medication should have been evaluated for both efficacy and safety, but the acceptable standard varies with time, with much higher criteria expected for agents seeking to enter the market more recently. As a result there are still very few licensed preparations available for use in behavioural medicine and so clinicians must turn to unlicensed products. Quite apart from the potential health risks associated with using such medications, the true efficacy remains unevaluated and individual testimonials provide little scientific support, given that a 40% placebo effect might be expected in owner report data relating to behaviour problems. It is therefore essential that clinicians ensure they maintain their objectivity and scientific standards. Given the potential risks, there is undoubtedly a need for an evidence based approach to this subject, rather than one based on anecdote or subjective opinion, and this may be where academically co-ordinated practitioner networks simultaneously evaluating potential products may play a very useful role in adding to our knowledge in this fledgling discipline. However, in the interim, it may be preferable for general practitioners to restrict themselves to a deeper understanding of the licensed agents than to dabble in the latest fad on the electronic discussion groups.

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IVBM & ECVBM-CA
Poster Session

10 CASES OF REDIRECTED AGGRESSION IN CATS

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Key words

cat, redirected behaviour, aggression, behaviour problem.

Introduction

Redirected aggression is the most dangerous form of feline aggression due to the violent and unpredictable nature of the attacks. The problem can occur when the triggering stimulus is not accessible for any reason and aggression is oriented to an alternative target.

Material and methods

A review of ten cases of redirected aggression attending the Animal Behaviour Clinic at the Barcelona School of Veterinary Medicine will be presented. A detailed behavioural history was performed on all patients. The population included 7 male and 3 female indoor cats. Seven of them lived with other cats whereas 3 came from single-cat households. The clinical patterns of presentation of these cases will be presented.

Results

The triggering events most clearly involved with the episodes of aggression were: contact with another cat (n=8), the visit of unfamiliar people (n=1) and the occurrence of sudden loud noises (n=1). A redirected aggression response towards people was identified in 90% of cases.

Discussion

Although redirected aggression can occur in response to a variety of causes, a general diagnostic, risk assessment and treatment protocol will be presented and discussed. Special emphasis will be put on those measures that could help to prevent new episodes of aggression.

A CASE OF RECURRENT FELINE INTERSTITIAL CYSTITIS: THE CONTROL OF CLINICAL SIGNS WITH BEHAVIOUR THERAPY

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Key words

feline idiopathic cystitis, idiopathic feline lower urinary tract disease, domestic cat, behaviour, stress.

Introduction

Feline Idiopathic Cystitis (FIC), also known as idiopathic Feline Lower Urinary Tract Disease (iFLUTD), is the most common medical cause of elimination change in the cat, and hence is an important differential when working up cats presenting with inappropriate elimination. Research has suggested that the impact of environmental stressors on a cat is an important factor in the multi-factorial aetiology of this condition. The mechanism for this effect is postulated to be related to the disruption of the GAG layer by a localised inflammatory response precipitated by activity in sensory nerve fibres, which allows the “leakage” of urine into the underlying tissues. A recent case control study found that case cats were more likely to be male, overweight and pedigree than the control population, but also found that several stress factors were “flare factors” associated with the onset of a bout of clinical signs. The most statistically significant stress factor was the occurrence of conflict with another cat in the household. In this case report, the use of a programme of behaviour therapy to control the exposure of the affected cat to identified stressors was found to successfully control further clinical signs.

Case presentation

A five year old male neutered domestic short-haired cat presented with recurrent bouts of dysuria and haematuria. He was also standing to eliminate and eliminating in different locations around the house. Urination appeared to be associated with pain, as he was crying as he urinated, and was pacing and restless prior to elimination. There was also grooming of the perineal region, caudal ventral abdomen and inner thigh regions. A full medical work up was carried out. No abnormalities were found in routine plasma biochemistry and haematology tests, but blood and excess protein was found on urinalysis. Urine culture revealed no indication of a urinary tract infection. Double contrast radiography and ultrasonography were conducted, revealing no indications of calculi, but a grossly thickened and pitted bladder wall was found. A diagnosis of FIC was made.

On behavioural assessment, the cat was found to be one of six within the household. He showed no signs of regarding any of the other cats as part of his social group. The patient typically avoided the other cats, with intermittent bouts of agonistic behaviour. Cats from neighbouring households also entered the garden, which restricted his access outside. In addition, he showed signs of anxiety when exposed to unfamiliar people and scents entering the household. Two days prior to the recent bout of FIC all six cats were shut into a room together because builders were in the house.

A programme of behaviour therapy was instigated which involved ensuring the patient had a separate “core area” and easy access to important resources. In addition, visual access to cats from outside the household was restricted. The cat was followed up for a period of seven months. There was no further recurrence of clinical signs for six months: at this point clinical signs returned. Further investigation revealed that this outbreak occurred two days after the owner shutting the cats in close proximity again.

Discussion

This case provides an interesting example of how bouts of clinical signs in FIC cats can often be linked to specific “stressful” events, and how such outbreaks can be reduced or prevented through the implementation of a specific programme of behaviour therapy.

AAA AND AAT PROJECTS IN A GERIATRIC INSTITUTE: EFFECTS ON THE PATIENTS WELFARE

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Key words

behavioural parameters, dog, heart rate, pet therapy.

Introduction

In the last few years we have seen a drastic change in the humans and pets relationship. In the beginning, man looked at animals like a source of food or an help in his work (e.g. shepherd, hunting) (Bergler R., 1988). Nowadays pets play a new role in human society. Infact, pets are an integral part of human family and this aspect has many social and emotional implications (Verga M. 2005). For their positive effects on human health, pets are also employed in some special and therapeutic activities known by the generic term of “Pet Therapy” (Miller M. & Lago D., 1990). The terms of Animal Assisted Activity (AAA) and Animal Assisted Therapy (AAT) better describe a targeted intervention, with a specific goal (Aubrey H. Fine, 2002). In these programmes the animal becomes an integral part of the therapeutic plan in order to induce some physical, social, emotional, and cognitive improvements in human patients (Corson S. A. & Corson E. O’L. 1981).

Aim of this research was to assess some behavioural and physiological variables on humans and on the co-therapeutic dog. This paper focuses mainly on the dog, but shows also some results on human patients. In fact another aim was also to verify the absence of stress in the two groups of human patients and in the co-therapeutic dog.

Materials and Methods

A new project of AAA and AAT has started in a geriatric institute (Rsa) lasting six months. The therapeutic programme has fixed a weekly session with the co-therapeutic dog for two hours (one hour for the AAA and one hour for the AAT). The medical staff of the institute has choosen two groups of geriatric patients: 4 patients with motor disorders for the AAT’s group and 9 patients with cognitive dysfunction for the AAA’s group. Every 3 weeks, at the beginning and at the end of the AAA and AAT session, we have collected some physiological parameters (arterial pressure, heart rate, haematic values) of the human patients; we have also gathered the dog’s heart rate by means of a polar. Furthermore, all the sessions have been videotaped in order to collect some behavioural parameters both of the human patients and of the dog. Two days after the session with the dog, we have repeated the observations on the patients in the same context (session of physiotherapy or recreational activity) without the presence of the dog. Data collected have been statistically analyzed to evaluate the effects of the human-dog interactions both on the geriatric patients and on the dog.

Results and conclusion

Dog's average heart rate has been always in the physiological range (70-160 bpm for adult large breed dogs). Heart rate values haven't changed at the end of the activity, thus indicating that the dog wasn't stressed during the AAA and the AAT sessions. Furthermore, the analysis of the postural language (tail) and of the facial expression (ears and mouth) during the interaction with the human patients, has confirmed the dog's relaxed attitude and the absence of anxiety or stress-related symptoms.

Also human patients' behavioural and physiological measured variables show an improvement in the overall quality of life.

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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN MEASURES OF CONSISTENCY IN OWNERS AND THE OCCURRENCE OF "BEHAVIOUR PROBLEMS" IN THE DOMESTIC DOG

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Introduction

Surveys have suggested that the use of inconsistent training methods (i.e. both reward and punishment based) used by owners correlate with an increase in behaviour problems. However, the consistency of an owner within a specific context has not been investigated. A previous pilot study developed methods of assessing owner consistency, in which a behavioural test and a questionnaire were compared with the presence of "problem behaviours" in the 45 tested dogs. Consistency scores as measured by the questionnaire, but not the behavioural test, were significantly correlated with the number of problem behaviours that the dogs exhibited ($p < 0.05$). The aim of this study was to build on the results of this pilot study, using the questionnaire to investigate the relationship between owner consistency and occurrence of behaviour problems in a larger population of domestic dogs.

Materials and methods

The questionnaires developed in the pilot study were adapted for use in this project. 250 questionnaires were distributed to members of the public that owned dogs at pet stores, veterinary practices and dog walking locations in two geographical locations in the UK. As well as background information about the dog and owner, the questionnaire asked owners the frequency with which their dog showed 36 defined behaviours that are commonly perceived to be "problematic" by owners, using a five point scale. Owners were also asked if they found these behaviours a problem themselves. In addition, owners were asked how they would respond to different permutations of 5 common "scenarios", such as "How would you react if your dog jumped up to greet you when you came home?" and "How would you react if your dog jumped up with muddy paws?" For each of these scenarios owners were given options of "Dog doesn't do this behaviour", "Physically punish the dog", "Tell the dog off verbally", "Ignore the behaviour" or "Praise the dog". Presentation of the questions was randomised to avoid order effects. As well as inconsistency scores for each scenario, the overall average inconsistency score (AIS) was calculated for each owner. This was done by adding together the scores for each of the scenarios (ignoring scenarios for which the owner reported the dog didn't do the behaviour) and averaging them so that each owner was assigned a value between 0 (completely consistent) and 1 (completely inconsistent). The average inconsistency score (AIS) was tested against the total number of behaviour problems exhibited for each dog using ANOVA.

Results

192 questionnaires were completed and returned. Out of the 192 owners who completed the questionnaires, 67% were female. Owner ages varied from under 20 to over 60 with the majority of participants falling into the 41-60 category. The mean number of 'problem behaviours' shown by dogs was 11.3, although the average number that owners considered a prob-

lem was 3.05. There was a significant effect of overall consistency score on the total number of problem behaviours reported ($F=5.773$, $p<0.05$). Relationships were also found between inconsistency in specific scenarios and particular types of problem behaviour. For example, inconsistency in the 'whine/bark for attention' scenario and also in the 'jumping up' scenario, were linked to an increase in fear responses towards familiar people. ($p<0.05$).

Conclusions

The results of this study suggest that the questionnaire methodology developed in the pilot study does provide a useful measure of "consistency" in owners. The consistency of owners as rated by this method appears to be an important factor in the aetiology of behaviour problems in domestic dogs.

ANIMAL WELFARE IN A KENNEL DOG INVOLVED IN SESSIONS OF ANIMAL ASSISTED ACTIVITY (AAA) WITH PEOPLE SUFFERING FROM ALZHEIMER'S DISEASE. A PRELIMINARY STUDY

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Key words

AAA, Alzheimer, behavioural measures, dog, stress, welfare.

Introduction

This study aimed to evaluate whether a shelter dog could be successfully rehomed into a facility for people suffering from Alzheimer's Disease. The goal was to assess the effect on animal welfare with this form of pet ownership and when performing individual sessions of AAA.

Material and methods

The study consisted of several phases.

(A) A complete physical and behavioural examination of 15 shelter dogs was carried out to select animals suitable for Alzheimer patients. Out of eight subjects that fit the requirements, the dog introduced in the single structure available for the project was a 6 year old female English Setter.

(B) Gradual introduction of the dog into the facility was performed on weekly basis, meeting initially with the operators and then the patients.

(C) Upon adoption, the dog started 20 minute AAA sessions three to four times per week.

During the six month period of phases B and C the dog's welfare was monitored integrating indirect assessment with direct observation of behavioural responses (body postures, calming signals, displacement or stereotypic activities, attention seeking, restlessness, eating and elimination), clinical parameters (tachycardia, tachypnea, motor activity) and with stress induced hormonal changes (faecal and hair cortisol).

Indirect assessment was performed by interviewing the operator responsible for the dog using an 18 item questionnaire at three different times (before starting AAA, mid-term, end of phase C).

Direct and video-taped observations of stress responses were performed during the introduction phase and after adoption, every two weeks during nine AAA sessions. Each observation was translated into a 31 item scoring system in terms of frequency of occurrence.

Faecal cortisol was evaluated in samples collected during gradual introduction and after adoption. Hair cortisol was evaluated from samples collected from the same coat site at three different times.

Results and discussion

Only descriptive statistics were made on questionnaires since the study involved only one dog. The findings suggest that although there were some small changes in environment and routine of life, the dog remained healthy and her level of social interaction, exploration and playfulness increased. Previously detected autogrooming decreased in frequency. The dog displayed no aggression or sexual behaviour even when in heat.

The qualitative data of direct observations were analysed in nonparametric statistics (Spearman test). A p-value of $p < 0.05$ was accepted as statistically significant. Several parameters (tachycardia, tachypnea and nose and lip licking) showed a significant decrease during the AAA sessions. These results suggest a progressive positive integration into the new environment and a gradual reduction of animal stress during AAA sessions.

The hormonal trend, especially hair cortisol, appeared to be correlated with the clinical and behavioural findings.

Conclusion

Although this was only a single subject, the results of our study represent an encouraging basis for further studies on a wider scale. Our dog, besides her ability to adequately perform AAA sessions, showed progressive benefits (re-homing, increased activity and social interaction). Though anecdotal evidence of benefits for Alzheimer's patients was recorded, studies concerning their advantages from AAA sessions are still in progress.

Acknowledgements This study was set in the frame of a wider project which has involved several structures (Faculties of Veterinary Medicine, of Psychology, of Education and Formation's Science of the University of Bologna, and the Local Health Service ASL) under the coordination of the "Social Security and Health Service" of the Province of Bologna.

ASSESSMENT OF A BULLTERRIER BLOODLINE REGARDING POSSIBLE EXCESSIVE AGGRESSIVE BEHAVIOUR

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Key words

aggressive behaviour, temperament test, ethogram, Bullterrier.

Introduction

In July 2000 a decree came into effect restricting the keeping of certain breeds in Lower Saxony. It was based on a report on the Animal Welfare Law of Germany that postulated a hypertrophy of aggressive behaviour especially in the breeds Bullterrier, American Staffordshire Terrier and Pit-bull Terrier.

Previous studies had already shown that a breed predisposition for aggressive behaviour in dog-human-contact cannot be proven. The social behaviour within the species was then observed in a certain bloodline of Bullterriers for:

- clues for a hypertrophy of aggressive behaviour in this bloodline
- to establish whether the tested Bullterriers were able to form a harmonic and stable group.

Materials and methods

Thirty-eight dogs were tested using a specially developed temperament test. All owners completed a questionnaire about their dog.

The test order was:

1. veterinary examination
2. learning and frustration test
3. 21 situations of dog-human-contact
4. 14 situations of dog-environment-contact
5. dog-dog-contact
6. obedience

All tests were recorded on video.

The results of the dog-human and dog-environment-contacts of the temperament test were compared to those of 415 dogs affected by the decree and 70 Golden Retrievers.

The results of the dog-dog-contacts were compared to those of a further 347 dogs affected by the decree. Furthermore a specially chosen group of four bitches and one male dog that lived together was observed concerning their social behaviour and analyzed via *continuous recording* with a camera. The sequences were *sampled ad libitum* without any human intervention, and dyads (interactions between two dogs only) were analyzed.

The results were analyzed using GraphPad Prism 4. For pairwise comparisons Fisher's-Exact-Test was used. Values of $p \leq 0.05$ were considered as significant.

Results

In the temperament test 10 dogs (26.32%) showed no aggressive behaviour. Twenty-seven (71.05%) showed visual and/or acoustic signals of threat while stationary. Only 1 dog (2.63%) showed biting with contact after threat signals. 97.37% of the animals reacted appropriately in the test situations, while 2.63% displayed aggressive behaviour in inappropriate situations.. In the previous study concerning the dogs affected by the legislation 95% of the animals reacted appropriately in the test situation, while 5% displayed excessive aggressive communication or aggressive behaviour in inappropriate situations. Therefore no significant difference in behaviour between the bullterriers and the breeds affected by the legislation could be detected.

For the observations within the species 1000 dyads were analyzed. The distribution was as follows: 61.5% social contact, 18.2% play behaviour, 8.1% sexual behaviour, and 3.1% agonistic behaviour. There was a highly significant difference ($p \leq 0.001$) in the proportion of the first three behaviours when compared against agonistic behaviour.

Discussion and conclusion

The results of this study concerning the temperament test do not indicate exceptional aggressive communication or aggressive behaviour in inappropriate situations or excessive aggressive behaviour in respect to this Bullterrier bloodline.

Because of the arrangement of the group, the question of whether these Bullterriers were able to form a harmonic and stable group can only be partly answered since same-sex-contact between male dogs could not be tested. On the other hand, the bitches proved to possess excellent social skills as well as the ability to communicate competently and to solve conflicts appropriately.

These results show clearly that a global statement about aggressive behaviour of certain breeds is not ethologically tenable.

BEHAVIOURAL AND PHYSIOLOGICAL EVALUATION OF AGE-RELATED COGNITIVE IMPAIRMENT IN PET DOGS

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Key words

aging, behavioural evaluation, cognitive impairment, dogs, peripheral markers, physiological evaluation.

Introduction

The goal of the present study was to define in dogs peripheral markers connected to underlying physiological mechanisms, to better understand how the brain mediates behaviours and to target pharmacological treatment in canine cognitive dysfunction syndrome (CCDS).

Materials and methods

Forty dogs clinically and behaviourally assessed (26 males and 14 spayed females, pure and mix breeds, over 15 kg of weight) have been enrolled in the present study. The dogs have been divided in three groups: 14 adults (2-7 years old), 18 aged (8-14 years old) and 14 dogs with a clinical diagnosis of CCDS (8-15 dogs).

Behavioural evaluation focused on disorientation, socio-environmental interaction and general activity during a battery of tests developed by the authors on the basis of the bibliographic research (open field, curiosity test and reversal learning) for the assessment of cognitive decline in pet dogs. In the open field test, various locomotion indices were recorded in a 3 x 3 m testing room. The curiosity test investigate the exploratory behaviours. In the reversal learning test the animal's ability for memory and discrimination was explored. Each test has been video registered and then analysed. Different items have been recorded rating the behaviours as normal or abnormal, scored 0 (normal) to 3 (severe abnormal) accordingly in subsequent analysis. Fischer's Exact Test has been applied ($p < 0.05$; GraphPad Instat).

