

2011 ACVB/AVSAB VETERINARY BEHAVIOR SYMPOSIUM

In cooperation with the
American College of Veterinary Behaviorists
and the
American Veterinary Society of Animal Behavior



ST. LOUIS, MISSOURI · JULY 15, 2011

Schedule of Events

2011 ACVB/AVSAB Scientific Program • Friday, July 15, 2011 • St. Louis, MO

Time	Title of Presentation	Speaker
8: 15-8:30	WELCOME	Drs. Karen Sueda and Jacqui Neilson
<i>Morning Scientific Session — Sponsored by Premier Pet Products</i>		
8:30-8:45	Harmonease [®] Chewable Tablets reduces noise induced fear and anxiety in a laboratory canine thunderstorm simulation: a blinded and placebo controlled study	Dr. Theresa DePorter
8:45-9:00	The interest of the use of feline interdigital semiochemical (ScratchyLicious [®]) to induce scratching behaviour in cat	Dr. Alessandro Cozzi
9:00-9:15	Litter Preference in Cats: Scented vs. Unscented	Dr. Jacqueline Neilson
9:15-10:15	Breakfast and Poster Session — Sponsored by Premier Pet Products	
10:15-10:45	AVSAB Student Award: Sponsored by Premier Pet Products Owner Attachment and Problem Behaviors Related to Relinquishment and Training Techniques	Jennifer Kwan
10:45-11:00	Validation and Reliability Testing of a Feline Osteoarthritis Pain Scale for Use by Veterinarians	Dr. Mary Klinck
11:00-11:15	Evaluation of two food delivery toys as enrichment for dogs in an urban municipal animal shelter	Dr. Margaret Gruen
11:15-11:30	Do you think I ate it? Owner perceptions and behavioral assessment of the “guilty look” in dogs	Julie Hecht
11:30-11:45	SVBT Award Paper Veterinarians and Dog Trainers: The Current Relationship	Julie Shaw
11:45-12:15	R. K. Anderson Resident Award Paper: Sponsored by Premier Pet Products Incidence of Parvovirus in Puppies Attending Puppy Socialization Classes	Dr. Meredith Stepita
12:15-1:15	Lunch — Sponsored by Elanco	
<i>Afternoon Scientific Session — Sponsored by Elanco</i>		
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1:45-2:00	Age and Cognitive Function in the Domestic Cat	Dr. Gary Landsberg
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2:15-2:30	Effect of Apoaequorin on Cognitive Function in Aged Canines	Dr. Gary Landsberg
2:30-3:00	Refreshment Break — Sponsored by Virbac Animal Health	
3:00-3:15	Evidence of stress thanks to physiological indicators during a cognitive test in horses	Dr. Patrick Pageat
3:15-3:30	Association of the Consideration of Euthanasia or Rehoming with Behavioral Outcome	Siricusa
3:30-3:45	Survey To Assess Health Related Quality Of Life (HrQoL) In Small Animal Cancer Patients Treated With Chemotherapy	Dr. Maria Ililopoulou

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3:45-4:00	Specialty experience, priorities, and satisfaction levels of clients of a veterinary behavior practice in a referral hospital setting	Dr. Meghan Herron
4:00-4:15	How I treat “just about anything!”	Dr. Lori Gaskins
4:15-4:30	What Smells: Using Nosework™ as part of behavior modification protocols	Dr. Valli Parthasarathy
4:30-4:45	How I approach diet, nutrition and behavior	Dr. Marsha Reich
5:00	AVSAB Annual General Meeting	

Posters

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Poster	Management of excessive “reproductive behavior” in a hyacinth macaw (<i>Anodorhynchus hyacinthinus</i>) utilizing functional assessment and intervention design	Dr. Leigh Ann Clayton
Poster	Aging and Imaging Based Neuropathology in the Cat	Dr. Sagi Denenberg
Poster	Behavioural studies on the use of open water systems by mink (<i>Neovison vison</i>)	Dr. Elke Heyn
Poster	Thunderstorm fears and phobias in Australian dogs- demographic data and perceived efficacy of treatment options	Dr. Kersti Seksel
Poster	The effect of variable feedign trials on activity, animal welfare, and management sustainability in captive black rhinoceroses (<i>Diceros bicornis</i>): A pilot study.	Josephine Byrk

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Paper Presentations

Harmonease[®] Chewable Tablets Reduces Noise Induced Fear and Anxiety in a Laboratory Canine Thunderstorm Simulation: A Blinded and Placebo Controlled Study

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Introduction

Thunderstorm simulation in the laboratory setting induces fearful and anxious behavior in Beagles, most notably manifested by increased inactivity (“freezing”), which, in a previous study, was ameliorated by the anxiolytic diazepam (Araujo, et al., 2009). Using this protocol, this study assessed the efficacy of Harmonease[®] a chewable oral anxiolytic botanical product containing a proprietary blend of extracts of *Magnolia officinalis* and *Phellodendron amurense* (Maruyama and Kuribara 2000).

Methodology

A balanced, placebo controlled, blinded single crossover design was used utilizing 20 healthy adult Beagles. Following a baseline thunderstorm test, subjects received Harmonease[®] chewable tablets or placebo treatment daily and were re-assessed on the 7th treatment day. Following a 7 day washout, the treatments were crossed over and an identical design as the first phase was employed. The thunderstorm test was performed in an open field arena and consisted of three 3 minute phases: an anticipatory phase in which no stimulus was provided; the thunderstorm phase in which a thunderstorm track was played over a loud speaker; and a recovery phase in which no stimulus was presented. Inactivity duration, considered the primary variable for assessing efficacy, was measured by

a trained observer and was defined as an animal sitting, lying down, or standing still, and not exhibiting any overt movement.

Results

Harmonease[®] significantly reduced inactivity duration during the thunderstorm phase [$p=0.03$]. Specifically, 12/20 (60%) dogs improved from baseline under Harmonease[®] while only 5/20 (25%) improved on placebo. Furthermore, 9/20 (45%) placebo dogs showed increased inactivity duration (worsened), while only 4/20 (20%) treatment dogs worsened. Difference in number of dogs improved versus worsened by treatment group was significant at $p<0.05$.

Conclusions

Harmonease[®] reduced fear-related inactivity or freezing in dogs in this thunderstorm simulation model. This supports previous studies demonstrating that the combination of botanical extracts in Harmonease[®] is effective for the management of stress related behaviors (Maruyama and Kuribara 2000, Sufka, et al. 2001).

Acknowledgements

This study was supported by Veterinary Products Laboratory (VPL), a division of Farnam Companies, Inc, Phoenix, AZ.

The study was conducted under contract by CanCog Technologies Inc. The current study was approved by the Local Animal Care and Use Committee and conducted in accordance with the Guidelines of the Canadian Council on Animal Care.

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Keywords

Fear; thunderstorm; *Magnolia officinalis* and *Phellodendron amurense*; honokiol; laboratory model, dog

The Interest of the Use of Feline Interdigital Semiochemical (ScratchyLicious®) To Induce Scratching Behaviour In Cat

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Cats normally perform scratching behaviour, which is seen by owners as one of the most unacceptable nuisances in this species. Most owners misunderstand this behaviour, seeing it as a mean for the cat to control the length of its claws. Authors have described the role of scratching in territorial marking with an association of visual (scratches) and odorous signals.

The aim of this study is to assess the role of the interdigital feline semiochemical (ScratchyLicious®) during the induction of scratching behaviour on a scratching post.

The scratching behaviour of 19 cats was evaluated during a standardized test: introduction in an area with a scratching post. The experimental design was as follows: double blinded, randomized, one group in crossover procedure, each cat was his own control. The test ended when the cat had his first scratching behaviour and the latency in seconds (principal parameter) was noted; the maximum time for each test was 20 minutes. Each cat came in the test area with a scratching post with ScratchyLicious® or *Nepeta cataria* twice. Two independent observers analyzed the video of the cats (Spearman's $\rho^2=1$). A total of 38 passages were recorded. The ScratchyLicious® or *Nepeta cataria* were applied on scratching post 5 minutes before each test.

The scratching post treated with the semiochemical was scratched more quickly by all of the cats when compared with the scratching post with *Nepeta cataria*: Intention To Treat analysis (ITT: ScratchyLicious® vs *Nepeta cataria* 612 sec vs 719 sec; $Z=-1,1029$; $p=0,2701$); Per Protocol analysis, only cats that scratch (PP: ScratchyLicious® vs *Nepeta cataria* 184 sec vs 369 sec; $Z=1,1867$; $p=0,2353$, Mann Whitney Wilcoxon Test). If we consider only the cats that scratched within the first minute, the scratching post treated with the semiochemical was scratched more quickly by the cats when compared with the scratching post with *Nepeta*

cataria: ScratchyLicious® vs *Nepeta cataria* 23 sec vs 327 sec; $Z=-1,8764$; $p=0,0606$, Mann Whitney Wilcoxon Test. In spite of obtaining non significant differences between treatments considering the low number of cats involved in this preliminary study, the results on latency of first scratching behaviour seem of interest in explaining the role of the interdigital feline semiochemical in inducing scratching behaviour on a specific scratching post. Scratching a normal way for felines to communicate, as an alternative strategy to declawing could be highly interesting. The semiochemical approach can challenge areas spontaneously selected by cats and highlights the role of chemical communication on this behaviour; either through prevention for a kitten arriving in a new home or in therapy to try to switch an inappropriate scratching behaviour.

Keywords

Cat, scratching behaviour, scratching post, semiochemical

Litter Preference In Cats: Scented vs. Unscented

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Abstract

The objective of this study was to determine, via a prospective study, the comparative acceptance by cats of a scented litter versus an unscented litter. Thirty-five shelter cats housed in colony rooms participated in the study. The cats were offered two litterboxes identical in every way with the exception of litter fragrance: one of the boxes contained a litter with a floral fragrance and the other box contained litter void of any added fragrance. Elimination events in each box were captured via motion activated cameras over four consecutive overnight periods. Of the 277 elimination events considered, 134 were in the box with scented litter and 143 were in the box with unscented litter. This population of cats did not exhibit a statistically significant preference in usage of the litters.

Introduction

House-soiling is a common behavioral problem in cats and litter aversion secondary to fragrance (scented litter) has been cited as one cause. However, the impact of fragrance additives in litter is not clear. In one study, scented litter was found to be a risk factor for elimination problems (Horwitz 1997) but in another study, scented litter was not associated with elimination problems (Sung 2006). The primary purpose of this study was to test the comparative acceptance by cats of a scented litter versus an unscented litter.