Blood samples were doubled collected to measure catecholamine (RIA kit, ng/ml) and serotonin plasma levels (ELISA Kit, ng/ml), lymphocyte muscarinic receptors and platelet α_2 -adrenergic receptors. Data were expressed as mean values \pm SEM and they were statistically processed using Tukey's Multiple Comparison Test (GraphPad Instat).

Results

No statistically difference for epinephrine and serotonin, but a significant difference for norepinephrine between adults/aged dogs (0.29 ± 0.04 ng/ml) ($p = 0.0062$) and adults/CCDS (0.14 ± 0.03 ng/ml) ($p = 0.03$), as well for dopamine between adults/aged (0.15 ± 0.02 ng/ml) (0.11 ± 0.002 ng/ml) ($p = 0.0014$) and adults/CCDS (0.10 ± 0.005 ng/ml) ($p = 0.04$).

The three groups didn't statistically differ for α_2 -adrenergic receptors (adults 230 ± 24 fmol/mg, K_d 0.38 ± 0.07 nM; aged 287 ± 28 fmol/mg, K_d 0.32 ± 0.04 nM; CCDS 290 ± 36 fmol/mg, K_d 0.40 ± 0.05 nM).

Two binding sites have been revealed based on K_d and defined as high affinity (HA) and low affinity (LA): adults K_d HA 0.09 ± 0.02 nM, K_d LA 0.79 ± 0.20 nM, $p=0.0006$; aged K_d HA 0.06 ± 0.01 nM, K_d LA 1.02 ± 0.22 nM, $p=0.0001$; CCDS K_d HA 0.09 ± 0.01 nM, K_d LA 0.87 ± 0.15 nM, $p<0.0001$. Significant difference was observed among: adults HA (13481 ± 753 sites/cell) and aged HA (8765 ± 1108 sites/cell) ($p=0.004$), adults HA e CCDS HA (9912 ± 8030 sites/cell) ($p=0.005$), adults LA (18884 ± 1650 sites/cell) and CCDS LA (39248 ± 6348 sites/cell) ($p=0.012$), aged LA (27438 ± 11679 sites/cell) and CCDS LA ($p=0.05$).

Behaviourally in the object discrimination learning test ($p=0.0253$) and in the reversal learning test ($p=0.0253$) a significant difference was found for socio-environmental interaction and general activity, supporting the cognitive evaluation.

Discussion

It has actually been difficult to validate the essential involvement of specific transmitter-defined neurons in the mediation of specific behaviours in pets, mostly because of some bioethical and technical constraints. Results confirmed in dogs the data found in humans and in laboratory animals, encouraging further studies.

BEHAVIOURAL CONSEQUENCES OF PREMATURE MATERNAL SEPARATION AND OF A LACK OF STIMULATION DURING THE SOCIALIZATION PERIOD IN DOGS

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Key words

canine, shelter, socialization.

Introduction

Previous studies discussed how a puppy's origin can affect the likelihood of behaviour problem development. Dogs purchased from shelters and stores are more likely to develop behaviour problems than dogs adopted out of a home environment. The objective of this study was to evaluate whether premature maternal separation and a lack of exposure to human and environmental stimuli in a shelter during part of the socialization period could influence the behaviour of the adult dog.

Materials and methods

The case group was formed by seventy adult dogs (minimum eighteen months of age at the time of the study) that had been introduced into the shelter between the ages of thirty and forty five days and adopted fifteen to twenty days later. Their owners were asked to answer a questionnaire regarding the presence or absence of sixteen abnormal behaviours. As a control group, an equal number of dogs who had remained with their mothers until the time of adoption at the age of two months were examined using the same questionnaire.

Fisher's exact test was used to compare the two groups. A p value of <0.001 was deemed significant.

Results

The prevalence of most problem behaviours was significantly higher in the case group than in the control group. Specifically, a significant difference in the studied behaviours between the case and the control groups was found for: destruction of objects (34.3% vs 2.9%, $p<0.001$), excessive barking (57.1% vs 17.1%, $p<0.001$); fearfulness on walks (52.8% vs 1.4%, $p<0.001$); noise fear (75% vs 30%, $p<0.001$); toys possessiveness (21.4% vs 4.3%, $p<0.001$); attention seeking (81.5% vs 45.5%, $p<0.001$); aversion towards people of unusual appearance (60% vs 24.3%, $p<0.001$); play biting (21.4% vs 1.4%, $p<0.001$); tail chasing (13% vs 0, $p<0.001$); pica (15.7% vs 0, $p<0.001$); food possessiveness (25.7% vs 7.1%, $p<0.001$); aggression towards unfamiliar people (22.9% vs 4.3%, $p<0.001$); house soiling (17.1% vs 2.9%, $p<0.001$). Conversely, no statistically significant differences were detected between the case and the control groups for: licking paws (20% vs 10%, $p=0.037$), shadow staring (10% vs 1.4%, $p=0.005$) and aggression towards familiar people (17.1% vs 8.6%, $p=0.07$). The behaviours widely manifested by the dogs of the case group were: attention seeking (81.5%), noise fear (75%), aversion towards people of unusual appearance (60%), excessive barking (57%) and fearfulness on walks (53%).

Discussion and conclusion

These results show that puppies adopted from rescue shelters and prematurely separated from their mother are more likely to develop undesirable behaviours as adults than puppies who remain with their mothers until adoption. The majority of undesirable behaviours displayed in these dogs appear to be linked to fear or anxiety.

This study suggests that the number of rescue puppies who develop behaviour problems as adults may be reduced by introducing schemes in the shelters directed at improving their socialization towards animate and inanimate stimuli.

BEHAVIOURAL IMPULSIVITY IN THE DOMESTIC DOG

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Key words

behaviour, dog, impulsivity, temperament, aggression.

Introduction

The concept of impulsivity has been well studied in the human psychological field; it underlies a range of human psychiatric problems and has been linked to serotonergic and dopaminergic functioning. In dogs, impulsivity is ill-defined, and has so far only been studied in relation to the conduct of certain forms of aggression; it has been suggested that impulsively aggressive dogs typically exhibit little or no warning signals prior to biting, making attacks unpredictable and particularly hazardous, however it would be expected that dogs at risk of showing such behaviour would exhibit impulsivity in relation to many other behaviours, and that this may be detectable before any harm is done. A more detailed behavioural profile extending outside aggressivity has not been attempted. The aim of this study was to develop and validate a public-response questionnaire that can be used in the identification of “at risk” individuals.

Materials and methods

Consensus survey:

32 “experts” in canine behaviour were invited to present their views on the behaviours related to impulsivity in the domestic dog. Information was returned from 20 experts, collated anonymously into a single list of 28 suggested behaviours, which were then used to form the basis of a larger questionnaire on impulsivity for the general public.

Questionnaire:

Each item suggested by the experts was re-written and listed as a statement comprehensible to the typical dog owner. The questionnaire was distributed internationally to 571 dog owners, who were asked to score each item on a 5-point Likert scale, having “strongly agree” (scores 5) and “strongly disagree” (scores 1) at the extremes and “partly agree, partly disagree” in the middle. A third of the participants completed a second, identical questionnaire after 6 weeks to test repeat test reliability. Reliable items were then subject to a principal components analysis, in order to explore the face construct validity of the questionnaire.

Results

From the 28 items that were suggested to relate to impulsivity, 8 were deemed unreliable and removed from further analysis. Principal component analysis on the data relating to the remaining 20 items revealed possible 3, 4 and 5 factor solutions. The 3 factor structure had greatest face validity using a 0.4 loading threshold and unique item loading criteria. This solution used 18 of the 20 behaviours (the two rejected items did not load on any factor at >0.4 and were therefore eliminated). The three factors were interpreted as relating to behavioural regulation, response to novelty with aggression, and responsiveness.

Discussion and conclusion

It appears that the experts' view of "Impulsivity" combined three distinct components, as outlined above. However the component relating to behavioural regulation is perhaps a closer reflection of impulsivity as described in the psycho-biological literature. This hypothesis is currently being tested against controlled laboratory behavioural tests and physiological measures of impulsivity derived from this literature. These data will be presented.

BEHAVIOURAL SIGNS OF STRESS IN POLICE DOGS DURING TRAINING SESSIONS

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Key words

behaviour, dog, police, stress, training.

Introduction

Harsh drilling and training sessions for service-dogs have been assessed to be stressing agents. At the Italian Police Service Dog Training Centre dogs are trained to work in squads accomplishing different tasks: explosive detection, human search and rescue, defence and public order. Tasks performed by each squad are extremely different, thus dogs are differently trained depending on the service they will ply. The aim of this study was to investigate the nature and extent of stress in service-dogs by evaluating behavioural stress responses during training.

Materials and methods

Five dogs of the explosive tracking squad, 4 of the human searching and 6 of the public order (13 males and 2 neutered females) were videotaped twice during their usual training session with their handler. Tapes were then analysed using continuous behavioural sampling to calculate the frequency (episode/minute) of behavioural patterns described in literature as being stress-related. Stress-related manifestations were classified in postural (i.e. lowering of body, ears, tail and limbs posture etc.) and non-postural (licking lips, body shaking, urinating, yawning etc.). Data were analyzed by an analysis of variance (one-way ANOVA) and afterwards a multiple *post-hoc* (LSD) comparison was run to test differences between groups for significance.

Results

Explosive-tracking dogs had a significantly lower frequency of stress behaviours than dogs trained for public order (0.142 vs 4.718, $p < 0.001$). Dogs employed for people search weren't significantly different from the other two groups. Among the non-postural signs of stress, dogs showed mainly licking lips and body shaking, while yawning and sighing were never recorded. Considering only these stress-related behaviours, dogs engaged in human searching showed a significantly lower frequency than public order dogs (0.0 vs 1.412, $p < 0.05$) and had no difference from explosive dogs.

Within public order dogs, dogs experiencing previous harsh managing conditions seemed to be more inclined to show stress-related behaviours, while within the human searching group, younger dogs seemed to show a higher rate of stress manifestations. No differences due to breed, gender, origin of the dog were found.

Discussion

The overall data indicate that the frequency of stress signs is mainly influenced by the discipline and tasks for which the dogs are drilled. Training methods, how experienced in the task the dog is and his relationship with the handler may likewise play a role. It is interesting to note that dogs trained for public order tasks are the only ones trained with negative reinforcements and punishments and undergoing manwork (i.e. exercises with a would-be criminal). These conditions could be the reason for the significantly higher rate of stress-related behaviours showed by these dogs. However, the fact that the tasks themselves could be more demanding should be taken into consideration.

Conclusions

The results indicate that the frequency of stress behaviours shown by police dogs is influenced mainly by the discipline for which the dog is trained. This preliminary study is one of the first attempts in Italy to quantify stress in police dogs. Further studies should help to develop new protocols for the management of the dogs aimed at increasing their welfare.

CAN STIMULUS ENHANCEMENT EXPLAIN THE APPARENT SUCCESS OF THE MODEL-RIVAL TRAINING TECHNIQUE IN DOGS (CANIS FAMILIARIS)?

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Key words

dog, learning, model-rival, stimulus enhancement, training.

Introduction

The model-rival technique is a method of training whereby an animal learns the distinguishing features of a target object, such as name and colour, by observing a trainer and a potential human competitor for the object engage in conversation about these features. The aim of this study was to further test the conclusions of an investigation into the effectiveness of the model-rival technique in training dogs to perform a selection-retrieval task by McKinley and Young (2003), but with a hypothesis that simpler forms of learning may be responsible for the results obtained in this particular study.

Materials and methods

The same 10 dogs were used in all tests. Our hypothesis was tested by repeating McKinley and Young's model-rival training method (M.R), in which experimenters interact with an object which is given a novel name, and comparing the results to those of training sessions devised to include different forms of stimulus enhancement of an object to be retrieved. These 2 minute comparative training sessions involved; minimal enhancement, where the target object was placed between the two experimenters but no interactions were made with it; indirect stimulus enhancement, where the two experimenters alternated their gaze between the dog and the target object; or direct stimulus enhancement, where one of the experimenters held the target object. Each training session (including M.R) was followed by a selection-retrieval task to evaluate the success with which the dogs learned by each technique. The selection-retrieval task consisted of the dogs being asked to retrieve the target object, firstly in isolation, and then in a choice test situation with two other objects. A different novel object and name were used in each task for a given dog. The significance of success in the choice test was calculated from residual binomial probability distributions based on a 0.33 chance performance in a 3-choice test, with 10 subjects. This suggested significance ($p < 0.05$) if 7 or more of the 10 dogs retrieved the correct item following the training. Where 6 or more of the same dogs successfully completed two types of training session, the rate of learning in the different tests were compared by means of a Wilcoxon signed rank test.

Results

It was found that with both the model-rival and direct enhancement training methods a significant number of dogs ($n=7$ for both methods) were successful at completing the selection-retrieval task. It was also found that dogs learned quicker with the direct stimulus enhancement training method than with the model-rival training method ($p < 0.05$).

Discussion and conclusion

Although it cannot be ruled out that dogs are able to learn by evaluating the complex social interactions underpinning the model-rival training method, it appears that a dog's learning of the name of a new object is quickest when interactions during training are kept simple.

Reference

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CANINE AGGRESSION TOWARDS OWNERS: RETROSPECTIVE STUDY IN A SPECIALIZED VETERINARY CASELOAD

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Key words

dog, aggression, owner, France.

Aim

Our purpose is to presents preliminary results on differences between aggressive dogs towards owners and towards other people, associated with relevant risk factors.

Material and method

A case-control retrospective study was performed on 798 dogs presented in two French behaviour referral practices. Aggressive dogs had shown at least one aggressive episode (bite or threat of bite). Dogs were characterized by demographic categorical variables (sex, reproductive status, age at consultation, size and breed). Statistical analyses were performed to compare distributions of variables between aggressive dogs (AD) and a control population (CP) (14464 dogs, two general veterinary practices) and between dogs aggressive towards owners (adult members of the family) and towards other people, using chi-square test or Fisher Exact test. Risk factors were quantified using Odds ratio (OR).

Results

Amongst the 798 dogs, 700 could be analyzed in which 488 (70%) had shown aggression towards humans. 75% of aggressive dogs were first presented between 1 and 7 years old. Amongst aggressive dogs, 298 (61%) had already demonstrated at least one aggressive episode towards their owner.

Aggressive population vs control population: There is a higher proportion of males in AD (71%) when compared to CP (55%) ($p < 0.0001$; OR=1.96). Particularly, intact males are more represented in AD (66%) than in CP (53%) ($p < 0.0001$; OR=1.71). Proportion of small dogs is less important in AD ($p < 0.0001$) whereas that of large dogs is more important ($p < 0.0001$). Proportions of 6 breeds (German shepherd, Beauce shepherd, Belgian sheepdog, Doberman pinscher, Briard, Pyrenees sheepdog) have a greater representation in AD whereas Yorkshires terrier and Rottweillers are less represented in AD.

Dogs aggressive towards owners vs towards other people: Males are more likely to be aggressive towards owners than other people ($p < 0.0001$; OR=2.60), and particularly intact males ($p < 0.0001$; OR=2.74). Small dogs are more likely to be aggressive towards owners ($p = 0.0174$; OR=1.76) whereas large dogs are more likely to be aggressive towards other people ($p = 0.0019$; OR=1.82). Poodles are more likely to be aggressive towards owners ($p = 0.0341$; OR=2.81) whereas German shepherd are more likely to be aggressive towards other people ($p < 0.0001$; OR=3.68).

Discussion and conclusion

These results seemed to indicate that aggressive dogs differ from dogs presented in general practices. As many authors note, male dogs are over-represented in aggressive dogs. Despite a weak tendency for sterilization in France (22%), intact males appear more aggressive as in other studies. Most of aggressive dogs are large size, it may be due to a lower tolerance because of fearfulness for owners themselves and for unfamiliar people. Data of our study show that demographic characteristics of dogs presenting aggressions are different depending on their victims: Intact males seem also to be implicated in more incidents towards owners, large dogs like German shepherd seem to be over-represented in aggression towards other people, while small dogs like poodles seem to be over-represented in aggression towards owners. Owners may probably be more tolerant with small dogs interacting with them in a way that should enhance the probability of conflicts. Further study on aggression circumstances may complete those results.

CERTIFICATING CLINICAL ANIMAL BEHAVIOURISTS – EXTENDING THE ASAB ACCREDITATION SCHEME

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Key words

clinical animal behaviour, accreditation, certification, behaviour disorders.

Since 2003, the Association for the Study of Animal Behaviour (ASAB) has been running an accreditation scheme to certificate clinical animal behaviourists in the UK. Certification is the means by which ASAB recognises individuals, who to the best of the Society's knowledge, meet the standards of education, experience and ethics that it has judged are the minimum that should be required of someone practicing as a professional clinical animal behaviourist.

This certification scheme was set up in response to concerns that the treatment of behavioural disorders in animals was poorly regulated in the UK and that there were people active in the area who called themselves "animal behaviourists", but who did not have appropriate qualifications or experience or did not have them to an appropriate level.

Certification is administered by the Accreditation Committee, a sub-committee of the ASAB Council, to which it reports. In addition to members appointed by ASAB Council, many of whom are themselves certificated, it includes representatives from the UK's Royal College of Veterinary Surgeons, the British Psychological Society, the International Society for Applied Ethology and the Association of Pet Behaviour Counsellors.

To become a Certificated Clinical Animal Behaviourist (CCAB) under the ASAB scheme, prescribed standards of education and experience have to be met. These reflect those required of the other professions working in the field of animal health or human mental health within the UK, such as veterinarians and chartered psychologists.

In addition, anyone certificated under the scheme has to demonstrate that they hold professional indemnity insurance at an adequate level and sufficient to meet any liabilities which might arise as a result of their professional practice. They must also abide by a Code of Conduct, which includes a mechanism for dealing with complaints from the public or other professionals and issues relating to conduct.

ASAB maintains a register of those certificated under the scheme, which is available to all from its website (www.asab.nottingham.ac.uk). This register also identifies the species for which each clinical animal behaviourist has received certification.