Materials and Methods

The study was conducted at an animal shelter, the Oregon Humane Society, in Portland, Oregon. The study subjects were neutered adult cats currently up for adoption being housed in colony rooms measuring approximately 8x14 feet. There were no specific criteria for cats to participate in the study other than the fact that they were currently being housed in the adult colony rooms. If an adoption occurred during the course of the study, that cat left the study population and another cat was added to the colony rooms. Relocation of cats during the course of the study was at the full discretion of the shelter staff and was there was no input, influence or guidance from the principal investigator.

During four consecutive overnight study test periods of approximately twelve hours in duration, the two litterboxes that contained shelter standard pelleted litter material were removed and replaced with two uncovered test boxes. The test boxes were new, uncovered, plastic litterboxes measuring 18.5" x14.5"x 4.5". One test box in each colony room contained clay clumping litter with a floral fragrance and the other box contained the same clay clumping litter with no added fragrance. The boxes were filled with equal amounts of their respective litters to a 2.5" depth.

Test box placement was at the typical litterbox sites in a corner of the colony room; the boxes were separated by approximately 6 inches. After each overnight test period, the boxes were removed from the rooms and scooped, removing all excrement. The standard shelter litterboxes containing pelleted litter were returned to the colony rooms for the daytime period. The test boxes were covered and stored securely during the day. The test boxes were reintroduced into the colony rooms the following evening, with locations reversed from the previous night.

Motion activated video cameras captured all activity in the boxes during the course of the study. The video footage was reviewed and each elimination event was recorded. Data collected for each elimination event included the cat identity, the type of elimination (urine vs. feces) and the litterbox in which the excrement was deposited (scented vs. unscented). Criteria for blocked box events (one cat blocking access to one of the litterboxes) were reviewed for each recorded elimination event.

Results

A total of thirty-five cats participated in the study. Twenty one of the cats were classified as domestic short haired cats, eight cats were classified as domestic medium haired cats and six cats were classified as domestic long-haired cats. During the course of the study, four cats were adopted/removed from the colony rooms and five cats were introduced into the colony rooms. The average number of cats at any given time participating in the study was 32 cats (8 cats per colony room).

There were a total of 291 elimination events over the course of the study. Fourteen elimination events were considered blocked so these 14 events were not included in the final analysis. Of the 277 elimination events considered, 134 (84 urinations, 50 defecations) were in the scented litter and 143 (90 urinations, 53 defecations) were in the unscented litter. The chi-squared test of hypothesized percentages failed to reject the null hypothesis ($p=0.62$), therefore the data does

not show a significant difference in use of the litters.

For each cat in the study it was determined via proportion which litter they preferred. Sixteen cats exhibited a preference for unscented litter and twelve cats exhibited a preference for scented litter, seven cats showed no preference. The binomial test for preference was then applied and the results showed that the cats did not exhibit a statistically significant preference for one litter over the other ($p=.572$) using an 80% confidence interval.

Discussion

The data failed to show that the scented and unscented litter products were considered different by the population of study cats.

There were several study limitations. The first was that the study only tested a floral fragrance; different fragrances and fragrance intensities may yield different results. A second limitation was the study site: a high density population colony room in a shelter setting. Social unrest or physical blocking of box access could have influenced box selection. The video footage allowed for the identification and exclusion of obvious blocked box elimination events but social pressures not captured on the video may have influenced box selection. Attempts were made to minimize the impact of box location by having boxes in close proximity and rotating the box locations each night of the study. Another study limitation included the study participants. Their prior history of litter exposure and house-soiling was unknown. Cats that had been offered a scented litter in a prior home may have established a bias for scented litters. A subset of the feline population (e.g. those with house-soiling) may be more sensitive to fragrance. In addition, the population did vary slightly due to adoptions and replacements. Another factor that may have influenced box selection included prior excrement deposited in the box. If a cat deposited an odiferous fecal deposit in the unscented box, the next cat needing to eliminate may have been driven to the use the scented box simply to avoid the malodor associated with the fecal deposit.

Despite these limitations, these results suggest that scented litter may not be as aversive to cats as has been previously suggested in the literature. Additional studies are necessary on a variety of fragrances and larger populations of cats to establish that cats find scented and unscented litters equivalent.

Acknowledgements

Clorox Company and the Oregon Humane Society

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Keywords

Cat, house-soiling, litter, scented, unscented

Owner Attachment and Problem Behaviors Related to Relinquishment and Training Techniques

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Problematic behaviors are a significant cause of relinquishment and euthanasia, and relinquished dogs are more likely to have problem behaviors. This study was conducted with standardized surveys of owners relinquishing their dogs to shelter and dog owners visiting vaccine clinics. “Relinquishing” and “continuing” owners were solicited from three local shelters and vaccination clinics associated with them. Owners were asked questions in the following categories: demographic information; training methods and tools; frequency with which their dog engaged in problematic behaviors; satisfaction with training methods and tools; and attachment to their dog. Relinquishing owners were also asked reasons for relinquishment.

Results of 129 surveys (80 relinquishing and 49 continuing) showed that relinquishers scored lower on pet attachment than continuing owners, and they were more likely to keep their dogs outside 100% of the time. Relinquished dogs were significantly older and larger than continually-owned dogs; and Pitbull-type dogs were more represented in the relinquishing group than continuing group. Also, relinquished dogs were no less likely to have attended a training class than continually-owned dogs. In both groups, owners that used punishment-based collars reported less satisfaction with their dog’s overall and leash-walking behaviors, and Pitbull-type dogs were reported to be no less well-behaved compared to all other breeds combined. Sixty-five percent of relinquishing owners reported some behavioral reason for relinquishment, with 48% of them indicating that at least one problem behavior was a strong influence in their decision to relinquish. These findings implicate that using punishment-based tools may affect the human-animal bond.

Validation and Reliability Testing of a Feline Osteoarthritis Pain Scale for Use by Veterinarians

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Abstract

Feline osteoarthritis (OA) is an important cause of pain and disability; however, detection of pain or other joint abnormalities upon physical examination is relatively insensitive and unspecific (Clarke and Bennett 2006, Lascelles 2007). This suggests that veterinarians could benefit from a clinical tool for feline OA pain detection. We previously developed a feline OA composite pain scale for veterinary practitioners, and performed preliminary content, construct, and criterion validation, as well as reliability testing. Modifications to content and presentation on the basis of the results yielded a 5-item scale consisting of evaluations of interactive and exploratory behavior, posture, and gait, as well as joint palpation and manipulation. Face validation via a survey of veterinary students (n=77) yielded excellent results for all items (assessments were of item clarity, importance, and appropriateness of response options). A prospective, blinded, placebo-controlled study of meloxicam treatment of cats with (n=42) or without (n=6) OA was then conducted to further evaluate the reliability and construct (internal consistency) and criterion validity (comparison with radiographic, actimetric, kinetic force plate, and mechanical allodynia (von Frey) analysis, as well as response to therapy) of the revised scale. Most items, including sequential palpation/ manipulation of every joint, and interaction with the veterinarian, were non-responsive to OA status. Further item refinement and validation are ongoing. The end product is anticipated to improve veterinary treatment of feline OA, via increased accuracy of detection of OA pain, and thereby better evaluation of therapeutic efficacy.

Acknowledgements

The authors are grateful to Boehringer Ingelheim Animal Health, the Natural Sciences and Engineering Research Council of Canada, the Canada Foundation for Innovation, the Morris Animal Foundation and Pfizer Animal Health for their support.

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Keywords

Arthritis, Assessment, Cat, Pain, Validation

Evaluation of Two Food Delivery Toys as Enrichment for Dogs in an Urban Municipal Animal Shelter

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Abstract

The objectives of this study were to investigate the use of two food delivery toys by dogs in an urban municipal animal shelter, and to quantify the dogs' interaction with the toys, the condition of the toys after each trial, and the ease of sanitization of the toys following use. We hypothesized that most dogs would interact with the toys and retrieve food from them but there would be individual differences in toy use. We also hypothesized that these toys would be resistant to damage during use and cleaning.

On each of ten separate days, one Kibble Nibble[®] toy was given to each of 5 dogs and one Tug-aJug[®] toy (rope removed) was given to each of 5 dogs. For each observation, scan samples were recorded at 6 time points and each dog's interaction with the toy was noted. After two hours, toys were retrieved, amount of remaining food was quantified, and toys were rated for general condition, cleanliness, and ease of sanitation. Results indicated that many dogs engaged with the toys, as measured by number of interactions noted and percentage of food consumed, although there were differences between dogs in their use of the toys, with some apparent breed-type associations. After use, all toys were evaluated to be in good condition, minimally soiled, and easily sanitized. Results suggest that such food delivery toys may be useful, durable, and convenient items for canine environmental enrichment in animal shelters.

Acknowledgements

We would like to thank Premier Pet Products for the donation of toys used in this study.

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Do You Think I Ate It? Owner Perceptions and Behavioral Assessment of the “Guilty Look” In Dogs

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Abstract

Using a questionnaire and experiment, we explored owner perceptions of dog “guilt” and dog displays of “guilty” behavior. Our experiment investigated the owner anecdote that dogs show post-transgression behaviors associated with the guilty look (ABs) even in the presence of an ignorant, non-scolding owner. The experiment explored (1) whether dogs that were disobedient in owners’ absences show ABs upon owners’ return to a room and (2) whether owners can determine if dogs were disobedient based on dog greeting behavior. Subjects included pet dogs (N=64) and their owners. Under experimental conditions, owners enforced a social rule that food placed on a table was not for dogs. Dogs were then left alone and had the opportunity to disobey. Owners returned and examined dog greeting behavior to determine whether the dog ate. The experiment also ascertained how dogs greeted owners when no rule was in place. Behavior coding found no significant difference in presentation of ABs between dogs who ate and those who did not eat. While owners appeared able to assess whether their dog ate, we could not confirm assessments were based solely on dog greeting behavior and not other factors. The owner-completed questionnaires revealed that owners believe ABs correspond with knowledge of a misdeed, not all dogs display ABs and dog ABs could lead owners to scold dogs less. This is one of the first papers to explore the “guilty look” in the context of a non-scolding owner under experimental conditions.

Introduction

Dog owners ascribe guilt to dogs (Morris et al. 2008). Recent research explored prompts to dog behaviors associated with the guilty look (ABs) in the context of a dog-owner interaction (Horowitz 2009). The owner’s act of scolding, rather than the dog’s performance of a forbidden act, revealed an increase in presentation of ABs. Our experiment investigated the “guilty look” in a different context as owners claim dogs offer post-transgression ABs even when not prompted by owners.

Materials and Methods

The study took place at the Department of Ethology, Eötvös Loránd University. Subjects included pet dogs (*Canis familiaris*; N=64), 52 pure bred and 12 of mixed breed origin, 37 females and 27 males with an average age of 3.62 +/- 2.54.

Owners confirmed that subjects (1) were older than eight months; (2) had lived with the owner for at least six months; (3) could remain calm if left alone in an unfamiliar room for three minutes; (4) had not participated in food-reward studies at the Department, and (5) might or might not eat food after being prohibited from eating and being left alone with the food.