ASAB is now looking to extend the remit of the certification scheme outside the UK. Through the assistance of the Joint Committee of European Societies for Behavioural Biology, which

it chairs, ASAB is keen to encourage and support national animal behaviour groups and interested individuals from Europe and elsewhere, to develop their own Accreditation Committees, based upon the existing UK model and to hear from anyone who wishes to assist with this development. To avoid possible problems due to differences in national legislation, it is envisaged that these ASAB endorsed Committees would administer certification in their own country and would work together to improve and harmonise standards. In this way, it is hoped to develop an international and independent kitemark of academic standard and experience in the field of clinical animal behaviour, endorsed by the leading international and national professional and academic bodies in the area of animal behaviour, that veterinary surgeons, the public, legislative bodies and others seeking assistance with behavioural disorders in animals can turn to with confidence and assurance that the practitioner being consulted is following good practice and meeting their duty of care to the animal and its treatment.

CLINICAL EFFICACY OF L-THEANINE TABLETS TO REDUCE ANXIETY-RELATED EMOTIONAL DISORDERS IN CATS: A PILOT OPEN-LABEL CLINICAL TRIAL

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Key words

anxiety, cat, l-theanine.

Introduction

L-theanine is a structural analogue of glutamate which binds to the neurotransmitter receptors, thereby countering their stimulatory activity in the brain. L-theanine promotes mental and physical relaxation in humans.

The present study aims at investigating whether an l-theanine based nutritional supplement (Anxitane®, Virbac) can attenuate symptoms of anxiety in cats under field conditions.

Materials and methods

Thirty-three cats (most Europeans), aged from 5 months to 16 years, were included in the study. The inclusion criterion was the occurrence for at least one month of one or more of the following manifestations of anxiety: inappropriate urination/defecation, aggressiveness (from fear), hypervigilance/tenseness, inhibition, cohabitation problems, fear of humans, and physical manifestations of anxiety (digestive problems, hypersalivation, body licking, bulimia). Exclusion criteria were life-threatening disease and the use of psychotropic drugs or pheromones in the preceding week.

The cats were administered half of a 50mg L-theanine tablet BID for 1 month. No other treatment was allowed. Questionnaires were filled in by veterinarians on D0, D15 and D30. A codified 20-item grid addressed autonomic and behavioural manifestations, the animal's emotional state and associated postures. Each symptom was scored on a 0-3 scale according to intensity and all the scores were added together. The evolution of the global clinical score was compared between time points using the Friedman test and confidence interval estimation. The investigators were also asked to make an estimate of the perceived improvement of the signs of anxiety at each visit as compared to baseline (rated as 100%). The Wilcoxon signed rank test was used to test for differences in investigator ratings between D0 and D30. Only statistical tests giving $p < 0.05$ were considered as significant.

Results

A significant reduction in the global clinical score was observed over the course of the study.

Global clinical score: median (95% confidence interval)				
D0	D15	D30	p*	% reduction D30
18 (14-22) ^a	11 (8-13) ^b	5 (4-11) ^b	<0.0001	62.1 (44.4-73.1)

* Global Friedman ANOVA across time

^{a,b} Data with different superscripts differ significantly (non-overlapping confidence intervals).

A large majority of cats (21/33) responded to l-theanine supplementation ($\geq 50\%$ reduction of the global clinical score).

The veterinarians' subjective estimates showed an impression of improvement.

Anxiety-related disorders rating: mean				
Signs of anxiety	D0	D15	D30	p*
Inappropriate urination/defecation	100%	39.2%	24.2%	0.0002
Aggressiveness	100%	64%	44%	0.001
Hypervigilance/tenseness	100%	59.8%	38.7%	<0.0001
Physical signs	100%	36.7%	20%	0.002

* Wilcoxon signed-rank test between D0 and D30.

Most owners (27/33) were satisfied with treatment efficacy. Tablet palatability was good in 93.9% of cases. No side effects were reported.

Discussion

This clinical trial demonstrates the value of L-theanine supplementation to mitigate symptoms of anxiety in cats. The magnitude of effects as measured by scores place the efficacy of the supplement beyond the typical response seen with placebo, although control data are lacking in this preliminary study. L-theanine seemed particularly effective on organic manifestations of anxiety and cohabitation problems in cats.

Conclusion

In this pilot trial based on subjective evaluation, L-theanine tablets improved anxiety-related emotional disorders in cats. Placebo controlled trials are needed to confirm these findings.

COMPARISON OF NEUROTRANSMITTER LEVELS AND BEHAVIOURS IN DRUG SEARCH DOGS

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Key words

breed, catecholamine, dog, neurotransmitters, serotonin, training.

Introduction

Behaviour disorders in domestic dog could have a multifactorial ethiology involving environment, owner's attitudes, and individual traits. Correlations between behavioural problems and neurotransmitters have been described in some species such as rats, rabbits, humans and dogs. The aim of this research was to verify the possible occurring differences in behaviour and neurotransmitters levels and to investigate the influence of dog training on blood neurotransmitters levels in two sheepdogs breeds reared in the same environment.

Materials and methods

Five German Shepherd and 5 Belgian Malinois showing no clinical signs have been studied. All the dogs were 2 years old; 8 intact females and 2 intact males were studied. The dogs were from the same breeding stocks, they lived in the same kennel and managed with standard procedures. The behavioural history case was carried out through a questionnaire for the handlers who were asked to describe a series of situations and behaviours: every answer to the questions in the history case was scored and statistically analysed (descriptive and Chi Square test). Only statistically significant variables were considered ($p < 0.05$). Blood samples were collected from each dog, before and after training and analysed by HPLC method to evaluate the plasma levels of dopamine (DA), serotonin (5-HT), homoVanillic Acid (Hva), 5-hydroxyindolacetic acid (5HIAA), 3,4-diidroxifenilacetic acid (DOPAC), norepinephrine (NE), epinefrine (E), L-Dopa and platelets levels of serotonin (5-HT). Plasma and platelet levels were statistically analysed through Wilcoxon test and by the ANOVA procedure of SPSS® statistic package (SPSS, 1993).

Results

Statistically significant differences were calculated in the following variables: reaction to veterinary handling ($p < 0.01$), submission posture ($p < 0.01$), door scratching ($p < 0.05$), barking ($p < 0.05$), stereotypes ($p < 0.05$), crackers phobia ($p < 0.01$), thunderstorm phobia ($p < 0.01$) and aggression towards dogs ($p < 0.05$). L-Dopa concentration differences were recorded even though no significant ($p = 0.056$). Other neurotransmitters plasma levels were similar in the two groups. In the two breeds no differences were calculated for platelet levels of 5HT, otherwise training seems to show a tendency to influence platelet 5-HT concentration: a lower concentration after training in the two breeds was recorded ($p = 0.07$).

Discussion and conclusions

The results show the influence of the breed on behaviours related to anxiety and aggressiveness. Belgian malinois mainly showed anxious behaviours and German Shepherd mainly showed aggressive behaviours. The analysis of plasma levels concentrations underlined the importance of dopaminergic system in determining aggressive reactions. In this preliminary study no influences of drug searching training sessions were recorded on neurotransmitters levels. Further studies on neurotransmitters in brain and in peripheral tissues (platelets) are necessary to investigate the relations between neurotransmitters levels and dogs behaviour.

**COMPARISON OF THE EFFECT OF ALPHA-CASOZEPINE
(TRYPTIC HYDROLYSATE OF ALPHA S1-CASEINE) AND SELEGILINE
CHLORHYDRATE IN THE TREATMENT OF ANXIOUS DISORDERS IN DOGS**

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Introduction

Anxious disorders are an important group of disorders. They are worldwide described even if they are differences according to the approaches.

The treatment of anxious disorders involves always behaviour modifications and often drug therapy.

For this part, the use of anxiolytic drugs with minimal side effects is recommended.

Alpha-casozepine (tryptic hydrolysate of alpha s1-caseine) is a nutrient, with a GRAS status (Generally Recognised As Safe). It has an interesting effect on distress. To try and prove this effect, it has also been tested in true anxious conditions in rats, human beings, cats and dogs in different studies against placebo.

According to ethical issues, to European Directive 92/18/CEE and to Good Clinical Practices as defined in European Directive III/3767/92, it has been decided that this trial would be conducted not against a placebo but against a reference molecule which is patented in veterinary medicine with anxious disorders as main indication.

Selegiline has been chosen as reference molecule. It has been patented in 1994 and it is widely used as an anxiolytic psychotropic drug.

Material, population and methods

Initial studies with selegiline have been using the EDED score to check the effect of selegiline in many anxious disorders. EDED score is a scale to measure emotional disorders in dogs set up by Pageat in 1994. So, it has been decided to design a study to check the effect of alpha-casozepine in anxious disorders using the same scale and adding an owner's evaluation of the improvement of the dog giving a mark between 0 (no effect of the treatment) and 10 (perfect result). This was a multicentric, randomised, triple-blinded (owner, investigator, monitor) study, conducted according to European Directive 92/18/CEE and to Good Clinical Practices as defined in European Directive III/3767/92.

Criteria of inclusion were

- anxious disorder diagnosed by a behaviourist veterinary surgeon
- EDED score > 19
- Weight between 1.5 kg and 42 kg
- Age > 3 months

Forty dogs were recruited among veterinary practices run by behaviourist veterinary surgeons, 38 fulfilled the study.

During 56 days, 19 received selegiline chlorhydrate at the classical dosage of 0.5mg/kg SID while the 19 other dogs received a daily dosage of 15 mg/kg of alpha-casozepine SID.

Statistical analysis was conducted on the results, using Statview software. ANOVA analysis assessed the efficacy of each molecule between the beginning and the end of the study while Mann-Whitney U-test compared the results of the two molecules regarding the eded score and the owner's evaluation at each step and especially at the end of the study.

As usually the threshold for a significant difference was set at $p < 0.05$.

Results

Both molecules were efficient. For both of them, the decrease of the score of EDED was highly significant (ANOVA test with $p < 0.001$).

The rate of successes showed no statistical differences between the two products (Test U of Mann-Whitney $p > 0.999$).

We could not find neither statistical difference in the Eded score at the last visit (Test U of Mann-Whitney $p = 0.79$) nor in the owners' evaluation (Test U of Mann-Whitney $p = 0.73$).

These results show that, even if alpha-casozepine is not a licensed drug, it may have a similar efficacy with selegiline on anxious disorders diagnosed in this study.

DRINKING WATER PREFERENCES IN THE CAT

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Key words

cat, drinking, preference, rehoming, rescue, water.

Introduction

It is widely recognised that cats are quite fastidious in their ingestive behaviour, but relatively little attention has been paid to factors not associated with plasma osmolarity that affect fluid intake in this species. Fluid intake and drinking behaviour in cats is of particular interest given their tendency to develop uroliths and idiopathic cystitis which may be exacerbated by stress and associated with urine spraying behaviour. Thus the investigation of factors affecting water intake at times of stress is of particular relevance in the prevention of both behavioural and medical problems of welfare concern in this species. We therefore investigated water drinking behaviour and preferences in a population of cats resident within a rescue cattery.

Methods

The study was a double blinded within subjects design with each cat exposed to two water sources (local tap water and purified water) simultaneously for a 48 hour period. Cats were provided with water in identical shaped bowls of differing colour and every 12 hours the volume of water consumed was measured and the water replenished from the same supply in the relevant bowls. Potential left- right or bowl biases and colour preferences were controlled for using a balanced design. A generalised linear model analysis of variance was used to initially examine the effect of cat identity (random factor) day, water source, bowl location and colour (random factors) on water consumption, with post hoc testing of potentially significant factors conducted using non-parametric tests of difference to assess their robustness given the distribution of the data.

Results

Cats consumed significantly more water during the daytime with a median of 38.5ml during the hours 7am to 7pm and only 7ml during the other 12 hours. Water source was the only factor found to be significant in the ANOVA and this was confirmed in a Wilcoxon analysis. A median of 21ml of tap water was consumed each session but only 15.5ml of pure water, suggesting a significant preference for the tap water.

Discussion and conclusion

These results suggest that cats are able to distinguish between different water types and that they prefer chlorinated tap in the short term over pure water. The reason for this remains unclear, but could relate to familiarity. If this is the case, then the results may be of clinical relevance, for example when a cat is rehomed and subject to additional stressors that might predispose it to urolithiasis and spraying. It may be that the presence of certain substances made the olfactory identification of the water source easier or that there is a genuine preference for certain constituents. Given the current results, owners should not be encouraged to indulge in purified water as a potentially healthier alternative to tap water. Further investigation is warranted.

EFFECTS OF A BEHAVIOURAL AND PHARMACOLOGICAL THERAPY ON DOGS WITH AN ANXIETY-RELATED DISORDERS: A PILOT CLINICAL STUDY

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Key words

anxiety, clomipramina, dog.

Introduction

Many of dog's behavioural problems have a state of chronic stress on their root. The physiological responses and the correlated behavioural manifestations mainly involve the sympathetic nervous system, through the release of catecholamines, and the Hypothalamic- Pituitary-Adrenal Axis (HPAA) by the release of cortisol. We have also neurochemical modifications which involve noradrenergic, dopaminergic and serotonergic neurotransmission systems. Stress' mediators also modulate the immunitary response bringing on an alteration of the leukocytic formula, of the haematocrit value and of the lymphocytic proliferation (Beersda B. et al., 1997) (Jannini E A et al., 1998) (Johnson M. R., 1995). The aim of this study is to evaluate the efficacy of the behavioural and pharmacological therapy with clomipramine (Dramard V. 2005) in dogs with anxiety-related disorders (generalised and separation anxiety, phobias and fears) through the analysis of the main physiological and behavioural parameters associated with a state of anxiety (King J. N, 2000).

Materials and methods

We have considered a group of 14 dogs with anxiety-related disorders and a control group (6 dogs) without behavioural problems or organic diseases. The dogs have been included in the two groups according to the data of their behavioural repertoire collected to a questionnaire. All the dogs of the study have been submitted to 3 behavioural examinations (respectively after 5 and 10 weeks from the first).

Dogs of anxiety group have followed a behavioural therapy for a period of 10 weeks. After the first examination, 8 of these dogs have subjected to a pharmacological therapy with Clomipramine.

At the beginning of any examination all the dogs have submitted to a blood sample in order to assess the values of blood count, urea, creatinine, Alt, Ast, glucose, cortisol, lymphocytic proliferation. Moreover, dogs' owners have filled out in fixed terms (first examination, after 5 and 10 weeks from the first), a questionnaire so as to evaluate the course of anxiety-related behaviours and the appearance of any clinical symptom connected to the pharmacological therapy. The results have been statistically analysed using Chi-square test for the behavioural parameters and the variance's not parametric analysis (Kruskall-Wallis) for the haematic parameters.

Results

As regards the behavioural parameters, we have a clear improvement in the behaviours of excessive vocalization, destruction, contact seeking, pacing. This improvement has been more pronounced in dogs that have followed a behavioural and a pharmacological therapy. All the owners have been satisfied with the results. There wasn't any improvement in the stereotypies and in compulsive disorders, and in the behaviour of inappropriate elimination.

Haematic and immune parameters of all dogs have been in the physiological range for all through the study. These results confirm the absence of renal or hepatic side effects connected to the pharmacological therapy.

Conclusion

Many of the behavioural parameters considered in this study are indicative to evaluate the follow up of the behavioural therapy in dogs with anxiety related disorders. Haematic and immune parameters are not consistent with the behavioural parameters and they seem to be less indicative in evaluating improvement's degree.

The employment of a pharmacological support (Clomipramine) to the behavioural therapy has allowed to get to better improvement.

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EFFECTS OF A HUMAN SOCIAL ENRICHMENT PROGRAM ON BEHAVIOUR AND WELFARE OF SHELTERED DOGS

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Key words

behaviour, environmental enrichment, sheltered dogs, welfare.

The well-being of dogs in shelters can be affected by different factors, including a poor physical and social environment and the absence of social contact and interactions with humans (Valsecchi et al., 2002; De Palma et al., 2005; Wells and Hepper, 1992). Many studies have proved that social contacts with other dogs and human beings is essential for the dog's well-being and must be considered the most important form of environmental enrichment for confined dogs (for a review see: Wells, 2004). As a minimum measure, a dog must be in visual, olfactory and auditory contact with other dogs, since these elements greatly increase the complexity of an otherwise very stifling environment (Poole, 1998). A positive significant interaction (stroking, playing, training), with humans also allows dogs in shelters to gain greater control over the environment, improving their behavioural and physiological profile, especially in new and stressful situations (Tuber et al., 1999; Hennessy et al., 2002 a,b).

The aim of the present study was to evaluate the effects of a human social enrichment program on the behaviour and welfare of long-term kennelled dogs. The enrichment programme included sessions of basic training, playing activity, and affective interaction on alternate days for 60 days. These sessions took place in the agility field within the shelter in Cella (Reggio Emilia) and involved 3 trainers who in turn worked with each dog in order to avoid the development of a preferential bond and excessive attachment to a single human partner. The social enrichment programme was carried out with 14 dogs (7 males and 7 females). Behaviour was evaluated by means of a temperament test carried out before and after the enrichment programme. The sample of enriched dogs was compared with a control group (n=13) who never received the enrichment programme. Biological samples were collected for physiological analyses. In particular, the faeces were collected daily (before, during and after enrichment) for an accurate determination of cortisol levels. The dogs were also shaved on a small intrascapular area, before and after the two months' enrichment period, in order to assess the cortisol excreted during this period. Results show that the enriched dogs received a higher score in the temperament test compared to control dogs although their scores were similar at the beginning of the study (after enrichment: $U=20.05$, $p=0.003$; before enrichment: $U=69$, $p=n.s.$). Enriched dogs, but not control dogs, significantly improved in obedience, docility and sociability (Wilcoxon test before and after for enriched dogs: $p=0.0023$; Wilcoxon test for control dogs: $n.s.$). The Anova for repeated measures revealed that both hair and faecal cortisol decreased in enriched and control dogs (hair cortisol: $F_{1,22}=19.52$; $p=0.0002$; faecal cortisol: $F_{1,46}=4.49$; $p<0.01$).

In conclusion, the social enrichment program positively affected behaviour and welfare of enriched dogs. A partial effect on welfare was detected also in control dogs, not directly subjected to the program, suggesting that the simple increase in the frequency of human presence in the shelter had some positive influence on the dogs.

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EFFECTS OF BLOOD DONATION ON HEART RATE, BEHAVIOUR AND NEUROTRANSMITTERS IN DOG BLOOD DONORS

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Key words

behaviour, dog, heart rate, neurotransmitter, transfusion.

Introduction

Blood transfusion is a new area of interest in veterinary medicine. A lot of bibliography on blood and emoderivates in veterinary medicine is available nowadays, but little information is available on the relation between collection methods and their effects on donors.

The purpose of this study was to evaluate changes in some behaviour (facial expression and posture) and in heart rate during collection of blood for a Veterinary Blood Bank in different dog breeds, sex, age and to evaluate plasma and platelets levels of some neurotransmitters.

Materials and methods

We evaluated thirteen dog blood donors during the “routine” blood donation in three different 90 seconds phases: before the blood collection (PHASE1), during the needle infission (PHASE2) and during the collection of a unit (350 ml) of blood (PHASE3).

The three phases of dog behaviour has been analysed through a video tape; detailed questionnaire has been later scored and statistically analysed: heart rate (HR) has also been analysed by Polar vantage ® during all phases and has been statistically analysed by GLM for reported measures and Wilcoxon Test.

Results

Each blood sample was drawn during routine donation and then analysed by HPLC method to evaluate plasma levels (mean values \pm sd) of dopamine (DA/0.030 \pm 0.001 ng/ml), norepinephrine (NE/0.256 \pm 0.087 ng/ml), serotonin (5-HT/5.94 \pm 3.20 ng/ml), 5-hydroxyindolacetic acid (5-HIAA/5.59 \pm 1.59 ng/ml), 3,4-diidroxyfenilacetic acid (DOPAC/0.610 \pm 0.192 ng/ml), L-DOPA (1.630 \pm 0.587 ng/ml) and platelets levels of NE (0.133 \pm 0.047 ng/mg prot.), DA (0.0522 \pm 0.018 ng/mg prot.) and 5-HT (509 \pm 100 ng/mg prot.) in the group.

We found statistically significant differences, among the recorded (videotape) phases in the following variables: ears back ($p < 0.001$), yawn ($p < 0.05$), pant ($p < 0.01$), sit ($p < 0.001$), stay ($p < 0.001$) and lie down ($p < 0.01$). Heart rate data shows an increasing trend: PHASE1 (119 \pm 18 bpm); PHASE2 (123 \pm 23 bpm); PHASE3 (128 \pm 22 bpm); HR recording time was significant to contribute in finding different statistical differences among the three phases ($p < 0.001$), between PHASE3 and PHASE2 ($p < 0.001$) and between PHASE3 and PHASE1 ($p < 0.001$).

Discussion and conclusion

Basing upon these data, we can conclude that the blood collection from dog donors don't induce significant changes in heart rate. These results are similar to those found in humans.

There are significant differences between two phases: the trend of HR fits in with cardiovascular researches in humans which state tachycardia and vasoconstriction as initial response to blood loss.

Further studies on the correlations between behaviour, neurotransmitters and heart rate will be fundamental in order to study and assess welfare and ethical aspects in dog blood banking.

ELECTROENCEPHALOGRAPHIC FINDINGS IN AGGRESSIVE DOGS

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Key words

canine aggression, electroencephalography, spectral analysis.

Introduction

Canine aggression is a serious medical and social problem in veterinary medicine. Different neurobiological basis and neurochemical processes have been proposed for appropriate aggressive responses and impulsive aggression in dogs. Episode of aggressive behaviour related to epilepsy and different psychiatric disorders have gained considerable attention in the humans with respect to electrophysiological studies. Aim of the study was to assess electroencephalographic activity (EEG) and spectral EEG analysis (q-EEG) in aggressive dogs toward the owners and comparing them to a normal control group.

Materials and methods

Aggressive dogs (A) included 10 males with a history of recurrent multiple and severe bites toward the owners. The control group (C) consisted of 9 healthy dogs. All C dogs and 5/10 A dogs were submitted to clinical, behavioural and neurological examination. Complete blood cell count and blood biochemistry, and cerebrospinal fluid (CSF) examination were performed for all dogs. Brain computed tomography (CT) and magnetic resonance (MR) were performed in 6 A and in all C dogs respectively. A questionnaire adapted for the recognition of impulsive behaviour was obtained from the owner to evaluate the dog's behaviour and the circumstances and physical manifestation of aggressive incidents. EEG was performed in all animals under medetomidine-propofol sedation. A 12 channel montage was used to record EEG that continued for 20 minutes. q-EEG was performed on the background activity using Fast Fourier Transform. For all dogs 90 replications of 2 second artefact-free epochs were selected randomly through the whole EEG. The spectral bands of delta (0.5 – 4.0 Hz), theta (4.1 – 8.0 Hz), alpha (8.1 – 12.0 Hz) and beta (12.1 – 30.0 Hz) were calculated and expressed as relative power (%). All A dogs were euthanized at the request of their owners. Kolmogorov-Smirnov, ordinary ANOVA and Tukey-Kramer test were used for statistical comparison. The probability value was set at $p < 0.05$.

Results

All dogs in which these exams were performed, had normal clinical, neurological, CSF, CT and MR findings. According to the questionnaires and behavioural examination 6 dogs showed impulsive aggressive behaviour (I) and 4 dogs showed dominance aggression (D). According to the sedation protocol, EEG visual examination showed a high voltage-low frequency background activity in all dogs. Occipital spikes were noted in one I and in two D.

q-EEG showed a prevalence of delta and theta in all dogs, while alpha and beta were poorly represented. There was a significant decreases of theta, alpha and beta in D vs C dogs; significant increases of theta, alpha, beta and decrease of delta were found between I vs C and I vs D dogs. Frontal, central and parietal scalp regions showed significant differences between the groups according to the trend of the analyzed four frequency bands.

Discussion and conclusion

The preliminary findings of this study show that differences in delta and theta frequency bands as well as in topographic q-EEG pattern are present in aggressive dogs. These data support a possible brain dysfunction as underlying disorder as it is reported in humans with antisocial personality disorders and impulsiveness.

EMERGING ROLE OF POLYPHENOLS GINKGO BILOBA AND RESVERATROL AS NEUROPROTECTORS IN BRAIN AGING OF DOGS AND CATS: A REVIEW

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Key words

brain aging, cognitive impairment, Ginkgo biloba, neuroprotection, resveratrol, small animals.

Introduction

During aging, the brain of dogs and cats is gradually affected by several degenerative processes, collectively known as neurodegeneration, that may lead to a variety of age-related clinical signs (e.g. cognitive dysfunction). Senile neurodegeneration is a complex combination of cerebral alterations, including changes in structure (e.g. diffuse β -amyloid deposits), metabolism (e.g. oxidative stress), neurotransmission (e.g. decline in catecholamines and acetylcholine levels) and neurotrophism (e.g. reduction in NGF synthesis and receptors). Recent advances in neuropharmacology suggest that compounds with multiple targets could promote an effective neuroprotective response and be therefore beneficial to prevent and/or ameliorate age-related learning and memory impairments. The purpose of this paper is to review the mechanisms of action, clinical and experimental data, and safety of Ginkgo biloba extract (EGb) and resveratrol, particularly focusing on their potential neuroprotective benefits.

Materials and methods

A search of the computerized database Medline (1966 - 2006) was performed. The search was restricted to the English language. The following search terms were used: Ginkgo biloba, resveratrol, brain aging, neuroprotection, cognitive impairment, CNS, dogs, cats.

Results

A large number of studies on both polyphenols were identified. Out of 422 papers on EGb, 36 clinical trials, 6 meta-analysis, 19 in vitro studies and 238 animal studies were identified. The experimental studies have found that the active constituents of EGb (i.e. glycosyl flavonoids) exert the following polyvalent neuroprotective activities: (i) protection of neurones against oxidative stress and β -amyloid induced apoptosis, (ii) improvement in cerebral blood flow, (iii) increasing neuronal glucose bioavailability, (iv) prevention of decline in muscarinic receptors and normalization of neurotransmitter levels (e.g. acetylcholine, dopamine). The clinical trials have shown the neuroprotective benefits of EGb on signs associated with cognitive deficits in the elderly, both in the human and veterinary fields. These studies have also suggested that EGb features optimal bioavailability, few side effects and no acute or chronic toxicity.

Out of 119 papers on resveratrol, 18 reviews and 75 animal studies were identified. These included studies showing that resveratrol has very interesting neuroprotective effects: (i) the rescue of hippocampal primary neurons from oxidative damage and (ii) the marked reduction of

β -amyloid secretion. These effects have been shown to be mediated by the activation of specific resveratrol binding sites, particularly enriched at the level of the neuronal membranes. The clinical and experimental studies have shown the effectiveness of resveratrol both in preventing spatial memory deficit in animal models and in modulating the pathological mechanisms of human AD dementia.

Discussion and conclusion

In conclusion, the bulk of published data clearly indicates the important neuroprotective effects of these two polyphenols, which are able to counteract the multiple mechanisms underlying senile neurodegeneration. In view of these features, they have recently been included in a new formulation for the prevention and treatment of pathological brain aging in dogs and cats.

EMPATHETIC MOTIVATIONAL INTERVIEWING IN VETERINARY BEHAVIOURAL MEDICINE

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Key words

consultation, empathy, motivation.

Introduction and aim

Studies in human psychotherapy (Miller and Rollnick, 2002 for example) have shown that empathetic counsellors have better results than non-empathetic experts.

Can this finding be applied to the veterinary behavioural consultation to increase the success rate of both the owners' contentment and the animal's welfare? - the latter depending directly on the former.

Review

There are three key elements, which need to be present in owners and animals when considering (therapeutic) change: willingness, ability and readiness (W.A.R.).

The owner's willingness to change depends on the balance of the costs and benefits of the status quo and of the change. His ability has to be evaluated and techniques co-developed with him. His readiness level shows his priorities; he may want to implement strategies of change, but not immediately (maybe later as he may have more urgent things to carry out first).

The animal's willingness can be provoked and increased if it perceives a positive outcome from change. Its abilities can be improved by teaching it new ways of managing situations; and its readiness depends also on priorities in its ethogram and in its instrumentalised strategies and on how the therapeutic system can motivate it to be ready.

To be skilled in a motivational consultation, the counsellor has to be W.A.R. to overlook his own agenda and desires, especially in relation to his ethical judgements of the client. This may be necessary to allow the counsellor to approach and accept the world as modelled by the system (consisting of people and animals) itself. Beyond this way of being, there are a few communication techniques that help the counsellor to dodge de-motivation (such as avoiding arguments, criticism, being in a hurry, and knowing better); there are also communication skills helping the counsellor to increase motivation (such as the expression of empathy, maintaining personal efficacy, and amplification of the difference between costs and benefits). In behavioural medicine, general practitioners often meet people who are in the precontemplation phase; the veterinarians are frustrated because they cannot implement solutions; the only thing they can do is increase the willingness of the clients. Specialists meet people who are usually already in the contemplation phase, i.e. willing, but seldom able and ready, particularly after they become aware of the costs of change. Only in the action phase will people implement the strategies of change and achieve lasting results. This is one explanation why suggested therapies either fail or succeed.

Conclusion

The author suggests that, paradoxically, in order to help people and animals, the counsellor has to keep his expertise half hidden, avoid trying to find immediate solutions, and let the solutions (strategies of change) be discovered by the therapeutic system itself as a whole (when it is W.A.R. to do so); with suggestions elegantly proposed here and there according to the counsellor's expertise.

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EVALUATION OF THE EFFECT OF TEMPORARY EXPOSURE TO SYNTHETIC DOG APPEASING PHEROMONE (DAP) ON LEVELS OF AROUSAL IN PUPPY CLASSES

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Key words

arousal, dog, pheromone, puppy, vocalisation.

Introduction

The aim of this study was to evaluate, in a typical temporary class situation, the effect of applying Dog Appeasing Pheromone (DAP) via a plug-in diffuser device on behavioural and acoustic signs of psychological and physiological arousal in puppies.

Materials and methods

Sixty one puppies, under 20 weeks of age at the start of a six week course of Puppy School socialisation and training classes, were used in a double-blind, placebo controlled trial at three different venues. The pheromone was applied via two electrically heated plug-in diffusers activated approximately half an hour prior to and during classes. Levels of arousal were determined from both acoustic and behavioural data sampled from weeks 1 to 5. Changes in behaviour were assessed by comparing video analysis of a sub group of the population during periods of free interaction in weeks 1 and 5 ($n = 9$ DAP group, $n = 20$ placebo group). A General Linear Model ANOVA was used to assess the effect of treatment, number of puppies in the class, venue, and lesson number on the behaviour of the puppies. Post hoc pairwise comparisons were undertaken with a Tukey t-test.

Results and discussion

There was no significant difference between the mean dB levels of the two groups but the frequency of barking in the DAP group was significantly lower than the placebo group ($F = 9.26$, $p = 0.004$), with the greatest difference in the first lesson. When the number of puppies in a class exceeded 5 there was a significant increase in the number of vocalisations ($F = 3.24$, $p = 0.014$) and a trend towards increased mean dB levels ($F = 2.33$, $p = 0.057$). Lesson number showed a significant effect on mean dB levels measured, lessons 1 and 5 were noisiest and lesson 2 the least noisy.

Post-hoc analysis of the behavioural data indicated that puppies exhibited more play behaviour in lesson 5, with a significant increase in play bows ($W = 17.0$, $p = 0.028$); levels of exploratory sniffing ($T = 2.182$, $p = 0.0352$) and pawing ($T = 2.482$, $p = 0.0175$) were significantly higher in the placebo group, whereas rapid withdrawal was higher in the DAP group ($T = -3.001$, $p = 0.0047$) and there was also a trend towards rolling over in the DAP group ($T = -1.996$, $p = 0.0530$).

The data suggest that immediate exposure to DAP has a potentially beneficial effect on arousal and behaviour in puppy classes. Puppies in classes exposed to DAP exhibit more appeasing behaviour than those exposed to placebo.

EVALUATION OF YOUNG AND ADULT DOGS' REACTIVITY

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Key words

adult subject, behavioural test, German Shepherd, puppy, reactivity.

Introduction

Some authors have studied pups' behaviour by means of behavioural tests (Scott and Bielfelt, 1976) in order to predict adults' behaviour (Willson and Sundgren, 1997, 1998) or eventually the possibility of development of behavioural disorders (Campbell, 1975; Fogle, 1990; Bondarenko, 1995). Our pilot study has the aim to investigate puppy's behavioural reactions towards different stimuli (tolerance to novelty) and then to look at whether the characteristics found in the puppies will be stable in adult dogs.

Materials and methods

The reactivity of 32 dogs (German Shepherd), from 5 litters, has been evaluated for predictive purposes, using behavioural tests during the first period of life (at 5, 7 and 9 months). Among these 32 dogs, 17 were chosen to continue the training programme up to 28 months (choice-group), the remaining stopped the training (discarded-group). The dogs in the choice-group were administered with the same behavioural tests at the age of 2 years. The seven behavioural tests were as follows: 1. "Tunnel test" (approaching to known and unknown person), which aims to assess the sociality and the exploratory tendency. 2. "Direct looking test" (known/unknown person), which intends to evaluate the dominance aggression and the possible behavioural reaction to a challenging stimulus. 3. "Sudden noise test", which analyses the orientation behaviour towards a sound. 4. "Retrieving buster ball test" (known/unknown person), which aims to explore the playing aptitude, the sociality and retrieving tendency. 5. "Problem solving test", which measures the learning ability and the exploration activity. 6. "Bowl removal test" (unknown person), which evaluates the aggression linked to food defence. 7. "Bowl approaching test" (known/unknown person), which aims to appraise the competitive or status-related aggression. During the tests some behaviours were observed: ears and eyes position, growling, wolfing, jumping up, pushing, playing and so on. For each test, the behaviours were ranked according to the degree of behavioural reactivity, and ranks were used as scores. As for the whole set of 32 puppies, the effects of gender and group and their interaction on the 5 to 9 months reactivity profiles were estimated with a linear model for repeated measures. A similar analysis was carried out on the choice-group to estimate the behavioural differences from 9 to 24 months and their possible dependence on gender.

Results and conclusions

Between 5 and 9 months, the age exerts a pivotal role on behaviour: all dogs become more self-confident with increasing age (Van de Borg et al., 1991). Some sex-related or group-related differences emerged in behavioural changes, e.g. time to perform tunnel test decreases faster in males, and time spent in exploratory activity at retrieving test decreases faster in choice group. At 9 months, the behaviour is slightly better in males and in choice-group.

When age increases from 9 to 24 months, self-confidence (mainly in male), attentiveness, ability to solve problems and to retrieve objects increase (Slabbert and Odendaal, 1999), whereas playfulness decreases significantly. At 24 months all or nearly all dogs got the best score in most tests, so that the correlation between scores at 9 and 24 months could not be computed or was only slightly positive.

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EVIDENCE OF A PROTEIC SEMIOCHEMICAL, THE SECRETOGLOBIN FELD1: ITS FUNCTIONS DURING DYADIC RELATIONSHIPS IN THE DOMESTIC CAT (*FELIS CATUS*)

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Key words

secretoglobin Feld1, social behaviour, cat.

Introduction

Cats are sometime described as versatile in the way they accept or not to share their territory with conspecifics, familiarity seems to play a role in this acceptance (Bradshaw and Hall, 1999, Curtis et al., 2004). The aim of this study is to evaluate the influence of Feld1, a secretoglobin widely released by domestic cats.

Material and methods

The Feld1 of 19 sedated cats is obtained by washing their whole body. We measure the affinity of their Feld1 for commercial monoclonal antibodies (ELISA assay) thanks to the gradient of the binding graph. The pairs of cats that will be studied during meetings were chosen taking in account the results of the ELISA. Each cat will meet 2 unknown cats from the same gender and different family, one from the same Feld1 group and one from a different group. Meetings are videotaped and we have used scan sampling every 2 seconds (450 pictures per meeting). Two parameters have been studied: proximity (accepting the other cat to be at less than 30 cm) and direction of the head. Direction of the head is defined by the direction of a line coming from the middle point between the ears and going to the nose. Three directions are observed: D1: the direction meets the body of the other cat; D2: the direction is in the opposite of the other cat; D3: the direction does not meet the other cat and is said to be the "neutral" direction (van den Bos and de Vries, 1996). Proximity is analysed using Student t test for ELISA assay, Wilcoxon test and the direction of the head with paired Student's t Test.