The experiment was as follows: dog greeted owner before the establishment of a social rule; owner and experimenter established and enforced the social rule that a piece of hotdog on a table was for humans only; owner disallowed dog from eating and dog was left alone with the food; owner returned and dog greeted owner after having the opportunity to break the social rule in the owner's absence and dog greeted owner when the social rule was no longer in place.

We analyzed data from 58 test videos. Seven ABs contributed to behavior coding: lowering body, tail down, moving away from owner, freezing, lack of jumping, turning head from owner and lowering head.

Results

We found no significant difference in dog presentation of ABs between dogs who ate in owners' absences (N=32) and dogs who did not (N=26) (Mann-Whitney U-test; $z = -1.512$, $p = 0.131$). This finding was sustained even when excluding from analysis dogs experiencing in-test separation distress, dogs described by owners as not showing ABs in this anecdotal context and dogs who never adhered to the social rule during the test. While owners appeared able to determine if their dog ate in their absence (Chi-Square test = 11.266, DF = 1, $p < 0.001$), analysis of a subset of owners deemed most likely to base their assessments on actual dog greeting behavior, as opposed to in-test experimental cues, found that these owners were not better than chance in their determination (Fisher's exact probability test; $p = 0.623$).

Owner-completed questionnaires revealed that dogs display ABs in certain situations (87.5%); dog presentation of ABs implies dogs know they have committed a misdeed (91%); dogs display ABs before owners have discovered a dog's misdeed (50%) and dog presentation of ABs could lead owners to scold dogs less (59%).

Discussion

Like other studies, our questionnaire confirmed owners ascribe guilt to dogs (Morris et al. 2008) and believe dogs are knowledgeable of disallowed activities (Pongrácz et al. 2001). Our findings also suggest dog "guilty" displays could lead owners to scold dogs less. Although this novel finding does not demonstrate this effect beyond a doubt, it suggests that such displays could serve as appeasement

behaviors within interspecific social contexts.

In our experiment, behavior coding did not substantiate the owner-reported anecdote that a dog who has transgressed displays ABs to a non-scolding owner. Possibly there are no such behavioral displays in this anecdotal context and, in accordance with Horowitz (2009), dogs only display ABs to a scolding or even subtly displeased owner. Alternatively, the present experimental procedure might not have enabled the display of ABs if they can only be presented in non-novel environments or ritualized contexts. Changes in human attentional states during the experiment also could have impacted dog adherence to the social rule (Call et al. 2003).

While owners appeared successful in determining whether dogs transgressed, we cannot confirm that owners' assessments were based on actual dog in-test greeting behavior. It is possible owners relied on a more personalized or holistic assessment of their dogs. Additionally, contextual cues, such as dogs' adherence to the social rule earlier in the experiment, could have aided owner responses. We suggest similar explanations could be found in some real-life situations.

Practitioners commonly counsel owners on the dog "guilty look". To enhance this dialogue, more research is needed on the various prompts to and effects of owner-perceived dog "guilty" behavior.

Acknowledgements

We thank the dog and owner participants and the Family Dog Project.

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Keywords

Anthropomorphism; behavior; dog; guilty behavior; guilty look; human-dog relationship

A Poll to Determine Veterinarians' Current Role Expectation of Dog Trainers

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Abstract

The intention of the poll was to determine the current expectations of veterinarians pertaining to dog trainers and obtain information on how dog trainers and veterinarians can develop strong working relationships that promote and protect the human-animal bond. The Veterinary Information Network (VIN) sent an email to its 42,000 members with a link to the 20 question radio button poll.

Results and Conclusion

Few of the respondents were members of American Veterinary Society of Animal Behavior (AVSAB). The great majority of respondents were not aware of the AVSAB position statement on force free training but most said they will apply the statement now that they are aware of it. Most veterinarians are referring clients to a trainer. 81% of respondents who were not referring to a trainer reported it was because there were no trainers or no qualified trainers in their area, although qualified trainer was not defined. 65% reported they prefer trainers who use force-free positive reinforcement based training while 25% supported any training techniques that effectively changed behavior and 10% do not evaluate the trainer's methods. Most respondents desire the trainer to be from a policed and credentialed organization and support trainers efforts to provide veterinary staff education seminars. The majority (64%) of respondents found it "extremely desirable to "desirable" that the trainer diagnose behavior problems (behavior problem was undefined) and create a treatment plan.

In conclusion, the poll indicates there are several opportunities for veterinarians and dog trainers to work together to help pet owners and their pets but also a deficit in behavioral education. First there is a greater need for veterinary education in the area of animal behavior as indicated by the support of "any training method that effectively changes behavior" (including aversive techniques) and the referral of behavior problems to trainers. Second, veterinarians should be more closely scrutinizing the credentials and practices of the trainers to whom they refer their clients so that clients are referred to trainers who practice

force free training and are quality monitored on a regular basis. Finally, since most veterinarians welcome the assistance of highly professional dog trainers in treating behavior disorders, veterinarians, dog trainers and clients would be well served by more clear definitions of behavioral disorders that require a veterinarian's diagnosis so that veterinarians and trainers can better define and execute their professional responsibilities in the treatment of animals with behavioral disorders.

Introduction

The goal of the survey was to determine the current relationship between veterinarians and dog trainers and to use those results to assist dog trainers in developing a strong, professional and symbiotic relationship with the veterinary profession.

Materials and Methods

The Veterinary Information Network (VIN) sent an email to its 42,000 members with the following introduction.

“Do you refer patients to a dog trainer? What qualities and qualifications do you look for when recommending a dog trainer? We hope to examine how dog trainers can best develop strong working relationships with veterinarians. The survey should take less than 5 minutes to complete”...

A link to the 20-question radio button poll was inserted into the email and was available for two weeks. 1.6 % (n=654) of the VIN members responded (645 veterinarians, 3 veterinary technicians, 6 responses left blank. Only the 645 responding veterinarians were used in the calculations). We were unable to determine geographic location of respondents through the poll.

Results

4.7% (n= 30) of the 645 veterinarians were members of AVSAB.

87% (n=561) currently refer their clients to a dog trainer.

Those who were not referring to a trainer (13% n=84) were asked to mark the most applicable reason: Dog training is not part of veterinary medicine (5% n=4); Clients are not interested (14% n=12); There are no qualified trainers in my area (64% n=54); There are no trainers in my area (17% n=14). (note: qualified trainer was not defined) 81% n=68 reported no trainer or no qualified trainer in their area.

Participants in the poll were asked how they assessed the quality of the training classes they referred their clients to. Answers included: veterinary staff has attended or audited classes (65% n=419); we regularly survey our clients on their experience (8% n=52); we don't have a reliable way to assess trainer quality (4% n=26); we passively or informally seek feedback from clients (listen for complaints or feedback) (22% n=142; other (5% n=32).

To determine the participants' current philosophy on training methods they were asked "which of the following best describes how a trainer's methods fit in your selection of a trainer?". Answers included: The trainer only uses positive, aversive-free methods (no shock, pinch or choke collars) (65% n=419); As long as the trainer is effective he or she can use any training techniques that result in improved behavior (25% n=161); We don't evaluate a trainer's methods (10% n=65).

When asked how strongly they felt about a trainer presenting a staff educational meeting, rated on a scale of 1-10 (extremely desirable = 10, Desirable 7-10), 43% (277) responded extremely desirable; 40% (258) desirable; and <1% (3) not interested.

In regard to professional duties and interactions participants rated on a scale of 1-10 (extremely desirable = 10, desirable 7-10) importance of, the following: Professional follow up from trainer (77% n=497); Trainer diagnoses behavior problems and creates a treatment plan (NOTE: Behavior problem was not defined): 64% n=413 reported extremely desirable to desirable; 19% n=123 reported undesirable.

When asked to rate the importance of the trainer being from a policed credentialing body (i.e. credentials can be revoked) 73% n=471 reported extremely desirable to desirable.

93% n=600 reported it was extremely desirable to desirable that the trainer was respectful of the veterinarian and didn't contradict the veterinarian's recommendations/diagnosis.

97% n=626 reported it was extremely desirable to desirable that the trainer was open to new methods, continued professional development, understood learning theory and terminology could apply prescribed techniques appropriately.

When asked if they were applying the AVSAB position statement on force free training 2% (n=13) were aware of the statement but didn't apply it; 5% (n=32) were unaware and won't apply even now that they were aware of it; 10% (n=65) were aware of it and applied it, and 83%(n=535) were unaware but will apply it in the future.

Discussion

Where are veterinary professionals getting knowledge of behavioral issues? (only 4.7% were AVSAB members) 83% were unaware it the AVSAB position statement on force-free training existed but will now apply it in their hospitals. How do we reach veterinarians with current behavioral education? Of those veterinarians not referring to a trainer 81% reported no trainer or no qualified trainer in their area. More professional, certified quality trainers are needed to work with veterinary professionals and there needs to be a method for assuring clients are getting quality care from those trainers.

1 in 4 of the veterinarians who responded are still supporting the use “any training technique that works”. Continued education to the veterinary profession on the side effects of aversive training techniques is needed. Note: Geographical information from the respondents would have been very valuable to determine specific areas of the country needing further education.

Veterinarians clearly desire trainers to be from a credentialing body that polices their members.

64% of the veterinarians polled found it highly desirable to desirable for a dog trainer to diagnose behavior problems, although “behavior problem” was not defined and we did not differentiate between lack of training and behavioral disorders. A clear definition and differentiation between “training issues” and “behavioral disorders” that require a veterinarian’s diagnosis is needed both for the veterinary profession and dog trainers. Veterinarians may be unaware of their role and responsibilities in the treatment of behavior problems.

Future polls should determine what veterinarians consider a “behavior problem” and determine why veterinarians would prefer to send behavioral issues to trainers rather than address them within the hospital or refer them to a specialist (lack of education, time or financial concerns, liability issues?) It would also be helpful to determine if there is more need of up to date behavioral education in specific geographic locations.

Acknowledgements

I would like to acknowledge the VIN for their assistance in creating and making the poll accessible and Karen Pryor Academy for assisting with creating the poll and the tabulation of results.

I would like to thank Dr. Andrew Luescher and Dr. Sara Bennett for their support in all my endeavors.