Results

Three different groups of Feld1 are observed. Groups 1 and 3 are significantly different ($p=0.0007$) and homogenous when group 2 is heterogeneous and includes cats that are not from Group 1 or 3. On the contrary, if we exclude Group 2, we observe some tendency but non significant difference for the tolerance to proximity with a novel cat of the same sex ($p=0.0719$). The cats seem to be more tolerant to proximity with another cat of the same sex when this cat belongs to the same Feld1 group. There is a highly significant difference for the direction D3 ($p=0.0043$). The cats do not focus (D1) or avoid visual contact (D2) but have a "neutral" visual interaction when the other cat belongs to the same Feld1 group.

Discussion

As described in other mammals, cats seem to use small proteins in order to recognise conspecifics (Leinders-Zufall et al., 2004). When meeting a novel cat of the same gender, they

seem to accept a higher proximity with a cat if its Feld1 characteristics are close to their own one. This result is supported by the visual interaction: cats from the same Feld1 group show “neutral” visual interaction. Secretoglobins, as some other proteic semiochemicals could be involved in the assessment of familiarity in cats: a better understanding of the underlying genetic mechanisms will be studied in the following years.

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FELINE BEHAVIOUR PROBLEMS REPORTED BY OWNERS AFTER ADOPTION FROM AN ANIMAL SHELTER

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Key words

adoption, cats, shelter, housesoil, aggression.

Introduction

The most common residents in many animal shelters across the United States, cats make up a large proportion of the animals adopted into new homes. Behavioural problems are among the most common reasons for relinquishing cats to shelters, and a frequent reason for return to shelters after adoption. Little information is available about prevalence, frequency and seriousness of behaviour problems in cats after adoption. The purpose of this study was to determine 1) whether or not new owners of adopted cats observe behaviours they consider problematic, 2) the frequency of these behaviours, 3) changes in behaviour over time and 4) which behaviours are problematic enough for owners to consider relinquishment. The results of the present study will enable shelters to better educate owners about prevention and treatment of common behaviour problems, to help increase successful cat adoptions.

Materials and methods

An 18-item telephone interview was administered by trained volunteers to the adopters of 100 consecutive cats at the shelter used for the present study. The questions assessed the frequency of problematic behaviours and the frequencies of behaviours such as aggression, house soiling, hiding, clawing, vocalizing, inter-animal behaviour, and friendly behaviour. Owners were also asked about surrendering their cat due to existing or potential behaviour problems. The interview was administered to owners at 1 week, 1 month, 2 months and 3 months after adoption. Fifty-three of the cats were female and 47 were male. All were neutered before adoption. The age range was 2 months to 12 years.

Results

Fifty-five per cent of owners reported no behaviours that they considered to be problems at any time interval, while 45% of owners did report problematic behaviours. The most common behaviour that owners considered problematic across all time intervals was house soiling (9%), followed by clawing furniture (8%), aggression to people (7%), jumping on furniture (6%) and intercat aggression (5%).

Owners reported a decrease in problematic house soiling behaviour from 1 week (11%) to 3 months (2%). There was an increase in aggression to people from 1 week (5%) to 1 month (7%) and then a decrease from 1 to 3 months (2%). There was no obvious pattern in changes over time in inter-cat aggression, clawing and jumping on furniture. There was also a decrease in the frequency of house soiling and aggression to people over time. Three per cent of owners considered relinquishment for an existing behaviour problem. The most common reasons cited for possible relinquishment were house soiling (18%) aggression to people (16%).

Conclusions

Results of the present study indicate that house soiling and aggression to people are among the most common behaviours which owners find problematic after adoption, and the most common reasons given for considering relinquishment. Both behaviours declined by 3 months after adoption. New owners should be counseled about litter box care and feline aggression, and be informed that these behaviours may decline after an adjustment period following adoption.

**GROUP 1 (SHEEP DOGS AND CATTLE DOGS EXCEPT SWISS CATTLE DOGS)
AND GROUP 2 (PINSCHER AND SCHNAUZER, MOLOSSIANS AND SWISS
CATTLE DOGS): BREEDS WITH DIFFERENT BEHAVIOURAL PROFILES?
STATISTICAL DESCRIPTIVE ANALYSIS ON THE BEHAVIOUR
OF THESE BREEDS**

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Key words

dog, breeds, behavioural profiles.

In the following study the authors have investigated whether dogs of Group 1 (sheep dogs and cattle dogs except for Swiss cattle dogs) and of Group 2 (pinschers, schnauzers and Molossians and Swiss cattle dogs) according to the "Fédération Cynologique Internationale" (FCI) subdivision really show specific behavioural characteristics which, together with the morphological aspect, determine their belonging to one group or the other.

In total, 311 dogs were evaluated, 182 from Group 1 and 129 from Group 2. The evaluation was carried out by a questionnaire distributed among owners.

Besides the identification of the subject, the questions aimed at investigating the following behaviours:

- Relationship with the owners;
- Socialization with people outside the family;
- Predatory behaviour;
- Defense of food, objects and territory;
- Interspecific socialization;
- Fear behaviour;
- Dog's response to man handling.

Furthermore, for each behaviour, the following aspects were also considered:

1. Adoption age (<3 months, >3 months);
2. Place of origin (breeding, other place);
3. Sex (m, f);
4. Adulthood (1, 5 years).

The answers were expressed in percentages and evaluated separately, by group (1 or 2) and then compared. Moreover, for each behaviour, more significant data were analyzed according to group percentages, differences in percentages between the two groups or both things.

The authors then noticed a tendency of one or the other group to show that behaviour.

A statistical analysis was carried out for each tendency using a T Student distribution with a 95% bilateral confidence interval. All significant information resulting from the questionnaire and the statistical investigation were collected into the considerations on each single behaviour, and it was noticed that the two investigation methodologies gave corresponding results.

The study's conclusions show that there are no significant differences in the behaviour of dogs of Group 1 or Group 2 regarding predatory actions, while dogs in Group 1 seem to be more reserved and wary of strangers and to have more difficulties in being handled by owners or other people.

Furthermore, they show worse behavioural characteristics when taken away from the mother and adopted before the three months of age.

These dogs, in fact, seem to have a more conflictual relationship with the owner, more difficulties in socializing with strangers, stronger defense of objects and territory and more frequent fear behaviours.

HOMEOPATHIC TREATMENT OF INAPPROPRIATE URINATION IN CAT: A CLINICAL CASE

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Key words

cat, elimination behaviour, homeopathy.

Introduction

In a homeopathic veterinary clinic, we often see cases of marking and inappropriate urination that did not respond adequately to pheromones and to conditioning techniques. We do not use a single therapeutic approach: we study every detail of the patient and the context in which the problem arises, and we prescribe the appropriate treatment according to classical homeopathic methods. This paper will explain the use of classical homeopathic method in the veterinary behavioural clinic. This is not a statistical study but is intended to describe the methods used in a homeopathic approach.

Materials and methods

Analysis of the patient and of the context; both homeopathic and behavioural anamnesis (minimum time 1 hour); prescription of one substance from homeopathic pharmacopoeia, based on the physical and mental characteristics of the subject.

Ginger: European shorthair female cat, 3 years, neutered, obese.

Taken for homeopathic consultation because of inappropriate urination: 50% of urinations on the floor, every day from one year; the problem started 2 weeks after that the owner began a new work (before she worked at home).

Former episode of bladder stones; urine analysis revealed no abnormalities for several months. No improvement was achieved with pheromones and behavioural treatment.

We search in the Homeopathic Materia Medica the substance that, in the course of previous experimentation, has revealed the greatest affinity with the symptoms of this patient.

Homeopathic prescription follows the analysis of any peculiar detail of the patient, first of all the exact context when the problem first began and the modalities of the symptom, the scenario and the dynamics of how it has progressed. After a direct analysis of the cat and its life scenario, some interesting characteristics are identified and focused upon in an homeopathic context: an acute irritability from music, fear of high places, disposition to be easily disturbed when left alone, and malicious aptitude; furthermore we considered some physical signs/symptoms: obesity, former urinary retention, aversion to warmth. We will discuss the procedure that let us identify *Natrum muriaticum* (Na Cl homeopathic dilution) as the ideal remedy for this subject; the medicine is given 2 times per week for 1 month in thirtieth centesimal dilution.

Results

In 7 days the symptoms were decreased by 50%; after 2 months, with a stronger dose, the symptoms were resolved. After two years, the problem occurred once again, with a good re-

sponse to homeopathic therapy. In my experience I have 15 cases of the same pathology treated successfully with homeopathy; 7 were treated with *Natrum Muriaticum*, the other subjects have been treated with different remedies based on their specific characteristics.

Conclusions

The homeopathic remedies can act on behavioural problems reducing, as an example, the anxiety from separation or other unbalanced mental states. For the owner, it is a simple program and the therapy is economic. Prescriptions should be made by a veterinarian with expertise in homeopathy.

HOW DOES ADDITIONAL VERBAL INFORMATION INFLUENCE A DOG'S OBEDIENCE TO A COMMAND?

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Key words

dogs, communication, obedience, verbal information, consistency.

Introduction and aim

Specific verbal and non-verbal changes in the signals used to communicate between humans and dogs can influence the dog's response to the intended command. However, the full range of significant signal modulators, which affect performance in the field remains largely unknown. The first aim of this study was to define, from field observations, factors that might influence a dog's obedience to a known command (Study 1). Specific hypotheses generated from the field study were then tested in a controlled setting (Study 2).

Study 1. Animals and methods

The behaviour of 56 dog-owner dyads involving the "sit" command in training situations were recorded and the following factors coded: dog's attention, owner's attention, sequence of verbal and nonverbal information given by the owner, nonverbal information given by the owner that was not part of the command, relative distance and orientation of dog and owner, dog's behaviour immediately before, during and after the command, and whether the owners were actually giving the form of the command they had previously stated they would give.

Results 1

Binary regression models aimed at predicting the dog's obedience suggested that the dog's attention and additional verbal information preceding the actual verbal command significantly ($p < 0.05$) influenced obedience in a positive and negative way respectively. Study 2 was developed to evaluate the latter observation

Study 2. Animals and methods

12 dogs were taught a new behaviour (jumping onto a raised platform) to a novel verbal command and performance was compared against an established command, in a range of novel circumstances. Dogs were trained to a reliable level of performance before testing. The commands were then given preceded by either the dog's name, the dog's name and a pause and a nonsense word. The dog's behaviour was scored from 0 to 5, 0 being no response, 5 an immediate response. A Wilcoxon test was used to test the significance of any differences between the variants and unaltered command context.

Results 2

The addition of the nonsense word significantly reduced response to both the known ($p = 0.014$) and the new ($p = 0.014$) commands. The addition of the dog's name and a pause preceding the actual command significantly reduced the response to the new command ($p = 0.043$), but not

the established one. The use of the dog's name before the command without a pause had no significant effect on performance

Conclusions

These results indicate the importance of verbal consistency when attempting to communicate with dogs, especially when teaching new commands.

HUMAN-ANIMAL RELATIONSHIP IN PIG PRODUCTION: INFLUENCE ON THE NON-SPECIFIC IMMUNE SYSTEM

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Key words

non-specific immune system, pig, productive performance.

Introduction

Research in intensive farming has indicated that an animal's fear of stock people may cause chronic stress which can progressively limit the animal's growth and reproductive performance. Pigs have good memories and the severity of low performance is directed related to the degree of fear expressed by the animals towards caregivers. Main behavioural types of pigs are described as follows: fearful, timorous, and trustful around people. Therefore, when evaluating causes of low production or reproduction, the psychological status of the animal should also be carefully investigated and any deleterious effects of negative handling analysed. The objective of this study was to evaluate the productive performances in a group of sows in relation to fear of stock people as described by Hemsworth.

Materials and methods

We investigated a modern pig production farm with 400 breeding sows where incorrect handling and behaviour of the stock people was clearly recorded.

The reactivity test described by Hemsworth was applied to 60 sows between 30 and 90 days of gestation. Three groups were defined and classified (20 animals/group): fearful, timorous and trustful.

The following parameters were evaluated:

- total number of piglets and number of born alive
- P2 thickness (internationally recognised anatomic point, 6.5 cm from the back bone, behind the last rib) at the time of delivery
- non-specific immunity parameters including serum lysozyme (6), serum bactericidal activity (2) and total haemolytic complement (1)
- Data obtained from laboratory analyses were processed by ANOVA.

Results

No statistically significant differences were recorded in the sows classified as timorous and trustful. Fearful classified sows showed a significant alteration of serum bactericidal activity (5) while lysozyme and complement values were barely affected.

Fearful classified animals showed a lower degree of back-fat depth than timorous and trustful subjects. Likewise, fearful subjects elicited a productive performance far below the other two groups, both in total born/litter and in born alive/litter (Tab. 1)

Tab. 1 Non-specific immunity parameters, fat depth (P2) and productive performance.

	Bactericidal activity	Lysozyme	Complement	P2	Total born/litter	Born alive/litter
Fearful	17.77 ^A	3.37	41.34 ^a	15.45 ^a	9.36 ^A	11.05 ^{A,a}
Timorous	30.58 ^B	3.44	57.87 ^b	17.20 ^b	9.09 ^B	11 ^b
Trustful	36.32 ^B	3.09	64.50 ^b	18.56	12.22 ^B	11.78 ^B

a-b = $p > 0.05$; A-B = $p > 0.001$.

Discussion and conclusion

The explored hypothesis about the relationship between pig fear of stock people and both variation in productive performance and non-specific immune system changes proved to have a construct validity in the sows tested. Fear and agitation in pigs can affect some parameters of non-specific immunity which compromise the homeostatic compensation ability of the subject. These findings support the thesis of the influence of human-animal interaction in predisposing to conditioned organic pathologies especially in animals used in high production.

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INTERDOG AGGRESSION - FACTORS WITHIN A HOUSEHOLD – A REVIEW OF 50 CASES SEEN AT A REFERRAL PRACTICE IN AUSTRALIA 2001-2006

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Key words

dog, aggression, sibling rivalry.

This paper summarizes a retrospective analysis of 51 cases of inter-dog aggression within the same household seen at a referral behaviour practice in the five years 2001-2006. Data were obtained from case histories with a primary presenting complaint of “sibling rivalry” or “inter-dog aggression between familiar dogs” and also from cases where inter-dog aggression within the same household was included in a more complex list of problems.

The population data was compared to national breed registration statistics, or with records from a large veterinary hospital located in the same area of Sydney where appropriate. Chi-squared tests were used to test for significance.

Inter-dog aggression within the same household was reported in 10.7% of all canine cases presented to the referral practice. When only the cases involving aggression to other dogs (n = 201) were considered, inter-dog aggression within the same household represented 25% (n = 51) of cases, with the majority of cases (n = 150) involving only aggression directed towards dogs outside the household. This varies from figures published from other referral practices.

Where aggression to dogs outside the household was a problem, both Terrier (ANKC Group 2) and Working (ANKC Group 5) breeds were over-represented. Where the aggression was directed at dogs within the household, only Terrier breeds were over-represented. Interestingly, no dogs from the Toy breeds (ANKC Group1) were presented for inter-dog aggression within a household.

Dogs that owners reported started fights were pure-bred in 67% of cases. Aggressors were more likely to be younger than their victims, but no significant sex differences were found. In 23 of the 51 cases, the owner had two dogs of the same breed with 65% of these being same-sex pairs.

The analysis also examined other possible contributing factors such as the make up of the household, both human and canine.

IS HIERARCHY AN OBSOLETE CONCEPT IN DOG-HUMAN RELATIONSHIP?

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During the last forty years, since Scoot and Fuller's work, it has been supposed that relationships between dogs and human were analogue at what could be seen in a wolf pack.

Dominance aggression has been described by many anglo-saxon authors while others from the French school speak about sociopathy. The possibility of hierarchy-based relationships between a human and a dog is highly controversial as it implies for each species to be able to understand, to send and to react to social signals from the other species.

An e-mail questionnaire has been sent to many behaviourist surgeons to conduct a survey among veterinarians from different countries to try and establish if the concept of dominance was today widely used or not and if it had to be replaced by other concepts.

Forty-five practitioners answered.

Differences are seen between schools regarding the relevance of the natural model, the percentage of cases involving hierarchy disorders.

If a large majority of practitioners within the different approaches agree on the fact that the words of dominance has to be replaced there are few accepted proposals.

Through our caseload, we have selected some cases to describe different human-dog groups where hierarchy seems to be an important factor in triggering the behaviour disorder.

All these cases underline how anxiety can rise when dogs can't clearly understand the social structure of the group. This can be seen in very small groups (one owner, one animal) or in larger ones (family with children)

The previous study, the outcome of a recent focus group on this topic and the review of clinical cases can lead to an interesting proposal: Hierarchy is not compulsory in a harmonious group. When difficulties occur, hierarchy can be an interesting option to solve the problem but it can also be a key factor to develop anxiety.

MANAGEMENT AND BEHAVIOUR IN A POTENTIALLY DANGEROUS DOG BREED: THE ARGENTINE DOGO

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Key words

Argentine Dogo, potentially dangerous dog breed, housing, dog management, owner-dog interaction.

Introduction

It is widely recognised that owners' husbandry choices may affect development and expression of dogs' behaviour. Aim of this study was to explore the relationship between management and behaviour in a sample of Argentine Dogos.

Materials and methods

A convenience sample of 94 Argentine Dogos' owners was recruited in dog shows and with the help of DACI (Italian Argentine Dogo Club). Participants answered 10 single-choice questions related to dogs' management and 35 Yes/No questions on specific behaviours occurring in their dogs (83 males and 98 females, $4,6 \pm 2,6$ years). Questions focused on aggression, fear, obedience and dominance-related behaviours.

χ^2 was used to highlight associations between management variables and prevalence of behaviours. Low-prevalence behaviours were summed up in broader items, such as "dominance-related aggression" and "anxiety".

Results

Dogs living in kennels showed significantly higher prevalence of food protection ($p=0.017$) and aggressive behaviour towards family members ($p=0.050$), strangers outside dogs' territory ($p=0.031$) and same sex dogs ($p=0.028$) than house-living subjects. The latter were associated with high anxiety ($p=0.004$), fear of startling noises ($p=0.035$), destructiveness ($p=0.048$), friendliness towards strangers ($p=0.002$) or unknown dogs ($p<0.001$) and high obedience ($p<0.001$).

Participation to dog shows displayed negative associations with dominance-related aggression ($p=0.006$), independent problem solving ($p=0.008$), pulling on leash ($p=0.007$), tendency to escape ($p=0.030$), and fear of traffic ($p=0.001$), startling stimuli ($p=0.031$) and loud noises ($p=0.018$).