Incidence of Parvovirus in Puppies Attending Puppy Socialization Classes

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Abstract

Socialization is one method of preventing behavior problems in dogs; however, some oppose socialization before 16 weeks of age due to the potential risk of contracting infectious diseases. Our objective was to determine if puppies that attended puppy socialization classes were at an increased risk of being suspected of having or diagnosed with parvovirus (PV) compared to puppies that did not attend classes. In Part 1, veterinarians at 21 clinics in four U.S. cities collected information on puppies ≤ 16 weeks of age. In Part 2, 24 trainers at 18 training facilities in these same cities collected similar information on puppies that attended their classes. Of 1,217 puppies in Part 1, none of the 51 that attended socialization classes were diagnosed with PV. Of total puppies, 92 were diagnosed with PV, with a higher relative risk for Rottweilers and those obtained from a pet store or as a stray. Of 234 puppies in part 2, none were suspected of having PV while attending classes. Results indicate that appropriately vaccinated puppies that attended properly run socialization classes were at no greater risk of being diagnosed with PV than those that did not attend these classes.

Acknowledgements

Thank you to Alisha Tran for her technical assistance.

Keywords

Behavior; dog; parvovirus; socialization

Case Presentation of the Use of a Pheromone Collar in a Cat

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Abstract

The positive effects of pheromone collars (DAP) have been documented in canines but the beneficial effect of pheromone collars in cats is not well documented. Feline facial pheromone sprays and diffusers are documented to improve social interaction of cats and reduce urine marking however they are associated with some limitations including usage in outdoor cats, limited compliance with daily spraying and significant financial costs associated with multiple diffusers in large homes. This case study examines the use of the Nurture Calm® (Meridian) pheromone collar in a cat with intercat and human directed aggression.

Considerations with the use of the pheromone collar are as included:

- 1.) Product acceptance by a cat
- 2.) Collar efficacy
- 3.) Duration

Case Presentation

A neutered male, 10 yrs 6mo old, DSH was presented for reluctance to tolerate human handling/touching, intercat aggression and agitation during car travel. The household composition included two human adults (one male, one female) and two companion cats. The patient cat was adopted by the female owner at 5 weeks of age. When the cat was 7 years of age (3 years prior to presentation), the female owner married and the husband moved into the home where the cats were living. The owners described that the cat did not want to be touched by humans, especially by the husband. The cat would occasionally allow touching by the wife. The cat was also difficult to medicate and exhibited significant vocalization and agitation in carrier when traveling. After the passing of elderly companion cat, the presenting cat was less social with other remaining cats in the home and had exhibited increased levels of aggression toward the other cats, especially in the context of attention from the female owner. The cat was spending more time in wife's proximity and exhibiting aggression if/when other cats approached. The cat also had a persistent allergic dermatitis of the paws and abdomen due to atopy that responded to antihistamine therapy in the past.

Methods tried to modify behavior by owners included aversive techniques (yelling, squirt bottle, objects tossed at cat) administered primarily by husband that exacerbated the behaviors. Medications were limited to monthly Revolution applications and weekly dosing of 25mg hydroxyzine. Due to behavioral problems, the wife could usually only catch and successfully orally administer the cat weekly, although hydroxyzine medication instructions were for daily administration.

There were multiple social and environmental issues that may have contributed to the decline in behavior: marriage and subsequent blending of households, a period of increased travel by the wife, and death of companion cat.

The collar was placed on the cat the beginning of October 2010 the collar was left on 24 hours a day. With the exception of monthly Revolution dose, there were no other topical preparations applied to the cat. After three weeks of collar wear, the cat would sit or lie within contact of the wife and sit within 5 feet of the husband. In addition the cat would cower less and show more relaxed body language as companion cats as they passed within six inches of him. At five weeks of constant collar wear, the cat solicited petting from husband and accepted it. Hydroxyzine ear gel was started to help the dermatitis. The cat was able to accept medication at this point. At 7 weeks cat traveled well to veterinary clinic, was much less agitated during physical examination allowing a more complete exam and dermatitis was resolved for the first time in years. At 8 weeks, the cat allowed husband to hold him for an extended period of time and accepted his petting. The cat was purring, exhibited relaxed body language about the home and solicited play with companion cats. For the first time in two and a half years the cat will slept contentedly with both spouses in the human bed. The owners reported greater ease in medicating and transporting the cat. During this period the owners replaced the collar every 60 days despite manufacturer's recommendations to replace every 30 days.

In February 2011, the collar was not replaced at the expiratory period to identify if there was a change in behavior as the pheromone levels decreased. He started to scratch at his ears and chew at his front feet at about day 65. By day 75 he had sores on his face and his front pads were red and swollen. A new collar was then placed on him. In less than a week he had stopped chewing at pads and stopped scratching at ears. The inflamed areas all healed and scratching/chewing stopped. In summary, the cat exhibited improved the social behavior towards humans and other cats within a month of application of the pheromone collar. The cat tolerated the collar well. The collar was an easy to use pheromone delivery system and the

owners were satisfied with the product. Limitations of this case report included the lack of a control and therefore the potential that factors other than the collar application may have contributed to both apparent improvement and relapse. The pheromone collar may be a viable solution for cats with social problems however additional research in a larger number of cats and in a controlled format is necessary to properly evaluate product tolerance and efficacy.

Environmental Enrichment for the Veterinary Patient

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Abstract

With the intent to optimize hospitalized-patient care, all veterinary team members must focus on both the animal's physical and mental well-being. Environmental enrichment within the hospital setting provides for this elevation in standard by decreasing patient stress, increasing healing, improving staff morale and decreasing injury to patients and staff members. Clients will also appreciate this rise in care as it lessens their own anxiety level if their pet is resting peacefully during hospitalization (Hewson 2008). The staff training, techniques and enrichment products necessary to formulate a stress reducing enrichment protocol are easily attainable, reasonably priced and many involve items that currently exist within the clinic (Halls 2010).

Introduction

Frequently, the treatment goals for a hospitalized animal prioritize physical health and during a busy day the animal's mental welfare can become overlooked. However, inexpensive environmental enrichment products and techniques can be implemented for veterinary patients thereby improving both mental and physical health (Hewson 2008). Veterinary technicians, as patient advocates, can be instrumental in instituting the environmental enrichment protocol and educating the staff to become partners, united in total patient care.

Materials and Methods

Environmental enrichment within the veterinary hospital focuses on recognizing and appealing to an animal's unique senses of sight, sound, touch, taste, smell and social proclivity. The medical environment should be carefully adapted to mask and soothe aversive stimuli while providing positive associations and the opportunity of choice as often as possible (Smith & Taylor 1995).

As an example: Traci Shreyer, MA, Applied Animal Behaviorist, designed and implemented such an environmental enrichment protocol within the Small Animal Community Practice program at The Ohio State University Veterinary Teaching Hospital.

In both the canine and feline wards, clinically researched relaxation music by Through a Dog's Ear was played. Also, the calming pheromones DAP and Feliway were diffused into those areas, respectively. Pheromone spray was applied to the soft bedding offered to every patient.

Dogs were fed meals and snacks in appropriate sized puzzle feeders. Black Kongs for strong-jawed dogs, Squirrel Dudes for moderate chewers and Twist and Treats for gentle eaters. For maximum mental diversion, the most palatal food possible stuffed each toy such as liverwurst, spray cheese, canned fish or pet food. Allergies and restricted diets were accommodated as well. Between uses every toy was inspected, batch scrubbed and rinsed with a food grade disinfectant then stored in easily accessible bins and labeled by chew type.

Hospitalized cats received cardboard hide boxes, plastic or rubber toys and when appropriate, fresh or dried oat grass or catnip.

The patient's primary care-taker was responsible for providing the environmental enrichment but the entire team monitored the animal's mental status and intervened early, should a patient demonstrate signs of stress.

Results

While not an official study, the one year sample of environmental enrichment techniques for hospitalized patients at The Ohio State University yielded an overall decrease in stressful body language as witnessed by Traci Shreyer. Canine patients engaged in less barking and destructive chewing and no injuries occurred in either dogs or cats from using the enrichment devices. Diarrhea from novel food stuffing was also extremely infrequent.

Another positive observation was how staff members enjoyed observing the patients manipulate the enrichment devices. This provided a boost in morale and work satisfaction.

A few patients with intractable anxiety necessitated seeking additional options such as: moving the animal to a quieter area, supervised tethering, sedation, early release, or out-patient treatment.

Discussion

Environmental enrichment is not a new concept in animal care but traditional veterinary facilities do not yet maximize its full potential. This is unfortunate considering that creation and implementation of a modest enrichment protocol

is feasible for every animal hospital despite the square footage, number of staff members, daily patient load or budget (Hewson 2008). The most vital impetuses are a desire for optimal patient care and a commitment to improvement. With the addition of a few inexpensive products, the opportunity to raise patient care, staff morale and the expectations of your clients is easily achievable. Of course, enrichment devices can be associated with potential risks but science has proven that stress is deleterious to healing and that environmental enrichment can lessen stress in animals (Veeder & Taylor 2009). Given the amount of fear inducing stimuli in a traditional hospital setting, careful consideration must be evoked to balance the risks-benefits and provide a humane and healthy environment.

Acknowledgement

Thank you to Traci Shreyer for the interview regarding your enrichment protocol at OSU.

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Keywords

Cat; dog; enrichment; hospital; patient; stress

Age and Cognitive Function in the Domestic Cat

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Introduction

Cognitive abilities generally decline with advanced age in mammals, but this has not been previously established with domestic cats. To assess the effect of age on cognitive function in cats, a group of cats were stratified with respect to age in groups characterized as adult, old, and senior, and were then tested on a battery of cognitive tasks which were modeled after tasks previously developed for assessment of cognitive function in dogs.

Materials and Methods

Cats were tested in two different apparatus, a T-maze and a “Feline General Test Apparatus”, which was adapted from the Toronto General Test Apparatus developed for cognitive assessment of dogs. Subjects included 37 short-haired cats, separated in an adult group (3–3.8 years of age), and old group (7.7–9 years) and a senior group (10.5 to 15).

Results

Significant age dependent decline was seen in T-maze reversal learning (Analysis of variance; $p=0.039$), with adult cats performing more accurately than senior or old cats. By contrast the groups did not differ on the initial positional discrimination task. On the reversal task, by contrast, the results revealed significant differences between the senior and adult animals on the discrimination learning task (Fisher LSD test; $p=0.04$) and a significant difference between the adults and old animals on the reversal learning task (Fischer LSD test; $p=0.035$). The animals were next tested on two versions of a delayed-non-matching to position task, a landmark discrimination task, an egocentric discrimination task and a test of object recognition (delayed-non-matching-to-sample, DNMS). Statistically significant age effects were seen on the DNMP (Analysis of Variance; $p=0.0002$), landmark (Analysis of Variance; $p=0.04$) and repeated reversal phase of the egocentric (Analysis of Variance; $p=0.0127$). Although the cats were unable to learn a three component DNMP task, the adult animals nevertheless performed more accurately than the other two groups. The cats were also unable to learn a DNMS task and on this task, the groups’ performance did not differ.

Conclusions

These results clearly establish age-differences in cognitive ability of cats, and suggest that advancing age is associated with a progressive decline in cognitive function. Age differences were limited in simple object or positional discrimination learning tasks, but were consistently found in tests of learning more complex tasks. We also found age differences in reversal learning. These findings generally parallel data obtained in studies of cognitive aging in dogs, supporting the suggestion that cats, like dogs, develop a cognitive dysfunction syndrome.

Keywords

Cat, cognitive function, cognitive dysfunction, learning tasks

Teaching Old Dogs New Tricks... It Is Possible With The Help of Medium Chain Triglyceride Supplementation!

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Abstract

It is well established that there are significant changes in both physical and behavioral parameters as dogs' age. In working dogs in particular, cognitive changes can shorten the careers of highly trained and expensive dogs. There are several changes in brain metabolism in dogs as they age, including decreases in glucose metabolism which may contribute to the development and progression of cognitive impairment. Medium chain triglycerides (MCTs) can be used by neurons as an alternative energy source to alleviate the deficits in glucose metabolism and help to maintain normal brain functions. The aim of this study was to examine the effects of MCT supplementation on cognition in aged dogs. Twenty-four dogs between 7.5 and 11.6 yr of age were randomized into two groups based on baseline cognitive scores, initial age and gender. Control dogs were fed a dry dog food and MCT fed dogs were fed the same diet but with 5.5% MCTs. MCT-fed dogs performed significantly better ($p < 0.05$) than control-fed dogs on spatial memory and discrimination tests as well as memory, concept learning and attention tests. Dogs fed the MCT diet had significantly better executive function test scores ($p = 0.0007$) and performed better as cognitive task difficulty increased when compared to control-fed dogs. In addition, cognitive function was evaluated using complex odor detection task to measure sensitivity and specificity in an experienced 8 yr old cancer detection dog. The odds ratios were improved post nutritional intervention with MCT supplementation for sensitivity ($p < 0.05$) but not specificity ($p > 0.10$).

Introduction

Dog cognitive function, like that of other mammals, becomes impaired over the course of aging (Adams et al. 2000). Decline in energy metabolism is a common feature of aging in animals, and is one of several processes that are closely

associated with age-dependent cognitive decline. London et al. (1983) reported that brain glucose metabolism in dogs was significantly reduced at 6 years when compared to one year old dogs. One possible means of counteracting deficits in cerebral glucose metabolism is by nutritional supplementation. Henderson (2004) proposed that dietary supplementation with medium-chain triglycerides (MCTs) can be used to increase brain levels of metabolites which serve as alternative energy sources. MCTs are converted to β -hydroxybutyrate (β HB) and acetoacetate in the liver and, to a lesser extent, by astrocytes in the brain. These metabolites could then be used by neurons as an alternative energy source to alleviate the deficit in glucose metabolism. Reger et al. (2004) reported an improvement in cognitive function and a correlation between improved cognitive function and serum β HB in when Alzheimer's patients were given MCTs .

The purpose of this study was to determine if MCTs could improve cognitive function and delay the progression of cognitive impairment in aging dogs.

Material and Methods

Animals. Twenty-four dogs, ranging in age between 7.5-11.6 years old, with at least 6 months of previous cognitive test experience were used. All dogs were provided with environmental enrichment consisting of toys, beds and the opportunity to play outside alone or with other dogs on a daily basis.

Diets. The control diet was a commercial super premium-type food for adult dogs (Nestlé Purina products: ~ 32% protein, 19% fat; 3% fiber). The test diet was formulated by adding 5.5% MCTs. Both diets were isocaloric and contained the same levels of protein, fat and carbohydrates. The dogs were fed once daily and provided free access to water during the 240 day study.

Blood β -HB levels. Jugular blood samples were collected 2-h post feeding for the evaluation of β -HB, CBC and clinical chemistry panels prior to the start of the study, and at approximately day 120 and at day 240.

Cognitive assessment procedures. The dogs were tested on three cognitive assessment protocols as described in previously (Pan et al., 2010). The first protocol, the landmark test, assessed spatial discrimination learning, memory, and visual-spatial attention. The second, egocentric test was used to assess the effects of MCT supplementation on spatial memory, executive functions, and concept learning in the dogs. The third, four-choice oddity discrimination test was used to assess the effects of MCT supplementation on attention, and concept learning in the dogs.

Results

The MCT diet significantly increased blood β HB ($p > 0.05$). MCT-fed dogs performed significantly better ($p < 0.05$) than control-fed dogs on spatial memory and discrimination tests as well as memory, concept learning and attention tests. Dogs fed the MCT diet had significantly better executive function test scores ($p = 0.0007$) than control-fed dogs. Interestingly, MCT-fed dogs performed better as cognitive task difficulty increased when compared to control-fed dogs. In a pilot study cognitive function was evaluated using complex odor detection task to measure sensitivity and specificity in an experienced 8 yr old cancer detection dog. The odds ratios were improved post nutritional intervention with MCT supplementation for sensitivity ($p < 0.05$) but not specificity ($p > 0.10$).

Discussion

The physical signs of aging are apparent and easier for owners to recognize, and subsequently seek treatment from the veterinarian. Changes in brain physiology and metabolism however, are more subtle. The clinical symptoms associated with those changes occur well after there have been significant physiological changes which make “turning back the clock” very difficult. However, based on this study, it is possible to improve energy delivery to the aging brain and thereby improve its cognitive function. Dogs fed MCTs had significantly enhanced cognitive capabilities, including attention, memory, spatial learning, executive function, and concept learning. MCT supplementation may slow the progression of cognitive impairment in aging dogs and though this study was intended to address slowing the inevitable cognitive decline of health aging dogs, it is possible that a diet supplemented with MCTs will have positive effects on dogs with mild to moderate canine cognitive disorder as well. Further studies would be required to confirm this hypothesis.

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Keywords

Dog, medium chain triglycerides, cognition

Effect of Apoaequorin on Cognitive Function in Aged Canines

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Introduction

The purpose of this study was to examine the effect of Apoaequorin (Neutricks™, Quincy Animal Health), a protein naturally found in jellyfish, on cognitive functioning in aged dogs. Apoaequorin is a calcium buffering protein that has been postulated to provide neuroprotection against aging, and consequently have positive effects in improving signs of brain aging.

Materials and Methods

Following baseline cognitive assessment, 24 beagles greater than 9 years of age, were divided into control, low or high dose groups. All subjects were tested on an object discrimination learning task, a visual search task that assessed attention and a test of visuo-spatial memory.

Results

Both treatment groups showed more accurate discrimination learning than the control group, and the difference between the low and control group was statistically significant. The visual search task involved presentation of one positive object and one, two or three identical negative objects that served as distractors. The control group performed more poorly than either of the two treatment groups. The magnitude of the group differences varied as a function of number of distractors. The high dose group differed significantly from the controls when presented with two distractors (Students t; $p=0.02$). We also looked at response latency (speed of responding). There was a marginally significant interaction between accuracy and dose (Analysis of Variance; $p=0.074$), with the animals in both treatment groups responding more rapidly than the control animals when responding correctly, but not when responding incorrectly. A smaller effect was observed on the spatial memory task.

Conclusions

Overall, these results suggest that daily administration of apoaequorin has beneficial effects on learning (i.e. discrimination task) and attention (i.e. visual

search task). High dose dogs performed better than the other two groups on the visual search task. All of the animals tested in the study were aged, and showed some degree of cognitive impairment. Thus, apoaequorin may be a useful therapeutic for treatment of age-associated cognitive dysfunction.

Acknowledgements

Study funded by Quincy Animal Health; Testing by CanCog Technologies Inc.

Keywords

Apoaequorin, brain aging, calcium buffering, cognitive dysfunction

Evidence of Stress Thanks to Physiological Indicators During a Cognitive Test In Horses

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Literature is lacking in data concerning the decrease in cognitive abilities in horses during aging and with a changing level of activity. Studies on cognitive decline in humans and dogs show a reduction in learning ability and memory. Stress affects cognitive performance differently, depending on the type of cognitive task. The evaluation of the relationships between cognitive appraisal, attention, memory, and stress play a key role in understanding the behavioral mechanisms in species. The aim of this study was to assess the impact of aging and activity on the cognitive abilities of horses and to measure the evolution of physiological indicators of stress during a standardized, easily repeatable test. 34 horses of different breeds were involved in the study: they were divided into 2 groups according to their age (Group 1: 17 horses 2 to 15 yrs; Group 2: 17 horses 16 to 30 yrs) and their daily activity (Group 3: 19 horses no activity; Group 4: 15 horses' daily activity in Equestrian Center). Heart Rate Variability (HRV) and cardiac beat to beat (RR) interval (Polar Horse S810®) were measured for each horse to assess the level of stress during the different phases of test; before performing the test, physiological parameters were measured during a baseline period. Before the test, the horses were trained to obtain carrots when their nose came in contact with either a blue triangle or a yellow circle. Then, cognitive abilities were studied using a cognitive test divided into three sessions: learning session, memorization session and reversal session. To pass each session successfully, the horse needed to give four correct answers as shown below. Main results show a higher heart rate (HR) and a decrease in RR interval in horses during the test than during the baseline (Session1: HR: $p=0,0002$; $rmssd: p=0.0005$; Session 2: HR: $p<0.0001$; $rmssd : p=0.0042$; Session 3: HR: $p<0.0001$; $rmssd: p=0.0015$) Wilcoxon Signed-Rank Test. In Group 2, horses showed a higher HR than in Group 1 during the learning session ($p=0, 0455$); regarding the level of activity, the HR in horses of Group 3 was higher than the one in horses of Group 4 during all test sessions except for the learning session:

learning ($p= 0,1133$), memorization ($p= 0,0040$) and reversal ($p= 0,0005$), Mann Whitney Wilcoxon test. Our results highlight that a horse in good health can perform this test regardless of his age and level of activity; this test represents a cognitive challenge for a horse; it is interesting to assess common indicators of stress in horses during a standardized test such as this one: stress is a change in the homeostasis of a subject and it is crucial to consider these changes during cognitive processes to better understand the emotional state of an animal; results show that age and level of activity can influence the physiological responses during a cognitive trial. This test seems to be a good model in assessing cognitive abilities in horses and can represent a useful tool to start a behavioral evaluation in this species.

Keywords

Cognitive abilities, heart rate, horse

Canine Behavioral Risk Factors for Euthanasia or Rehoming

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Introduction

The aim of this retrospective study was to identify owner- and pet-related risk factors for euthanasia or rehoming of dogs presenting to a veterinary behavior service.

Materials and Methods

We examined 302 patient records for dog and owner demographics and behaviors, home environment, presenting complaints, clinical diagnoses, and disposition of the patient at 3 and 6 months post-visit. Data were analyzed for the association of pet- and owner-related characteristics with (A) owners having considered euthanasia or (B) owners having considered re-homing or euthanasia before the visit, or (C) owners having euthanized, or (D) owners having re-homed or euthanized the dog within 6 months of the appointment. For pet and owner-related factors significantly associated ($P \leq 0.05$) with A, B, C and/or D, risk-factor analysis was conducted.