Dominance-related aggression ($p=0.045$), food protection ($p=0.023$), and aggression towards family members ($p=0.026$) were positively associated with physical punishment.

Frequent daily play sessions showed positive associations with obedience ($p<0.001$) and friendliness towards strangers ($p=0.004$) and negative associations with fear of startling stimuli ($p=0.039$), territorial behaviour ($p=0.054$) and tendency to escape ($p=0.038$).

Short daily walks (<30 min) were associated with anxiety ($p=0.009$), fear of startling stimuli ($p<0.001$) and loud noises ($p=0.033$), destructiveness ($p=0.054$), low concentration ($p=0.025$) and poor results ($p<0.001$) in training sessions.

Obedience trained dogs showed territorial behaviour while inside their owners' car ($p=0.002$), reacted aggressively when handled ($p=0.002$), protected food ($p=0.041$), sexually mounted people ($p=0.003$) and were more obedient ($p<0.001$) than untrained dogs.

Discussion

Life style seems to affect Argentine Dogos' behaviour. Although it is not possible to determine cause-effect associations between management and behaviour, results seem to suggest that a closer human-dog relationship due to house living may have a positive effect on dogs' obedience and friendly social behaviours but might increase anxiety which could be reduced by physical exercise, participation to dog shows and frequent play sessions.

Kennel living and physical punishments should be further analysed due to their association with prevalence of people-directed aggressions. Associations between obedience training and some problem behaviours may reflect ineffective attempts of owners to control dogs' behaviour.

Conclusion

Present results, being based on owners' interpretation, should be confirmed by direct observation of dogs' behaviour. The survey highlights husbandry aspects that should be carefully evaluated because associated with undesirable behaviours (e.g. kennel living) and those that may be used to reduce problem behaviours (e.g. daily walks, play sessions). It is still to establish how management can affect the likelihood of developing behavioural problem.

NEOPHILIA IN DOMESTIC DOGS (*CANIS FAMILIARIS*)

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Key words

choice test, dog, novelty preference.

In many species novelty preference is often associated with the temperament trait of sensation seeking (Zuckerman, 1994) which has been linked to the neurophysiology of behavioural activation and extraversion (Depue and Collins, 1999). And there is good evidence that such traits exist in dogs (Gosling and John, 1999). Therefore the aim of this study was to investigate novel-object preference in dogs based on the tendency of dogs to show a higher interest in novel items than in familiar ones.

The subjects were 17 pet dogs (*Canis familiaris*) of varying breed, colour and age. For each dog the object of the task was to see if the dog would choose an unfamiliar item or one of the known items from a group of three different toys when asked to retrieve an unspecified object. An unfamiliar toy was placed in a line-up on the ground with two known toys according to a random sequence. The dog was then allowed 30 seconds to pick up a toy. The trial was complete when the dog had contacted an object from the line-up by sniffing it or picking it up. This process was repeated three times with a different unfamiliar object, used on each occasion. It was placed in each of the possible positions in the line-up over the three trials to control for location bias or learned order effect (i.e. 51 exercises for 17 dogs).

Out of the 51 selection tests 50 trials were achieved. The response of dogs during their first, second and third selection test ($n = 17$ for each) and during all tests ($n = 3 \times 17 = 51$) were analysed separately. To determine the preference of the dogs for either familiar or unfamiliar objects a binominal probability distribution test was used, with a probability of 0.3333 of the unfamiliar item being selected in any single test (Table 1). The number of dogs selecting the new item was significantly greater than that expected by chance in each of the three tests (selection of unfamiliar item 38/50, $p < 0.0001$).

Table 1. Results of the choice-test during each session.

	Item chosen	No of Dogs	Observed Proportion	Significance
1st test	unfamiliar	12	0.71	0.002
	familiar	5	0.29	
2nd test	unfamiliar	12	0.75	0.001
	familiar	4	0.25	
3rd test	unfamiliar	14	0.82	<0.001
	familiar	3	0.18	

The results demonstrate quite clearly that dogs appear to have a natural attraction towards novel objects over familiar ones. The preference was consistent across all three tests, and the significant result in the first test, would discount a significant influence of learning during the trial.

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OBJECTIVE ASSESSMENT OF A PROPRIETARY NEUROPROTECTIVE NUTRACEUTICAL ON SHORT-TERM MEMORY OF AGED DOGS

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Key words

canine, CDS, Gingko biloba, nutraceutical, phosphatidylserine, pyroxidine, vitamin E.

Introduction

The aging process is associated with progressive neurodegenerative changes. In dogs and cats, this may lead to signs of cognitive dysfunction syndrome (CDS) or confusional syndrome (Landsberg et al., 2003). Detection of age related behavioural disorders is a challenging task for the veterinarian because the diagnosis is largely dependent on pet owner observations. On the other hand, neuropsychological testing provides quantitative and objective measures of cognitive function. Moreover, it can be used to objectively assess the efficacy of therapeutic and neuroprotective products.

A short-term memory task, i.e. variable delayed non-matching-to-position task (varDNMP) is highly sensitive to canine aging (Studzinski et al., 2006; Chan et al., 2002; Araujo et al., 2005a). In this task a food containing object is presented in one of three potential locations, which is followed by an identical object placed in one of the two remaining positions after a fixed delay. Only responses to the novel, non-matching locations are rewarded. Neuropsychological tests suggest that both oxidative damage and increased beta-amyloid load in the canine brain are factors leading to cognitive dysfunction. (Adams et al., 2000; Colle et al., 2000; Cummings et al., 1996; Head et al., 2002). Recent studies in dogs with cholinergic drugs also indicate that the early impairment in DNMP is likely linked to age-dependent cholinergic dysfunction (Araujo et al., 2005b; Araujo et al., 2004). In humans it has been suggested that a synergistic combination of ingredients such as antioxidants, vitamins, energetic cofactors, trophic nutrients (and others) rather than monotherapy might be most effective in contributing to brain cell health and memory preservation (Standridge, 2005; Lombardo et al., 2005). In fact, this multimodal synergistic approach has become a focus of therapeutic interventions in dogs (Araujo et al., 2005a, Cena et al., 2005; Dodd et al., 2003; Heath et al., 2005).

The purpose of this study was to determine if a multi-component nutraceutical[®] could improve cognition in aged dogs based on the results of the varDNMP at 20 and 90 second delays. Improvement has previously been documented using this supplement in two clinical trials (Cena et al., 2005; Osella et al., 2005).

Materials and methods

Ten aged beagle dogs were divided into two equivalent groups based on baseline varDNMP performance. The nutraceutical or placebo was administered in a meatball once daily to each subject in each group over a 60 day wash-in. This was followed by 10 days of testing on the varDNMP. A cross-over design was used over the next 60 days before retesting. For all analyses, a repeated-measures ANOVA was conducted with test order serving as a between-sub-

ject variable, and both treatment phase (baseline vs control vs nutraceutical) and delay (20 vs 90 seconds) as within-subject variables. An alpha level of 0.05 was required for statistical significance.

Results

First, we found that performance under the supplement was significantly improved over baseline; the performance in the control group, by contrast, did not differ from baseline. A long-term effect was observed, in that dogs that received treatment during the first leg of the study continued to perform well during the second leg (control). There was also evidence that subjects approached their peak performance while on the treatment.

Conclusion

The present study suggests that the multi-component nutraceuticals is likely to prove beneficial in improving cognitive function in aged dogs by improving short term memory and perhaps by maintaining learned behaviours.

Senilife® (Innovet Italia Srl); Ingredients; phosphatidylserine, Ginkgo biloba standardized extract, Vitamin E, pyroxidine.

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OWNER OBSERVATIONS CAN PROVIDE DATA FOR CONSTRUCTIVE BEHAVIOUR ANALYSIS IN NORMAL PET CATS IN AUSTRALIA

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Key words

feline, behaviour, pet-owner interaction.

Introduction

Cat social behaviour is complex and incompletely understood. The aim of this study was to examine whether observations by owners of normal cats were accurate enough to identify individual and social factors affecting the expression of housesoiling, aggression, over grooming, fabric chewing, resentment of handling and nocturnal hyperactivity in Australian pet cats. The relationship between aggressive behaviour and housesoiling was examined.

Materials and methods

Three hundred and ninety-eight households were surveyed. When more than one cat was owned, a cat was chosen at random from the questionnaires returned by the owner. Responses for 332 cats were examined. Principal component analysis of the 40 behaviour items revealed seven factors. Four of these factors had Cronbach's alpha levels of 0.7 or above. The factors were labeled cat-directed aggression (CDA), cat-directed sociability (CDS), biting (B) and human threat (HT). These four factors and the behaviours of housesoiling, spraying, over grooming and fabric chewing were compared with cat factors of gender, sexual status, breed type, colour, age, confidence rating, age at acquisition and place acquired from and the social factors of multiple cats and presence of other pets in the home using MANOVAs. The relationships between the four factors and housesoiling, fabric chewing, over grooming, nocturnal hyperactivity and resenting handling were examined using MANOVAs and correlations.

Results

The age of the cat was found to have an effect on the factor CDS ($p=0.002$) with younger cats being rated as more sociable than older cats. There was a trend for younger cats to be rated highly on the factor HT ($p=0.060$). The factor CDA was significantly affected by the living style of the cats ($p<0.001$), with indoor only and enclosed cats having the lowest ratings on the factor CDA. No relationship was found between CDA and cat numbers. There was no relationship between any of the cat factors or social factors with housesoiling or spraying. Correlation of the factors with problem behaviours resulted in seven correlations. Over grooming positively correlated with CDA and negatively with CDS. Resenting handling positively correlated with the factors B and HT. Nocturnal hyperactivity negatively correlated with the factors B and HT. A positive correlation was found between fabric chewing and nocturnal hyperactivity. Urination within the house positively correlated with defecating in the house and spraying the entry of the house. Defecating in the house had a negative correlation with CDA; cats that are less aggressive towards other cats are more likely to defecate in the house. Spraying the entry of the house had positive correlations with CDA, CDS and with B.

Discussion and conclusions

The relationship between age and CDS and HT may reflect differences in the activity levels of younger versus older cats. The lack of a relationship between CDA and number of cats seems counter intuitive, however, it may be that cats can adapt to small spaces without excessive aggression as suggested by the low ratings for CDA for enclosed or confined cats. Alternatively, owners may not recognize covert aggression or overtly aggressive cats are rehoused by owners.

The correlations between problem behaviours and the behaviour factors identified show relationships between some problem behaviours and the social environment exist without identifying causative factors.

Inappropriate Defecation and Spraying appear, in this population, to be related to feline social interactions despite no relationship identified between housesoiling and spraying and the number of cats in the household.

The survey indicates that owner observations may give a reliable construct for behaviour problems and possibly motivations in normal pet cats. Several relationships between behaviour factors and problem behaviours were identified. Further examination may show the factors to be useful in diagnosis of problem behaviour.

PERIOPERATIVE STRESS IN DOGS: NEUROENDOCRINE AND IMMUNE RESPONSES

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Key words

dog, stress response, surgery.

Introduction

Preoperative confinement in an Intensive Care Unit (ICU) and manipulation, surgical trauma, postoperative pain and dysphoria caused by analgesia, are all major factors involved in stress response when an animal undergoes a surgical procedure.

The work presented here is part of a main study about perioperative behavioural, haematological and biochemical response in dogs. Behavioural results have been previously presented (Siracusa et al. 2005, 2006). The objective of this preliminary study is to describe the neuroendocrine and immune stress responses in dogs undergoing elective surgery, under normal clinical practice conditions.

Materials and methods

Sixteen dogs, seven females and nine males, living in a public shelter, underwent elective orchietomy or ovariectomy. A standardised surgical protocol was used. Antibiotic and anti-inflammatory therapies were administered over the four days following surgery. Each animal was confined in the ICU pre and post-operatively. Timing of sample collection is described in the following table:

<i>Time</i>	<i>Definition</i>	<i>Samples</i>	<i>Parameters studied</i>
T0 (basal)	Surgery day, Pre-surgery Dog in usual environment	Saliva	<i>Cortisol</i>
		Blood	<i>Glucose, PRL, CRP, Hp, WBC</i>
T1	Surgery day, Pre-surgery Dog in ICU cage	Saliva	<i>Cortisol</i>
		Blood	<i>Glucose, PRL, WBC</i>
S	Surgery	-	-
T2	Surgery day, Post-surgery Dog in ICU cage	Saliva	<i>Cortisol</i>
		Blood	<i>Glucose, PRL, WBC</i>
T3	Surgery day, Post-surgery Dog in usual environment	Saliva	<i>Cortisol</i>

T4	24 h post-surgery	Blood	<i>CRP, Hp, WBC</i>
T5	48 h post-surgery	Blood	<i>CRP, Hp, WBC</i>
T6	8 days post-surgery	Blood	<i>CRP, Hp, WBC</i>

CRP= C reactive protein; *Hp*= haptoglobin; *WBC*= white blood cell; *PRL*= prolactin

ANOVA and Wilcoxon tests were used for statistical analysis, to determine significant differences among basal values (T0) and values at different times studied ($P < 0.05$).

Results

Compared to T0, cortisol values showed a significant increase both at T1 (24.79 ± 16.96 ng/ml; $p = 0.041$) and T2 (33.44 ± 18.13 ng/ml; $P = 0.013$), while glucose (118.63 ± 18.82 mg/dl; $P = 0.000$) values were significantly increased only at T2. PRL values were affected by a significant decrease at T2 (4.81 ± 5.42 ng/ml; $p = 0.001$). Immune response was characterised by a long term neutrophilia (peak T4 $16.73 \pm 4.25 \times 10^3$ cells/ μ l; $p = 0.000$) and monocytosis (peak T2 $1.10 \pm 0.44 \times 10^3$ cells/ μ l; $p = 0.000$), but by a short term lymphopenia ($1.95 \pm 0.39 \times 10^3$ cells/ μ l; $p = 0.000$) and eosinopenia ($0.27 \pm 0.15 \times 10^3$ cells/ μ l; $p = 0.001$), limited to early post-operative time T3. Concerning acute phase response, both CRP (peak T4 36.15 ± 13.59 mg/l; $p = 0.000$) and Hp (peak T5 3.64 ± 0.69 g/l; $p = 0.001$) showed a post-surgery long-term increase.

Discussion and conclusion

Cortisol was a useful tool for pure psychological stress assessment, as it was the only marker to show a pre-operative significant change. Variations in hematological and biochemical markers showed that postoperative stress leads to major neuroendocrine and immune responses. The neuroendocrine response suggests an important, but limited activation of the HPA axis. Neutrophils, monocytes and the acute phase response was greatly influenced by tissue damage, as demonstrated by its long duration, while lymphocytes and eosinophils proved to be more sensitive to glucocorticoid increase, limited to early postoperative time. Due to changes over the course of time the neutrophil/lymphocyte ratio proved to be a good tool for post-operative stress assessment.

Acknowledgments

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PHOSPHATIDYLSERINE: A NOVEL NUTRACEUTICAL WEAPON AGAINST BRAIN AGING IN DOGS AND CATS

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Key words

aging, brain, cats, dogs, neurodegeneration, phosphatidylserine.

Introduction

With increasing age, dogs and cats may develop a form of neurodegenerative disease, which has many similarities with age-related cognitive impairment and Alzheimer's disease in humans. Neurotransmitter alterations and deficits in neurotrophic factors are considered to play an important pathogenetic role. Neuroprotection (i.e. protecting the neurones against degenerative processes) is a promising approach for obtaining a successful brain aging and improving the quality of life of senior pets. Substances acting on one or more of the neurodegenerative changes are intended as neuroprotectors. The aim of this study is to critically review relevant research and clinical results on phosphatidylserine (PS), in order to verify the potential use of this naturally occurring phospholipid as a novel nutraceutical weapon in the emerging field of veterinary psychogeriatrics.

Materials and methods

A database search of all indexed and not indexed available literature was conducted. The keywords used were phosphatidylserine, dogs, cats, brain, aging, neurodegeneration.

Results

PS emerged to play critical roles in nerve transmission. It has been shown to (i) facilitate the neuronal activities depending on plasma membranes, (ii) prevent neuronal apoptosis and (iii) restore the levels of neurotransmitters (e.g. acetylcholine) and receptors (e.g. NMDA-R, muscarinic-R, NGF-R) involved in learning and memory.

PS has been repeatedly shown to improve cognitive and behavioural performance in the elderly animals and humans. Some studies with a proprietary nutraceutical preparation containing PS have been recently performed in dogs. A multicentric study on owned elderly dogs displaying two or more signs of brain aging demonstrated that ninety day supplementation with this nutraceutical improved the clinic-behavioural picture. Younger dogs (7-10 years old) showed significantly more improvement than older ones.

Safety as to its use has been confirmed by toxicological studies. After oral administration high bioavailability is reported. Oral LD₅₀ values are found to be greater than 5 g/Kg, without evidence of any adverse effect. PS compatibility with most common drugs is established.

Discussion and conclusion

Administration of PS both to human patients and laboratory animals with cognitive decline has produced excellent results in terms of improved learning and memory. The effects exerted by PS both *in vitro* and *in vivo* support the suitability of its use in geriatric behaviour problems of pets. The studies reviewed herein provide a solid scientific base for the use of this naturally occurring compound as a neuroprotective agent.

The increasing number of dogs and cats aged over 7 years old, the insidious onset of age-related cognitive and behavioural decline and their inherently progressive development support the importance of a timely treatment. Senior pets are intrinsically “weak patients”, and the use of natural compounds having both the characteristics of a nutrient and a pharmaceutical (i.e. nutraceuticals), as an attempt to accomplish desirable therapeutic outcomes with reduced side effects, as compared with other therapeutic agents, can be a successful strategy. In this respect, the neuroprotective approach based on the use of PS may represent a suitable measure to deal with brain aging in elderly dogs and cats, possibly in combination with other pharmacological and behavioural treatments.

PRELIMINARY STUDY ON THE PREVENTION OF BEHAVIOURAL DISORDERS IN DOGS: THE EFFECTIVENESS OF ADVICE GIVEN TO PUPPIES' OWNERS

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Key words

behavioural disorders, dog, education, prevention, puppy.

Introduction

The correct management of dogs during the first months of their life is regarded as an effective tool for the prevention of behavioural disorders (Sheperd, 2002). This research aimed at assessing the effectiveness of advice provided by behaviourists regarding the correct education of puppies.