Results

Canine variables associated with a greater risk of re-homing or euthanasia and/or the owner's considering re-homing or euthanasia included: heavier weight; mixed breed; aggression to familiar people over resources, resting places, or when groomed/medicated; aggression to unfamiliar people during interactions; a history of biting; and living in a family with children 13-17 years old. Owner variables included use of punishment-based training and/or previous consultation with a non-veterinary behaviorist or trainer.

Conclusions

Several owner and pet-related factors, other than the behavior problem itself, can increase the likelihood of re-homing and euthanasia. These factors must be addressed in order to maximize the effectiveness of treatment. Close follow-up is recommended if such risks are identified during the behavioral consultation.

Keywords

Behavior; dog; euthanasia; relinquishment.

Survey to Assess Health Related Quality of Life (HRQOL) in Small Animal Cancer Patients Treated With Chemotherapy

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Abstract

Quality of life (QOL) is a growing field of research with established importance in veterinary medicine. The goals of this study were: to develop a QOL survey for use in a canine cancer chemotherapy setting; to validate the instrument's utility; to discover key questions that facilitate client and clinician communication regarding decision making in patient care. We utilized human and veterinary QOL literature to develop a comprehensive yet simple proxy survey instrument. This survey comprises a longitudinal evaluation of QOL with six components addressing: 1) the animal's QOL before onset of cancer; 2) changes in animal's QOL since manifestation of disease; 3) changes in animal's QOL with regard to treatment response; 4) owner's QOL and its impact on priorities in decision making; 5) clinician's impression of the owner's priorities and QOL; 6) clinician's impression of the dog's QOL. Inclusion criteria specified canine patients diagnosed with metastatic cancer requiring chemotherapy as treatment. Patients with other life limiting medical conditions were excluded. Patients were evaluated both by owners and veterinarians at the time of their initial visit to the clinic, and at 3 and 6 weeks after the initiation of chemotherapy. According to our pilot study results, predictors of QOL were the questions addressing the following: 1) clinical signs of illness; 2) playfulness and activity level; 3) the dog's level of "happiness" as perceived by the owner and clinician. This QOL instrument was statistically valid and could be employed to guide therapeutic decisions and assessment of canine cancer patients in future studies.

Introduction

The mission of medicine is maintenance of health, elimination of suffering and prolongation of life. Companion animal medicine has emerged as the dominant social function of veterinary medicine, and pets are increasingly considered family members and their value is not primarily economic. Thus, the goals of small animal veterinary medicine have approximately the same mission as those of pediatric medicine. Veterinarians must work through a financially responsible third party to make fiscal and medical decisions for the animal. This situation

is quite similar to human pediatrics, gerontology and psychiatry practice. An important difference is that the animal's owner has the option to elect humane euthanasia of the animal. This is a critical issue, since even though both the assigned veterinarian and the owner share responsibilities in decision-making, the ultimate decision remains the owner's. (Brown, Carbone, Conlee, et al., 2006) In a review article by McMillan in 2000, 33 veterinary medicine reports addressed QOL. (McMillan, 2000) In no report was QOL quantified, but the term was applied in the context of owner and clinician decision-making process. McMillan concluded that QOL in animals is comprised of the balance between pleasant and unpleasant feeling states. Researchers considering the welfare of animals have identified factors related to overarching domains of body, mind and nature⁹or subjective animal feelings in the presence or absence of pain. (Duncan and Petherick, 1991, Bono and De Mori, 2005) However, these factors remain theoretical in the absence of validated QOL assessment tools to provide objective data for comparison. Current medical treatment of dogs with cancer is largely palliative. Decisions made for the choice and duration of treatment often require that the clinician and the owner regularly assess the quality of life (QOL) of the patient. This is usually done in an impressionistic manner, which may not be a true reflection of the patient's status. Thus, it is important to have an efficient tool to assess QOL of the companion animal. The purpose of this study was to develop an instrument that would identify the QOL changes of the canine cancer patient, as perceived by the owner and the primary attending clinician, in a longitudinal evaluative process.

Materials and Methods

This study was designed as a longitudinal evaluation of QOL in a small animal oncology setting. Patients were evaluated both by owners and an attending clinician at the time of their first visit to the clinic, and at 3 and 6 weeks after the initiation of chemotherapy. Clinical data regarding the patient's physical and laboratory findings, along with responses to treatment and any adverse effects, were obtained from the medical record at each visit. This data was subsequently correlated with the results of the QOL survey to identify statistically significant predictors of the dog's QOL.

Literature from pediatric and oncology proxy questionnaires, as well as from veterinary studies of QOL, were reviewed to develop survey instruments. We developed 4 surveys: a 36-item survey (1st visit) and a 20-item survey (2nd and 3rd visit) for the owner, with a 4-item survey (1st visit) and a 6-item survey (2nd and 3rd visit) for the assigned clinician. A Likert-type scale was used to rank survey responses that featured six components: 1) Canine cancer patient QOL

when the animal was healthy, and free of disease. Each subject thus served as its own control before and after diagnosis of cancer, and during initial phase of chemotherapy; 2) Patient QOL since the manifestation of disease; 3) Patient QOL with regard to response to treatment; 4) Owner QOL and priorities in decision-making; 5) Clinician impressions of the owner's (proxy) QOL and ability to prioritize decisions for patient; 6) Clinician impressions of patient QOL.

Results

The study enrolled 29 dogs. There were 15 females and 14 males. The median age was 8.3 years (range 3-15 years). Responses of the 29 owners largely agreed with those of the attending clinician regarding the dog's QOL. Correlation was found to be statistically significant for all 3 visits. The greatest agreement was noticed during the 3rd visit ($\rho=0.8133$, $p=0.0001$) and the 1st visit ($\rho=0.807$, $p=0.0003$). During the 2nd visit there was still statistically significant agreement, but the percentage of agreement was 56% ($\rho=0.562$ and the $p=0.0172$). Multiple regression analysis of the 1st visit owner survey data indicated statistically significant predictors of QOL to be: the illness of the dog (coefficient 0.41, $p=0.0001$) and playfulness (coefficient 0.46, $p<0.0001$). The regression model was statistically significant ($p<0.001$) with the significant predictors explaining 85.21% of the variability in the dog's QOL. Multiple regression analysis of owner responses from the 2nd visit indicated as statistically significant predictors: the happiness (coefficient 0.39, $p=0.0169$) and playfulness (coefficient 0.61, $p<0.0001$) of the dog. The regression model was statistically significant ($p<0.001$) with the significant predictors explaining 82.56% of the variability in the dog's QOL at the second visit time point. Multiple regression analysis of the 3rd visit indicated statistically significant predictors to be: the illness (coefficient 0.33, $p=0.0145$) and playfulness (coefficient 0.44, $p<0.0058$) of the dog. The regression model was statistically significant ($p<0.001$) with the significant predictors explaining the 55.53% of the variability in the dog's QOL.

Discussion

The QOL questionnaire developed here included several innovations. This is the first veterinary QOL instrument developed in veterinary medicine to longitudinally assess, the QOL of canine cancer patients treated with chemotherapy, by using owner and clinician proxy assessments. A major finding was the statistical concordance of both owner's and clinician's assessment regarding the QOL of each canine cancer patient over three consecutive visits. This is the first veterinary QOL instrument to assess chemotherapy treated canine cancer patients that correlated the impact of the owner's QOL as a function in decision making, thus addressing "caregiver's negative affect". A significant

finding was that there was no statistical correlation between owner level of stress and dog's QOL parameters. There were three significant predictors of canine QOL: changes in play behaviors; exhibition of clinical signs of disease; and canine "happiness" as perceived by the owner. These three factors should be included in future studies of canine cancer patient QOL. Another unique aspect is that we used the dog while healthy as an internal control, rather than using individuals from a healthy matched population. Further, we queried only the person closest to the dog to assess QOL throughout our longitudinal study. The most proximate caregiver should be best capable of identifying changes in behavior and health status of the animal. Furthermore, completion of our QOL questionnaire was considered feasible and a positive experience for the owners. The use of this QOL questionnaire enhanced the perceived value of the cancer care provided by our clinic.

Acknowledgements

Drs. S. Abood, C. Patterson, and survey participants at MSU Animal Cancer Care Clinic.

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Specialty Experience, Priorities, and Satisfaction Levels of Clients of a Veterinary Behavior Practice in a Referral Hospital Setting

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Introduction

Veterinary behavior is a relatively new specialty field in veterinary medicine and has only recently taken a place in both private and university referral practices. Behavior problems are the primary reason for dog relinquishment and, ultimately, the cause of death for the majority of the 2 million animals euthanized annually in shelters (Arkow 1994, Patronek & Rowan 1995, Salman et al. 200), yet few specialty referral hospitals, and fewer university teaching hospitals offer veterinary behavior services. This leads to an inadequate availability of resources for owners seeking help and fails to capture a growing client base.

The purpose of this study was first to ascertain how many new clients a Veterinary Behavior service brings to a referral practice and how likely those clients will then be to return to another specialty service within that practice. We hypothesize Veterinary Behavior recruits clients to a referral practice that may not have chosen to visit one otherwise. Second, this study assessed the priorities and satisfaction levels of clients specifically visiting a Veterinary Behavior service thus providing a template for improvements to the clinical service.

Materials and Methods

Owners of dogs and cats visiting the Behavior Medicine Clinic (BMC) at the Ohio State University Veterinary Medical Center (OSU-VMC) for the first time were asked to participate in a ten-question survey at the end of their initial appointment. The behavior clinician provided this survey after finishing the evaluation and providing a summary of the treatment plan details. Participation was voluntary and owners who did not wish to participate simply elected not to complete the survey.

Results

A total of 87 surveys were returned over an 8 month period. The majority of clients were referred to the Behavioral Medicine Clinic by their veterinarian (63%), followed by their pet's trainer (17%). Sixty-eight percent of new clients had

never visited the OSU-VMC for any other specialty service, while 64% had never taken a pet to any specialty practice prior to their appointment with the BMC. Eighty-seven percent of clients reported that they were likely to bring their pet to another specialty service at the OSU-VMC, based on their experiences with the BMC.

Overall new clients of the BMC were satisfied with their experience, with 95% of clients reporting they were “highly satisfied” and 5% reporting they were somewhat satisfied. When asked to rank different aspects of their experience with the BMC, clients gave “receiving detailed, written take-home instructions” the highest rank for importance (70%). “Physical examination of my pet” was least reported as having highest rank of importance (25%).

Discussion

In summary, the BMC at the OSU-VMC recruited a large number of clients who had not previously visited a veterinary specialty practice. Furthermore, these results suggest that clients’ experience with a behavior service may increase their likelihood of visiting other specialty practices within the same hospital. Offering Veterinary Behavior services to clients not only fills the void for clients in need of such services, but also brings a potential revenue draw for the entire practice.