Materials and methods

Fourty-six owners of puppies, at the moment of their first vaccination, received advice by a trained person regarding the puppies' education. When dogs went to the veterinary clinic for their annual booster, their owners were interviewed. A control group was composed by 43 different dogs whose owners where interviewed without giving them any previous information. The 89 dogs were clinically healthy, 11 to 18 months-old, 53% females and 47% males, of different breeds or mixed-breeds. The interview consisted in a questionnaire divided into the following sections: owner's anagraphical data; dog's anagraphical data; case history; the dog's environment; the training received by the dog; displayed behaviours according to the owners' description; dog's behaviours as observed during the consultation; dog-owner relationship. A variety of observations of undesirable behaviours displayed by the two groups of dogs were statistically analysed using the Chi-square test and Fisher's exact test, assuming a normal data distribution. The data were presented in percentage-in order to be easily compared.

Results

Dogs whose owners received advice displayed less undesirable behaviours than the control group such as: soiling in the house (2% vs 24%; $\chi^2= 19.50$; $p=0.000$), mounting (26% vs 49%; $\chi^2= 12.11$; $p=0.017$), non-stop playing (0% vs 12%; $p=0.023$), chewing parts of people's body (11% vs 37%; $\chi^2= 7.15$; $p=0.007$), and begging for food (17% vs 41%; $\chi^2= 5.31$; $p=0.021$) or demanding food (0% vs 11%; $p=0.023$) from the table.

Discussion

Results show that the advice provided was useful, and diminished the incidence of very frequent behavioural problems in adult dogs (Houpt, 1985). This is probably due to the correct management of the socialization period, which facilitates the acquisition of social (Scott and

Fuller, 1965; Pageat, 1999) and non-social (Pageat, 1999) behaviours. Good results in puppies education can be achieved also thanks to puppy socialization classes (Seksels, 1997), although this kind of training is not necessary for an appropriate response to novel, social, and handling stimuli (Seksels, 1999).

The positive effect of a behaviourist's advice at the beginning of a dog-owner relationship is even more evident considering that the experimental group included more puppies at risk for the development of behavioural disorders. In fact, these animals had been exposed to high risk conditions such as remaining with their mother (48% vs 23%; $\chi^2= 9.94$; $p=0.007$) or their littermates (37% vs 19%; $\chi^2= 8.61$; $p=0.013$) for less than 2 months and coming from a large litter ($\chi^2= 5.71$; $p=0.017$).

Conclusions

The results support the assumption that providing an owner with advice regarding their own correct behaviour and their puppy's education leads to better behaved dogs with a reduced incidence of behavioural disorders. Therefore, the consultation of a behaviourist can be regarded as an effective tool for the prevention of behavioural disorders.

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PREVALENCE OF AGGRESSION AND FEAR RELATED BEHAVIOURAL PROBLEMS IN A SAMPLE OF ARGENTINE DOGOS IN ITALY

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Key words

Argentine Dogo, potentially dangerous dog breed, behavioural problems, fear, aggression.

Introduction

Argentine Dogo are common amongst the breeds most frequently identified as potentially dangerous in legislation all over the world. Aggression can have many causes with dominance and fear as the most common motivational drives. The aim of this study was to investigate the prevalence of potentially dangerous behaviours in this breed.

Materials and methods

A convenience sample of 94 Argentine Dogos' owners was recruited at dog shows and with the help of DACI (Italian Argentine Dogo Club). Participants provided demographic information on their dogs (83 males and 98 females, $4,6 \pm 2,6$ years) and answered 27 Yes/No questions focusing on aggression and fear related behaviours.

Prevalence of problem behaviours (percentage of sampled dogs with specific behaviour) was calculated. χ^2 was used to highlight associations between dogs' behaviour, age and sex.

Results

Ninety-two per cent of sampled dogs displayed predation on small animals, 69.5% aggression toward unknown dogs and 61.3% vigilance of the territory perimeter. Other territorial behaviours included aggression towards people visiting the dog's house (45.3%) and protective behaviour while inside the owners' car (33.1%). 19.1% of sampled dogs were aggressive towards strangers met outside their territory, 17.6% chased running people and 29.4% aggressively protected their owners from social threats.

Among owner-directed aggressions, reactions to leashing, punishment, disturbance during sleep and toy removal occurred in less than 10% of the sample, while reactions to food removal (13.3%), handling (19.8%) and washing (35%) showed higher prevalence.

Common anxious behaviours were fear of traffic (10.3%), loud noises (36.2%) and startling stimuli (30.5%), destructiveness (42.9%), excessive body licking (13.6%) and shyness in novel situations (32.4%). Fear of strangers, children and unfamiliar dogs occurred in less than 10% of sampled dogs.

Males showed significantly more hormonally driven behaviours than females (mounting: $p=0.010$; attacking same sex dogs: $p=0.016$) and owner protection ($p=0.029$). Dogs older than 7 years were significantly more aggressive towards unknown dogs ($p=0.011$) than younger dogs and destructiveness diminished as age increased ($p<0.001$).

Discussion

The results are consistent with selective pressures exerted in this breed, which are derived from fighting dogs which then underwent a selection process to improve hunting qualities. Most common aggressive behaviours included predation, territoriality and intra-specific conflicts, whereas owner-directed aggression was marginally represented. Chasing people and aggression towards strangers, either with a friendly or threatening approach, showed an intermediate prevalence. Low anxiety levels reported by owners in social situations confirm these findings. These results agree with several other studies reporting aggression as one of the most common behavioural problems occurring in dogs, in spite of supposed differences in dangerousness among breeds.

Conclusion

Aggression shown by the sampled Argentine Dogos outside their territory were mainly directed towards other animals while aggressive behaviours towards people were mainly shown inside the dogs' house. Therefore, Italian legal restrictions applied to potentially dangerous dog-breeds may be ineffective in preventing Dogos' aggression to humans. Social hazards could be reduced by promoting proper socialization towards people. Since this study relies on owners' perception, results should be confirmed by direct behavioural testing, while comparisons with other dog-breeds would allow a better evaluation of Argentine Dogos' behavioural characteristics.

REACTIONS OF COMPETITION THOROUGHBRED HORSES TO AN UNFAMILIAR STATIONARY HUMAN

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Key words

behaviour test, horse, thoroughbred, training.

Introduction

Training can be problematic phase in Thoroughbred horses' lives because they undergo to abrupt management changes and this could affect their welfare and relationship with humans.

The aim of this research was to examine the reactions of Thoroughbred horses (TH) under training during an on-farm behaviour test and to compare these reactions to the ones of horses (DH) of different breeds and attitudes (recorded in a previous study).

Material and methods

We monitored the behavioural reactions of 86 Thoroughbred horses, 35 females and 51 males ranging in age from 2 to 5 years, to an unknown stationary human test. The horses were housed in a large Italian hippodrome, in solid-sided box stalls, allowing them neither visual nor tactile contact and all underwent a similar management. All the horses were trained to walk and trot for one hour once a day. Furthermore, the horses galloped for one lap on the horse track.

The test was always performed by the same experimenter, a woman unfamiliar to the horses. Using an instantaneous scan sampling, she directly recorded the presence/absence of the following behaviours: immobile, approaching, sniffing, contact with a person, moving away, hindquarters presentation, threat of kicking and biting. These behaviours were recorded while she opened the box door, while she entered the box and twice, at a thirty-second interval, while she was immobile inside the box. The reactions of TH were compared to the ones of 139 DH, similar in age and gender to TH but of different breeds and attitude. Descriptive analysis and Chi square tests were performed.

Results

During the test, TH spent most of the time immobile (28.2%) and sniffing the unfamiliar person (27%). Threat of kicking was recorded during 0.5% of observations. 55.8% of TH were never in contact with the experimenter while the highest frequency of contact between horses and the experimenter was recorded 30 secs after the experimenter entered the box.

'Immobile' behaviour was the most frequent behaviour recorded when the experimenter opened the door (43%) and entered the box (36%). During the last two phases of the test, the most frequent behaviours were sniffing (38.4% and 41.9% respectively) and contact (27.9% and 26.7%).

The female TH spent significantly more time immobile (34.5%, $p<0.05$) and with hindquarters presentation (5.4%, $p<0.05$) than males which threatened to bite more (10.9%, $p<0.05$).

Latency to contact the experimenter was not significantly different between males and females.

We observed immobile behaviour (28.7%, $n = 225$, $p < 0.001$) and threat of biting (8.1%, $n = 225$, $p < 0.01$) more frequently in TH than in DH, among which sniffing (68.4%, $n = 225$, $p < 0.001$) and contact (40.8%, $n = 225$, $p < 0.001$) were highest.

Conclusions

The authors concluded that Thoroughbred horses under training showed a more diffident attitude towards humans than horses of similar age and gender but different breed or attitude during a behaviour test to a stationary human. This might be related, in addition to genetic influences, to the management and to limited interactions with humans.

RELATIONS BETWEEN BEHAVIOURAL PROBLEMS AND PHYSICAL DISORDERS IN HORSES IN DENMARK

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Key words

behavioural problem, horse, physical disorder.

Introduction

The present report concerns a study of the quantitative relation between behavioural problems and physical disorders in horses, *Equus caballus*, in Denmark, whose owners consulted an equine-behaviourist. The study was carried out in June – July 2006 and is the foundation for my final dissertation for my education as an Animal behaviour therapist at Etologisk Institut in Ballerup, Denmark.

When a horse has a behavioural problem that is due to a painful behaviour, it is an indication of a physical disorder. Behavioural responses to pain serve the purpose of protecting the horse against a worsening of the disorder. For this reason, a substantial part of the report includes a literature study of pain physiology and pain responses, which is intended to illustrate the qualitative relation between different behavioural problems and physical disorders, and I will try to parallel this to the results in the quantitative study. This will contribute to a better understanding of behavioural problems and of which treatment will be most effective, when the causal factor is a physical disorder.

Methods

The data for the quantitative study was collected through questionnaires posted to 46 equine-behaviourists in Denmark. The population of the study consists of 375 horses.

Statistics

In the quantitative analysis the percentage of the 375 horses, which had a physical disorder as causal factor for their behavioural problems, is calculated. In addition to that, a calculation for a statistically significant correlation between the 2 most commonly represented behavioural problems and the most often represented physical disorder is performed. For this purpose a chi-square test is used. The table value for χ^2 is found on a 95% significantly level.

In the qualitative analysis, behavioural problems are compared with the physical disorders, to illustrate if there is a pattern in the relations.

Results

The usable questionnaires showed that 46% of the 375 horses had physical disorders as a cause for their behavioural problems. This result might be a low estimate, since not all horses with behavioural problems are examined for physical disorders.

The behavioural problems most often represented in the study are riding problems (27%), bucking (23%), saddling problems (21%), rearing (15%), reluctance (13%) and head shaking (11%). The physical problems most often represent are back disorders (50%), tooth disorders (23%) and leg disorders (10%).

Conclusion

46% of the horses in the study had physical disorders as a cause for their behavioural problems. Likewise it appears, that riding problems, bucking and saddling problems most often are associated with back disorders; that rearing and head shaking are associated with tooth disorders; and that reluctance is most often associated with leg disorders. There is a statistically significant relationship between bucking and back disorders, but not between riding problems and back disorders.

With the knowledge of the extent and importance of physical disorders for behavioural problems, it is not only possible to achieve more effective behaviour therapy, but also a better welfare for the horses.

SCENT PREFERENCES IN THE DOMESTIC CAT

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Key words

cat, feline, olfaction, scent.

Introduction

Olfaction serves an important role in many feline endeavors including feeding, social interactions and territorial delineation. Feline peripheral olfactory neurons have been shown to possess a more complex mechanism for signaling odor information than that of the human and other species. These differences in scent processing may be critically important to the domestic cat who is co-habiting with humans and exposed to human selected scents throughout the home in the form of cleansers, candles, air fresheners, scented cat litter, etc. The purpose of this study is to evaluate the behavioural response of the domestic cat to specific scents.

Materials and methods

Seven domestic cats were exposed to 6 different scents (citrus, floral #1, floral #2, fish, cedar, malodor/fecal odor) and a control (no scent) in a randomized but controlled manner: 0.1 ml of scent was placed on a cotton ball and the cotton ball inserted into a plastic hair roller. The hair roller was then introduced into the kennel where the cat was located and held approximately 10 cm from the cat's nose. The response of the cat to the scent was video-taped over the course of 30-seconds. On video review with the veterinary behaviourist blinded, the time the cat spent engaged with the scent; neutral with the scent and avoiding the scent was measured and recorded. The behaviourist also gave a global subjective score to each cat engaged with each scent on a 9 point scale ranging from "dislikes extremely" to "likes extremely".

Results

For each response (engaged, neutral or avoidance) the Friedman Test, a nonparametric analysis of variance for a randomized block design, was performed. Also Est Median responses for each scent were calculated. Although the scent was not significant for Engaged Behaviour versus Scent ($p=0.171$) in the Friedman Test, the Est Medians clearly break out Fish, Cedar and Control into the high scoring group for engagement. Again, Scent was not significant for Avoidance ($p=0.199$) however Citrus and Floral #1 were split away from the other groups, showing more avoidance. The Subjective score was significant ($p=0.044$): Cedar, Control and Fish split out from the other scents as being the most "liked".

Discussion

While absolute scent preferences were not established, trends were noted that indicate Fish, Cedar and Control (no scent) were preferred by cats over Floral and Citrus scents. There were some challenges with application of the study including cats appearing to become less responsive as the study progressed. The cats were all contained in a standard kennel during the testing procedure, thereby somewhat limiting their response to retreat. The study did not test

for different intensity levels of the same scent. In addition the sample size was very small, a greater number of cats may provide more significant results.

Conclusion

This pilot study gives some idea of scent preferences in the domestic cat. It elucidates the need for additional work since this scent preference/avoidance may be important when considering use of scented products in the feline home.

SURVEY OF UNDESIRABLE BEHAVIOURS DISPLAYED BY POTENTIAL GUIDE DOGS WITH PUPPY WALKERS

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Key words

guide dogs, puppy walkers, questionnaire, undesirable behaviour.

Introduction

Guide dogs play an important role (Sanders, 2000) but their training is costly. Previous research has concerned either their performance during and after training (Wilsson and Sundgren, 1997; Murphy, 1995, 1998), or evaluating pre-training behaviour under test conditions (Koda, 2001a, 2001b; Fallani et al., 2006). The current research aimed to survey puppy walkers' assessment of the frequency and type of undesirable behaviours displayed during the puppy walking period. It is considered that their assessment of the dog's behaviour can provide useful predictive information regarding an individual animal's suitability for the guiding role (Serpell and Hsu, 2001).

Materials and methods

A 80-item questionnaire was distributed to 35 families who were puppy walking for the National School of Guide Dogs for Blind People in Florence (Italy). All family members responded (n=96). This increased the robustness of the data for each puppy by reducing possible subjective evaluations of any individual.

Frequency data have been turned into percentages to obtain descriptive statistics (Holloway, 1997).

The population comprised 27 Labrador Retrievers, 6 Golden Retrievers and 2 German Shepherds. 45.7% were males and 54.3% females; 65.7% were between 7 and 13 months.

Results

The data indicated three categories of undesirable behaviour.

First were behaviours not considered to be detrimental to the working guide dog role. These were: digging in the garden 11.8%; chewing objects 4.4%; stealing or begging for food 3.0%; licking hands and/or feet 5.9%; trying to get on the sofa 4.4%; defending territory 2.8%; putting paws on the table 4.4%; eating of own faeces 5.9%.

Second were behaviours that could be corrected during training. These were: not responding to recall 8.9%; pulling on the leash 11.8%, jumping up 28.1%; barking at other dogs 5.9%; chewing the leash and/or owners' hands 1.5%; house soiling 5.9%.

Third were behaviours considered as potentially disqualifying. These were: scavenging 17.7%; aggressive behaviour: aggressive barking 10.4%, growling 9.4% and biting 10.4%; fear of: thunderstorms 6.2%, loud noises 32.3%, men 2.1%, women 3.1%, people with unusual clothes 6.2%. No dogs were reported as fearful of children.

Discussion

Results indicate that puppies were well socialised to people, only few showing fear. Being sociable to people is an important requirement for a guide dog (Pfaffenberg et al., 1976; Naderi and Scanyi, 1995).

Although 67.7% of respondents recorded at least one undesirable behaviour, only few were incompatible with the guide dog role, and substantially less than found by Koda (2001a). This may reflect methodological differences, test *versus* normal living conditions. Alternatively, the puppy walkers may have under-reported undesirable behaviour as they were not trained observers.

Conclusion

Behaviour problems represent a major reason for disqualifying guide dogs (Goddard and Beilharz, 1983). Early assessment of problems would be most effective, and, potentially, puppy walkers could make an important contribution.

Future studies are needed to investigate how undesirable behaviours in the puppy walker environment develop and are maintained. This may lead to changes in the education of puppy walkers, such as advising on the prevention, or early detection and resolution of aggressive and fear behaviours.

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THE EFFECT OF BEHAVIOUR THERAPY FOR DOMESTIC CATS WITH "PROBLEM BEHAVIOURS" ON OWNER REPORTED LEVELS OF EMOTIONAL SUPPORT

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Key words

domestic cat, behaviour, cat-owner bond, emotional support, behavioural therapy.

Introduction

Studies investigating the reasons for domestic cats to be euthanized or relinquished to shelters suggest that the occurrence of behaviours that owners perceive to be a problem are an important factor in the break down of the bond between owner and cat. In addition, the degree to which they will persevere with a cat, and tolerate its behaviour, will be influenced by the strength of attachment to their pet.

Some owners seeking referral for behaviour therapy, for example, have tolerated behaviours that cause high levels of inconvenience to them for prolonged periods. There has been very little systematic research on the effect of 'behaviour problems' on the cat-owner bond. However, in a previous survey of cat owners participants were asked whether their cat showed a range of different "problem behaviours" and were also asked to complete a previously validated 9 point 'Emotional Support Scale' (ESS).

Interestingly, the number of potentially undesirable behaviours in cats was positively correlated with ES, and in the 16 cats for whom 5 or more undesirable behaviours were reported, the ES was significantly higher than for those with less than five. These results may suggest that these owners are a 'residual population' of owners who have retained their cats despite numerous behaviour problems because of the strength of emotional bond that they have for their pet.