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How I Treat Just About Anything

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Introduction

I use a technique I learned during my residency training to teach veterinary students how to treat just about any behavioral complaint (training problems, normal unwanted behaviors, abnormal behaviors).

The treatment plan includes these 5 steps:

1. Avoidance
2. Relationship building
3. Behavior modification
4. Tools
5. Pharmaceuticals/ adjunctive treatments

To provide a complete treatment plan, students personalize the 5 steps for each individual behavior case. If they can only figure out a few of the steps, then they know they need a behavioral consult or a referral. This treatment plan teaches veterinary students to systematically approach behavior problems and is applicable for practicing veterinarians as well.

Method

Once a behavioral problem has been identified or a behavioral diagnosis has been made, the 5-step treatment plan can be prescribed.

Step 1: Avoidance of the situation that predictably causes or results in the problematic behavior.

- a. Teach owners “If you can predict it, you should prevent it because practice makes perfect.”
- b. Achieve avoidance through environmental management.
- c. Implement avoidance measures immediately and use unless working on step 3 behavior modification.
- d. Decreases the risk of inadvertently reinforcing the unwanted behavior.
- e. Increases safety, which decreases liability. Aggressive pets may bite and fearful animals may injure themselves trying to get away.

Step 2: Relationship with owner. The goal is to improve the owner-pet relationship.

- a. Teach owners how to read the pet's body language.
- b. Teach new behaviors (sit, down, target, eye contact) with positive reinforcement (+R) techniques.
- c. Provide appropriate exercise and environmental enrichments.
- d. Provide a predictable and consistent pattern of positive interactions to be practiced all the times (i.e. Nothing in Life is Free (NILIF), Say Please by Sitting, Protocol for Deference, Request-Response-Reward, No Free Lunch, Learn to Earn, etc.). Working for all the rewards of life (toys, play, attention, food, etc.) increases pet's attentiveness to owner, builds trust, and decreases anxiety. Using this program every day in every interaction when there is no stress involved increases the likelihood of compliance when stressful situations and stimuli are present.
- e. Discuss the potential side effects (fear, anxiety, aggression) of using inappropriate punishments (+ interactive P after the fact). Punishments, if used, should be limited to negative punishments and positive remote punishments.

Step 3: Behavior modification. This step changes the problematic behavior. Options include but are not limited to:

- a. Classical conditioning
- b. Operant conditioning
- c. Desensitization and counterconditioning (DS/CC)
- d. Flooding
- e. Extinction

Step 4: Tools. These are items needed to implement steps 1-3.

- a. Examples for avoidance: fences, baby gates, crates, window coverings, tethers, closed doors, white noise, etc.
- b. Examples for relationship: head collars, favorite treats, food toys, dog walkers, body language books/videos/websites, etc.
- c. Examples for behav mod: muzzles, clickers, treats, remote punishers, calming cap, anxiety wrap, sound DVDs, etc.

Step 5: Pharm/adjunctive therapies: Options include but are not limited to:

- a. Prescription drugs
- b. Herbal remedies
- c. Homeopathy
- d. Diet and nutraceuticals

- e. Pheromones
- f. Acupuncture
- g. Aromatherapy

Discussion

Avoidance and relationship building, and the tools needed for these steps, can be prescribed for all problem behaviors even before a diagnosis is made. Behavior modification can be implemented weeks later during a recheck visit or a referral. Some owners may elect not to modify the behavior, but simply avoid the situation indefinitely.

Sample Case

Signalment: 3-year-old M/N terrier mix

Behavior problem: aggression towards children

S: Adopted from rescue organization 1 year ago by an adult couple that has no children. Previous behavioral history unknown. Up to date on vaccines, no previous medical problems. Knows how to “sit” on request. Walked in neighborhood on choke chain. Backs up and hides behind owner, then barks, lunges and snaps if child reaches to pet him. Owners will correct with the leash, yell at the dog, and then leave the area. Dog is not aggressive on leash with other dogs or adults.

O: Wt=35 lbs, physical and neurologic exams normal

A: Defensive aggression directed toward children

P: 5 Step Treatment Plan

1. Avoidance
 - a. Don't allow kids to approach dog on walks.
 - b. If kids seen while on a walk, turn and go in another direction.
 - c. Walk at times when kids are not likely to be present.
2. Relationship building
 - a. Teach targeting with + R.
 - b. NILIF every day with every interaction.
 - c. Discuss body language and fearful motivation for aggression.
 - d. No + P for aggression (choke chain, yelling).
 - e. Replace choke chain with head collar.

3. Behavior modification

- a. DS/CC to children approaching and reaching for dog.

4. Tools

- a. For avoidance- none needed
- b. For relationship- head collar, training treats
- c. For behav mod- favorite treats and basket muzzle for DS/CC

5. Pharm/adjunctive tx

- a. Not necessary as trigger is predictable and an appropriate amount of aggression is used to get the communication accomplished.
- b. Can consider situational therapies such as medications, pheromones or lavender aromatherapy on walks.

Acknowledgements

I would like to thank my mentors (Melissa Bain and Laurie Bergman) for introducing me to this method, and my resident mate (Jeannine Berger) for helping me practice and perfect it.

Keywords

Behavior problem, 5-step plan, treatment

What Smells? Using Scentwork as Part of Behavior Modification Protocols

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Introduction

It is widely known that dogs have a very well-developed sense of smell. Dogs can be trained to use this ability to search and indicate to their handlers a wide variety of odors. The most common examples of this training include detection of drugs and explosives. Other examples include finding cancers, invasive mussels, and more recently, bedbugs.

The Sport of Nosework™

K9 Nosework™ is fast becoming a popular sport among dog owners. The sport is modeled after training dogs for drug detection. The appeal of this sport lies not only in teaching dogs how to use such a unique sense but also the fact that it can be easily applied in indoor and urban environments. Dogs are taught to search for and find specific scents that are hidden in containers, rooms, vehicles or outdoors. Dogs and handlers can also choose to compete to earn titles for scent working ability.

From a clinical behavior perspective, scent work gives practitioners a way to provide mental enrichment as well as a means to potentially decrease anxiety. Scent work is also especially appealing for those dogs that may be largely house-bound because of intense aggression or anxiety issues.

Much anecdotal evidence exists that suggests that scent work can be helpful for decreasing anxiety and increasing mental enrichment in dogs. Because of the way in which many nose work classes are run, they provide safe opportunities for people with dogs who are aggressive to other dogs, or have anxiety towards people, to participate in an enriching activity. This presentation will 1) introduce the sport of nose work, 2) describe how to modify the activity to address the behavioral treatment of the dog, 3) discuss how to make the activity fit into the lifestyle of the owner and 4) use case studies to illustrate the use and behavioral effects of this activity.

Scent Work Variations

1. ***Sniffing Walks***: The focus of these walks is mental enrichment rather than physical exercise. They are the easiest of the three modifications, and the one that the majority of clients will be able to follow through on. The dog is allowed to spend the duration of the walk sniffing whatever he or she wants to sniff, as long as they are not pulling the client towards the odor, and as long as it is not going to compromise the dog's physical or behavioral health.
2. ***“Find It”***: This activity is more formal and requires more training than sniffing walks. The client teaches the dog to find piles of food (also known as “hides”) on cue. Training for this is typically started in the house, and can be run in a very small space. This option is beneficial in an apartment setting, or for a dog whose ability to go outdoor is limited. It can also be applied to the outdoors if desired.
3. ***Formal Nosework™*** classes: Some clients elect to take formal classes in scent work. Many instructors run the class one dog at a time, allowing for dog-reactive dogs to participate. Also, the human observers are asked to remain quiet and unobtrusive, which can be helpful for human-reactive dogs.

Keywords

Dog, enrichment, nosework, scent work, sniffing

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How I Approach Diet, Nutrition And Behavior

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Abstract

Raw, kibble, grain-free, organic, natural, high protein and low protein are all varieties of diets fed to companion animals. The plethora of choices and the dearth of studies create many opinions about what should be fed. Food labels can be misleading about the composition of foods unless we read the actual ingredient list. I will present my approach to diet and nutrition in my behavior practice, including case examples as time allows.

Introduction

The aim of the presentation is to further understanding of nutrition and diet choice as it applies to behavior cases.

Discussion

In preparation for a behavior case I review the medical record particularly looking for any history of gastrointestinal (GI) or skin disease. Such history could indicate that I need to pay closer attention to diet. During the appointment I ask more about any vomiting, diarrhea, gas, or increased GI sounds and if any are present I may suggest an over the counter limited ingredient diet. I have seen many cases where GI discomfort has exacerbated behavior problems and changing to a limited ingredient diet has helped. I have also noted improvement in some pica cases and in cat cases with inappropriate defecation with switching to a limited ingredient diet. Some foods can have an additive effect on a pet's allergies or a pet could have an undiagnosed food sensitivity leading to skin disease, so I may also recommend a limited ingredient diet in these cases as well. Any time I recommend a limited ingredient diet I also specify treats that are compatible with the diet. I have seen countless cases fail a referring veterinarian's diet trial because the pet was fed treats incompatible with the diet suggested.

I also look at the pet's weight over time and any comments the referring veterinarian made about the body condition score. While reviewing my pre-appointment questionnaire I note information the owner provided as to what food they feed and what treats the pet likes and if the pet gets any table food. I look up the food on the internet and find out more information including the ingredient

list. Calorie content per cup of food isn't always listed, so occasionally I have called the manufacturer who has readily provided the information. Some dog diets, particularly the ones advertised as being grain free are over 500 calories per cup, and some older diets are around 300 calories per cup. Some of the limited ingredient dog diets are around 425 calories per cup. Calories are important if the pet is obese, so I provide calorie-conscious alternatives to treats the owner may be using for behavioral purposes. Instead of peanut butter, which is approximately 180 calories in 2 tablespoons, I'll recommend meat-based baby food, preferably without added starch which is approximately 50 calories per jar; with added starch it is about 80 calories per jar. I have also had clients use unsweetened applesauce—being careful to specify avoiding artificial sweeteners. The treats I suggest can also be calorie and ingredient conscious; I often use dried fish cat treats for dogs since it is very appealing and already in small pieces. I use dried chicken but specify using brands made in USA to prevent potential disease that has been associated with those made elsewhere. If I am calorie concerned I avoid biscuit-type treats. Slicing potatoes and sweet potatoes and baking them can provide tasty treats compatible with most limited ingredient diets. Some dogs like apples, carrots, green beans and other vegetables. If a pet has a history of calcium oxalate crystals I avoid vegetables high in oxalates (broccoli). I find fruits and vegetables useful in low intensity situations but use meat or fish products for high intensity situations.