The aim of this study was firstly to compare the owner reported levels of emotional support between a population of cats with clinical behaviour problems with those in a matched control group, and also to compare levels of emotional support in the clinical population before and after a programme of behaviour therapy.

Materials and methods

The owners of 97 cats with "behaviour problems" (clinical group), and 51 matched cats without problems (control group) were recruited. Each owner was visited in their own home, and were asked to complete an ESS questionnaire. In addition, each cat was also given a full behavioural assessment, and the owners in the clinical group asked to give a global rating of the severity of the behaviour problem(s) before being given an individual programme of behaviour therapy. At a second visit 8 weeks after the first, owners were asked to complete the same questionnaires. The average ES score was compared between visits, using a Wilcoxon Signed Rank test, and any change in average ES between visits was compared with the change in global severity score for both owner and clinician, using Spearman rank correlations.

Results

In the control group, the level of ES reported by owners was not significantly different between the first and second visit. However, in the clinical group, the owner reported levels of ES were significantly higher at the second visit to the first ($p < 0.05$), and was weakly correlated with the change in owner severity rating ($p < 0.05$). Interestingly, the correlation between owner rated improvement in behaviour problem and ES varied for different types of “behaviour problem”.

Conclusions

The relationship between an owner’s emotional bond with their cat and the number, type and severity of “behaviour problems” that the animal displays is obviously a complex one. However, it does appear that the successful implementation of a programme of behaviour therapy does have a positive effect on the cat owner bond.

THE EFFECT OF NEUTERING ON BEHAVIOUR AND SOCIAL RELATIONSHIPS IN A COLONY OF URBAN SEMI-FERAL CATS

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Key words

cats, social behaviour, fecal cortisol, neutering.

Introduction

Despite the fact that, in our country, the control of demography of semi-feral cat colonies, by law, is accomplished through “trap, spay/neuter and release” programs, and despite the massive neutering campaigns, there is a shortage of data on the effects of neutering on this species. The aim of this study is to verify the influence of neutering on cat behaviour and on the social structure of the cat social group. We investigated the effect of neutering on inter-individual relationships of cats belonging to the same colony.

Materials and methods

The group consisted of 17 semi-feral domestic cats living in the urban environment. Data were collected during 557,41 hours of observation before neutering and 427,65 hours of observation after neutering. Data on the outcomes of aggressive, submissive as well as affiliative and territorial behaviour were collected, using classic ethological methods (“focal animal”, “all occurrences” and “1/0” sampling methods- Altmann, 1974). Three faecal samples were collected from each cat on three consecutive days (when possible) before neutering, to measure the levels of cortisol metabolites (Schatz, 2001), in order to have an indication of the relationship between one physiological indicator of stress and some behavioural patterns as well as to dominance rank.

Results

A linear dominance hierarchy based on the outcome of agonistic encounters with and without sources of competition, separately, was found before neutering (Appleby test: $p < 0,025$ – Appleby, 1983). The dominance hierarchy did not change after sterilization (Spearman rank correlation coefficient: $R_s = 1$, $n = 7$, $p < 0.001$). On the other hand, the frequency of aggressive, territorial marking behaviour as well as proximity among individuals decreased significantly. Males of the group were less aggressive towards strange males trespassing. Affiliative behaviour was observed among adult males that never performed it before sterilization. The level of fecal cortisol metabolites was inversely correlated with the number of individuals that showed submission to each cat ($R_s = -0.636$, $n = 11$, $p < 0.05$) that, in turn was positively correlated with rank ($R_s = 0.800$, $n = 11$, $p < 0.005$).

Conclusion

In conclusion, although sterilization can be considered an invasive method for management of cat demography, the results of this study suggest that the hierarchical structure of the cat

social group does not change. The most dramatic influence detected on individual behaviour is simply that cats are less active and interact less with each other. Although positive effects were recorded, such as a sharp drop in hygienic and sanitary problems signaled, some ethical considerations on sterilization are due. Given that in 15 years since the implementation of the National Law, about 15,000 semi-feral colony cats were neutered only in our city, are we sure that we wish a world of sterilized feral cats and fertile cats of valued breeds? This is a question that all people involved in the management of urban animals should seriously consider.

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THE IMPORTANCE OF CONSISTENCY IN THE TRAINING OF DOGS. THE EFFECT OF PUNISHMENT, REWARDS, CONTROL AND ATTITUDE ON OBEDIENCE AND PROBLEM BEHAVIOURS IN DOGS

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Key words

behaviour, consistency, dog, punishment, reward.

Introduction

Traditional dog training methods have involved the use of aversives (punishment). In recent times, methods focusing on rewards have become popular, e.g. clicker training. Research has shown that aversives can induce problem behaviours and put the dogs' welfare at risk (Hiby et al., 2004, Schalke et al., in press). The aim was to study whether punishment was a risk factor for problem behaviours, and how reward, punishment, attitudes and control (permissiveness-strictness, consistency) in combination affect obedience and specific problem behaviours. In addition, we looked at gender effects of training methods.

Materials and methods

Nine hundred and thirty-five replies to an online open questionnaire (217 questions) were analysed, covering four topics; demographics, the owner's control (permissiveness-strictness, regulation of the dog's behaviour) and attitude (warmness-coldness dimension) (PARQ/Control; Rohner and Khaleque, 2005), the owner's training methods (physical punishment and reward) and the dog's behaviour (obedience and behaviour problems) (CBARQ; Hsu and Serpell, 2003). The sample was analysed as a total population and as a sub sample of extremes defined as more than one standard deviation from the mean (problem behaviour group). SPSS 13.1 (2004, Apache Software) and Excel 2003 (Microsoft) were used for statistical analysis. The grouping of variables for "control" and "warmth" followed Rohner and Khaleques (2005) procedure, while the C-BARQ variables were reduced by factor analysis to 13 factors (problem behaviours) (Cronbachs alpha \geq 0.698). To evaluate relationships between variables, regression and spearman's correlation were used.

Results

The owner's control (permissiveness-strictness, consistency) score was compared with the dog's behaviour, and a significant increase in obedience and lower training problems were found with increased control ($p < 0.01$). Punishers, i.e. dog owners that used high frequency and harshness of punishment and several methods of punishment, had a significantly higher level of training problems and lower obedience ($p < 0.01$), while the use of frequent rewards was correlated significantly with lower level of training problems and higher level of obedience ($p < 0.01$). In the problem behaviour group, increased control was related to high trainability ($p < 0.01$), decreased fear of strangers ($p < 0.05$) and reduced non-social fear ($p < 0.05$). The men and women trained their dogs differently. A two-step Cluster Analysis revealed 4

clusters were the majority of men (93%) punished and controlled their dogs more and rewarded them less. Their dogs were less excitable and had more training problems. The majority of women (69.9 %) rewarded the dogs more, punished them less and used moderate control. Their dogs were more obedient and had fewer behaviour problems. A smaller group of women (28.8%) were relatively more permissive with their dogs, and used punishment and reward close to the mean score. Their dogs were disobedient and had training problems.

Discussion

This study shows that training method and control were related to the dog's specific behaviours (obedience and behaviour problems) and that men and women use different methods. Which factors contribute as cause and effect, are not clear. Owners with problematic dogs may feel the need for more punishment and the owners with fewer training problems and higher obedience may have "easy dogs" with which to deal. In contrast, if lax control is a cause of low level obedience and higher level of behaviour problems, and punishment leads to higher training problems, this has implications for how dog owners should be instructed to train their dogs from a welfare point of view, as well as to increase the quality of the human-animal relationship.

Conclusion

The findings suggest that control is an important tool to achieve an obedient dog, but seems to be dependent on low level of punishment in the training.

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TOXOPLASMOSIS AND BEHAVIOUR: REVIEW OF THE LITERATURE AND FUTURE PERSPECTIVES

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Key words

behaviour, *Toxoplasma gondii*, Toxoplasmosis.

Latent toxoplasmosis (LT) is one of the most prevalent infections of humans and animals. Worldwide, it has been reported that 26-62% and 10-72% of clinically normal dogs and cats are seropositive for *Toxoplasma gondii* antibodies, respectively. Historically, LT is considered of minimal clinical interest and usually asymptomatic unless the host becomes immune-suppressed. However, a convincing body of evidence now demonstrates that LT can alter behaviour in rodents and humans, and has led to a reconsideration of this assumption. In infected rodents, anxiety, reaction speed, neophobia, motor performance, ability to recognize familiar surroundings, learning capacity, memory, and specific predator avoidance were decreased, while general activity and aggressiveness were increased. These behavioural changes appear to be the result of a selective pressure for the parasite to enhance transmission from its intermediate hosts (rodents) to its definitive hosts (cats). When infected human adults were compared with uninfected controls by personality questionnaires and behavioural tests, LT appeared to significantly affect the human personality profile with sex related differences, concerning rule consciousness, vigilance, mistrust, and warmth. In addition, the duration of LT correlated with these factors. Other studies in humans suggest that LT could be a cause of impaired psychomotor performance, lower intelligence quotient, retarded psychomotor development, psychiatric disorders and schizophrenia. Some medications used to treat schizophrenia inhibit the replication of the parasite in cell cultures and prevent behavioural alterations in rats. Possible mechanisms by which *T. gondii* may affect the host's behaviour include its effect on dopamine and testosterone levels. All these findings are consistent with the hypothesis that LT without giving rise to disease may affect endogenous regulatory processes in the brain and probably cause behavioural modifications in each host species, rather than only affecting the behavioural traits of rodents which selectively benefit the parasite. Therefore, our aim was to review extensively the existing literature on toxoplasmosis in animals, with special reference to its repercussion on behavioural changes. Computer searches using literature databases were done and related articles were identified. The considered terms were "*Toxoplasma*", "Toxoplasmosis" or "*T. gondii*" and "behaviour". Although there has been an abundance of epidemiologic studies and case reports, results showed that very little has been reported on the behavioural aspects of toxoplasmosis in animals other than rodents. Mild behavioural changes were occasionally observed in experimentally infected grey seals. A statistically significant higher occurrence of antibodies to *T. gondii* was recorded in cats with extraordinary aggressiveness. Obsessive circling and aggressive behaviour, including attacks to other animals, have been reported following *Toxoplasma* infection in a fox. Amongst oth-

er clinical and neurological conditions, aggressive behaviour was recorded in a dog with suspected toxoplasmosis. Other reported signs in cats may include restlessness, somnolence, personality changes, hyperesthesia, and atypical vocalizations. Due to its potential consequences and a general lack of knowledge, we call for a renewed focus on behavioural aspects of LT in animals. Future integration of behavioural and parasitological perspectives is needed to better elucidate the behaviour alterations in animals with LT and help veterinary clinicians to plan more appropriate therapeutic interventions.

UK SURVEY OF DOG OWNERS ON THE DISADVANTAGES OF DOG OWNERSHIP

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Key words

disadvantages, dog and ownership.

Aim

This study investigated the attitudes of a sample of the UK dog owning population on the perceived advantages and disadvantages of dog ownership.

Materials and methods

One hundred respondents were sampled, from each of nine different UK locations as part of a larger study into public attitudes to dogs. Demographic information was collected (respondent gender, age, ethnic origin, household income, household membership), history of dog ownership, positive and negative experiences associated with dogs. Respondents were then shown two tables, each listing 12 advantages and disadvantages of dog ownership, identified in previous research and were asked to select five items from each table that they considered most important to them, ranking them accordingly. Scores were allocated on the basis of the ranking of advantages/ disadvantages selected by each respondent and the results pooled for the sub-group of dog owners (n = 199) within the population surveyed (n = 900).

Results

The most important advantages identified were (in order of greatest first): companionship, encourages a healthier active lifestyle, teaches children responsibility & respect for animals. In contrast the most important disadvantages were: restriction on freedom of movement, financial cost and time commitment.

Discussion

The results of this study indicate that dog owners consider some of the worst aspects of dog ownership to be the restrictions placed on their own lifestyles and the time commitments involved. These two factors may be closely interlinked and dog owners may have to organise their time and their lifestyles in such a way that the needs of the dog are accommodated.

If the time dedicated to the dog is deficient, due to other life demands, the behavioural and welfare implications for the dog are numerous. The impact of compromise will depend on the areas of time allocation which are lacking. Most dog owners appreciate the necessity for ensuring their dogs have the opportunity to go outside for toileting and the provision of meals and will make arrangements as such. Provision of other canine necessities may be given less importance by dog owners when time is considered a precious commodity, for example: time spent with or without human or intra-specific company, time spent walking and exercising the dog, time spent interacting during play or training and socialisation with other dogs.

This information is currently being used as the basis for further research on the allocation of time spent by dog owners with their dogs and the resultant implications for the dogs. Ultimately we hope to use the information gained to target advice given to new dog owners on if and how, a dog will fit in with their lifestyle, in order to minimise behavioural problems and optimise the welfare of both owner and dog.

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USE OF L-THEANINE TABLETS (ANXITANE™) AND BEHAVIOUR MODIFICATION FOR TREATMENT OF PHOBIAS IN DOGS: A PRELIMINARY STUDY

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Key words

behavioural therapy, dog, L-theanine, phobia.

Introduction

The phobia is an excessive fear response to particular noises, like thunderstorm, storm, firework, motorbikes or emergency sirens, that is disproportionate to danger presented (Overall, 2004). Phobic dogs generally show behaviours like panting, pacing, trembling, remaining near the caregiver, hiding, excessive of salivation and vocalization, destructiveness, inappropriate eliminations, self-traumas and also aggressiveness (Overall et al., 2001; Dreschel and Granger, 2005). The aim of this study is to evaluate the use of a new nutraceutical (Anxitane™) with L-theanine amino acid as support during the behavioural modifications, in the treatment of specific phobias in dogs. L-theanine is a unique amino acid because it is found only in the tea plant. Since ancient times, the action of green tea has been known. In fact it has been showed that theanine produces a relaxation effect in human beings and in rats and also other physiological effects. This substance acts on the release of some neurotransmitters like dopamine and serotonin (Juneja et al., 1999; Yokogoshi and Terashima, 2000).

Materials and methods

In this study we considered 12 dogs subdivided in 3 groups. Group A included 5 dogs affected by loud noises, firework or thunderstorm phobias which received a behavioural therapy (desensitization and counter-conditioning) associated with Anxitane™. Group B included 3 dogs affected by noises, storm or thunderstorm phobias which received only a behavioural therapy (desensitization and counter-conditioning). The last group (group C) included 4 dogs without behavioural problems. Dogs had been included in the groups according to the data of their behavioural repertoire collected to a questionnaire during the first examination (Crowell-Davis et al., 2003). They had also been submitted to blood sample to exclude clinical problems and to evaluate the cortisol level (Beerda et al., 1997; Cavallone et al., 2001). At the first examination, it was started a specific behavioural therapy consisting in desensitization and counter-conditioning that were conducted at home with an audio simulation. Dogs' responses were evaluated by a specific card in which the most frequent phobia signs were rated on a 1-5 score based on severity or amount seen during the behavioural therapy (1: no manifestation to 5: extensive amount/very severe). After two months of therapy, there was a second behavioural examination and a second blood sample. The scores' card and cortisol values were analyzed to evaluate the degree of improvement, with or without the use of Anxitane™, and of the stress condition of dogs (Beerda et al., 1996; Dreschel and Granger, 2005).

Results and conclusions

This is a preliminary study and the number of the subjects is too small to have significant results. The questionnaire applied is a validated scale to evaluate the modification of phobia's signs. In fact, by the first data, there was an improvement in the phobic behavioural manifestations, in group A and B. About cortisol no data have been yet available. But it is important to find an alternative substance, without counter-indications or side effects, which can be used in association with behavioural therapy for phobias, or other anxiety-related disorders, because many times the presence of clinical problems can forbid the use of pharmacological substances.

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USING MULTIVARIATE ANALYSES TO EMPHASIZE BEHAVIOURAL PATTERNS RELATED OR NOT TO DAP TREATMENT IN NEWLY ADOPTED PUPPIES

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Key words

puppy, pheromone, separation, stress, vocalization.

Introduction

Adoption is a process that may be traumatic for the puppy, particularly when the puppy is bought in a pet-shop. As DAP is involved in the communication between the bitch and its pups, it would be expected to have a calming effect on puppies recently separated from their mother.

The purpose of this study is to explore combinations between behavioural items of newly adopted puppies and to assess relationships with epidemiological parameters and with the treatment modalities using multivariate analyses.

Materials and methods

Sixty-four puppies were enrolled in a triple-blind controlled study at their arrival at the pet-shop. 31 received randomly a DAP collar and 33 a placebo one. They stood meanly 20 days in the pet-shop and mean age at adoption was 11 weeks. 3 and 15 days after adoption, owners were contacted twice by phone in order to administer a questionnaire.

In order to avoid interpretations, all the owners were contacted by the same vet and were invited to describe the behaviours of their puppy in specific situations. All the collected items were qualitative parameters and were explored using multiple correspondence analysis (MCA). Treatment and epidemiologic criteria were reported in the results as supplementary parameters.

Results

The clinical interpretation of the fourth first axis of the MCA (48% of the variability) was relatively clear: the first axis was defined by presence/absence of stress related signs. The second was defined by house-soiling. The third axis decomposed stress related signs in different categories: items like “fear reactions when facing unfamiliar people”, “when walking outside” were found at one extremity of the axis and others like “vocalizations/scratching at the door/moving objects when alone” were found at the opposite side. The fourth axis was defined with signs of lack of control. Projection of supplementary variables showed that the effect of the treatment is involved in axes 1 and 3 and not in 2 and 4.

More precisely, placebo treatment is linked to signs of stress (axis 1) and more closely to signs linked to social separation (axis 3) while DAP is close related with absence of signs of stress. “Staying less than one week in the pet-shop” appeared linked with signs of stress while “social contact at night” appeared in opposition with “vocalization at night”.

Discussion

Results suggest that puppies experienced two kinds of stress: one typically expressed by vocalizations and scratching at the door when socially isolated and the second one expressed by avoidance and/or aggressive behaviour when facing new situations (social and surroundings).

The first one appeared to be experienced by all puppies of the placebo group and to be strongly reduced by DAP treatment. The second one seemed to be experienced by less puppies and also reduced by DAP, but not so strongly.

Results confirm previous findings about the benefit of social contact at night in reducing vocalizations, but also seem to indicate that a quick adoption might reduce the welfare of the puppy (numerous stressors during a short period). These last findings need further investigations.

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