There are many components to foods for which there is little information about their potential to cause health problems. Often, information about the best amount to feed may be unclear, and some foods have deceptive information. Research on the association between food dyes and problem behavior in children is inconclusive, but I do point out when foods or treats contain artificial colorings. Sodium content is rarely noted on the label but many foods advertise fruits and vegetables on the front of the bag yet sodium might be higher on the ingredient list. Sodium content could be something to be aware of if the pet has a behavioral complaint of urinating in the house. Protein content can vary, with some of the grain free diets being over 42% while the average for most diets is 21-26%. Some foods advertised on the bag front as being grain free simply aren't. Barley, rye, millet, and sorghum are common ingredients in pet foods, and I have seen some of these grains in what the bag says are grain-free products.

I am commonly asked about raw diets by my clients. There is no reliable data from studies on the benefit of these diets. The concern I express to clients is bacterial contaminants of E. coli and salmonella. Some therapy programs do not allow pets fed raw diets to participate due to risk of bacteria shedding to immune-

compromised human patients. Additionally, if owners use hot dogs I make sure they know to cook them prior to use.

Keywords

Calories, cat, diet, dog, nutrition, treats

Poster Presentations

Thyroid Figures, Cholesterol and Behavioral Problems In Dogs

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Abstract

The aim of this study was to investigate the relationships between thyroid parameters (T4, fT4, T3, T3, TSH) plus cholesterol and behavior problems or behavior disorders in 216 dogs. The parameters T4, fT4, T3, T3, TSH (chemoluminescence immunoassay) and cholesterol (clinical-chemical methods) were evaluated.

The results show that behavioral problems and behavioral disorders in dogs are related to low thyroid parameters. The average parameters of all samples analyzed for thyroid parameters were located in the lower range of the reference values with the exception of fT4. The T4 and T3 levels ranged in the lower third of the reference, the fT3 value even underneath the reference range.

Introduction

The aim of this study was to investigate the relationships between thyroid parameters and behavior problems or disorders in dogs. Since there has not been any previous data or reliable research in this topic, it was important to establish a basis for further investigation. There can be numerous behavioral problems or disorders and the author wanted to investigate whether any of them are related to abnormal thyroid and/or cholesterol figures. New insights in this area of research can be used for diagnosis and as a first step for behavioral modification combined with appropriate medication.

Animals, Materials and Methods

The study was conducted in 2008 and 2009, during which time 216 serum samples of dogs (133 pure bred, 83 mongrels) were sent to the institute from throughout Germany. They were analyzed for T4, fT4, T3, fT3, TSH parameters and cholesterol and in addition to this, data about general behaviour, problematic behaviour and several other categories concerning the dog and its health status were collected. The problematic behavior and behavior disorder were categorized for analysis. Since each dog may exhibit several behavioral problems and / or behavioral disorders, they

could be represented in several categories of behavior. As there is no reliable data on dogs without behavioral problems and / or behavioral disorders in relation to the thyroid parameters and cholesterol values yet, the dogs without a specific behavior problem and / or behavioral disorder were used as the reference group.

Results

The average parameters of all samples analyzed for thyroid were located in the lower range of the reference values with the exception of fT4. A comparison of the breeds (Fédération Cynologique Internationale groups) showed no significant differences in T4, fT4, fT3 and TSH values. In relation to the size, significantly higher T4, fT4 and T3 levels could be found for small breeds.

The comparison of various behavioral problems and behavioral disorders in relation to the various thyroid parameters and the cholesterol showed the following results: Dogs in the behavior category of anxiety and aggressive behavior had significantly lower fT3 and cholesterol levels than the reference group. Dogs with fear of conspecifics, however, had significantly higher T4 values than the reference group. This trend was also observed in dogs with separation anxiety, but was not significant. Dogs with separation anxiety, however, exhibited a significantly lower TSH value than the reference group. In dogs with emotional disorders / brain dysfunction, significantly lower T3 values could be determined. In dogs with cognitive dysfunction, a significantly higher fT3 value was found. The thyroid parameters T4, fT4 and T3 were also increased, but not significantly. The comparison of the dogs in the behavioral category deprivation / lack of socialization to the reference group showed no significant differences. A continuative comparison exclusively of the dogs with deprivation / lack of socialization in relation to aggression as well as in relation to anxiety showed no differences.

In all the analysis it is striking that the T4 and T3 levels ranged in the lower third of the reference, the fT3 value even underneath the reference range. A comparison to a group of dogs with inconspicuous behavior could give further insight on whether these changes are directly related to the behavioral problems, are subject to other factors such as age, size, etc. or if the reference ranges should be reconsidered and breed-specific values should be established.

Discussion

The results show that behavioral problems and behavioral disorders in dogs are related to low thyroid parameters. A variety of altered thyroid parameters could be identified in dogs with several behavioral problems and behavioral disorders. Although these occurred significant differences in individual parameters,

a specific behavior problem or behavior disorder cannot be concluded from changing thyroid parameters in a single individual, as most thyroid levels were in the lower reference range, and lowered thyroid parameters could have been caused by a variety of other influences. A comparison to a group of dogs with no suspicious behavior could give further insight on whether changes in the T3 and T4 parameters are directly related to the behavioral problems, are subject to other factors such as age, size, etc. or if the reference ranges should be reconsidered and breed-specific values should be established.

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Keywords

Dog, behavioural problem, behavioural disorder, thyroid, cholesterol

Management of Excessive “Reproductive Behavior” in a Hyacinth Macaw (*Anodorhynchus Hyacinthinus*) Utilizing Functional Assessment and Intervention Design

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Abstract

Applied behavior analysis (ABA) is an ideal technology to address problem behavior. It is well validated with human learners but remains underutilized in veterinary medicine.

A functional assessment and intervention design (FAID) worksheet is an ABA tool to systematically evaluate problem behavior and provide a comprehensive, individualized approach to manage behavior (Friedman 2007). The functional assessment clearly defines the target behavior and functionally related environmental antecedents and consequences. An intervention is designed and implemented to alter the environment to make the problem behavior irrelevant, ineffective, and inefficient and reinforce alternative behaviors.

This process was utilized to reduce a posture behavior in a 21 yr female hyacinth macaw (*Anodorhynchus hyacinthinus*). For years, she periodically exhibited a distinct posture (head extended below shoulders, tail held vertically, open mouth, panting), screaming, and nesting attempts. Staff categorized these behaviors as “reproductive” but no other signs of active reproduction or seasonal pattern were noted.

The posture behavior increased in frequency, duration, and intensity over approximately two months in 2009, becoming disruptive. The FAID worksheet was completed and a behavior change plan implemented. There were no other management changes. The functional assessment identified key environmental factors that predicted and maintained the behavior. The primary interventions were to increase attention for other behaviors and reduce attention during posturing. The behavior decreased to acceptable levels within one month.

Applied behavior analysis is a relevant tool to systematically evaluate and manage problem behavior. Reproductive behavior in parrots may be responsive to operant conditioning without medical management (e.g., hormone injections).

Acknowledgements

The authors wish to thank the National Aquarium, Baltimore Animal Programs staff for their participation in the functional assessment and implementation of the intervention design.

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Aging and Imaging Based Neuropathology in The Cat

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Abstract

This is a retrospective study of canine patients presented to a behavioral referral practice for aggression directed toward unfamiliar people in the home and/or on walks. The objective was to assess variables of the patient population and assess treatment modalities prescribed in this condition. The author examined canine patient records from her practice for 2007, 2008 and part of 2009 for cases that might fit the inclusion criteria. Records were eligible for further analysis if the treatment plan focused on aggression toward unfamiliar people as the primary problem. There were 40 canine subjects: 16 spayed females, 24 neutered males. The age range at presentation was 8 months to 10 years; the average age was 3.3 years. Data collection included tabulation of information in the patient record and telephone contact with the owner. Interval between patient presentation and telephone follow up varied from 6-24 months. Source of the dogs included: 26 from shelters, rescue organizations or as strays, 13 from breeders and 1 from a pet store. Eighteen dogs of mixed breed origin and 22 dogs were pure bred. Stray or rescue dogs were statistically over-represented in a Chi square analysis. Treatment modalities such as avoidance of the triggers and using head collars were more likely to be in use after the consultation. This paper is one of the first to assess characteristics of the patients, treatments recommended and owner compliance for dogs that show aggression toward unfamiliar people.

Introduction

The dog is a well established model of human aging and cognitive decline. Little research has been done to investigate the role of the cat as a model of human aging. However, the cat is established as a model of HIV infection in people, including demonstrating similar neurological abnormalities. It has been established that the cat develops beta amyloid plaques that are immunopositive for AB42 and that cats also develop hyperphosphorylated tau protein and that aged cats demonstrate loss of cholinergic neurons. There have been no reported imaging studies of aged cats.

Materials and Methods

The study population consisted of 11 young adult cats (2-5 years of age) with a mean age of 3.66 years, 12 older adult cats (8-10 years of age) aged 8.41 years and

11 senior cats (more than 10 years of age) aged 12.64 years. Cognitive function was determined using a combination of the delayed non matching to place (DNMP) and discrimination and reversal tests. Brain imaging was performed using a 1.5 T magnet for collection of T1 and T2 weighted images and magnetic resonance spectroscopy (MRS) data. Brains were segmented into grey and white matter using the FSL software and the lateral ventricular volume was determined by manually drawing regions of interest. The MRS data were fitted using the LCModel software.

Results

The data demonstrated that increasing age resulted in poorer cognitive performance with increasing age. The morphometric MRI data showed that the grey and white matter volumes decreased with age. The measurements of the lateral ventricular volumes were greater in the old adult cats. The MRS data demonstrated a decline in n-acetyl aspartate and n-acetyl aspartyl glutamate with age and a similar decline in myoinositol. There was an association with declining glutamate levels on MRS with cognitive performance, but not a statistically significant age related change. Review of the structural images demonstrated small multifocal lesions in the predominantly in the pyriform lobe that increase in number with age. The lesions were predominantly hypointense on T1 weighted images and isointense on T2 weighted images.

Discussion

The study confirmed that cats demonstrate morphological and biochemical changes in the brain that appear to be associated with cognitive decline. The multifocal lesions have not previously been reported. Histopathology will be required to make a definitive statement as to the cause, but potentially is due to demyelination without evidence of reparative re-myelination. The appearance of the lesions is similar to those associated with multiple sclerosis in people. A second explanation is grey matter loss with subsequent cyst formation. Lesions associated with stroke are another possibility. If so, because of their small size, they might be equivalent to mini strokes in people. This is unlikely however, as clinically significant strokes in cats are uncommon and those that do occur are thought to be associated with aberrant parasite migration.

Acknowledgements

Thanks to N W Millgram, JA Araujo and M Creed for assistance with this study.

Keywords

MRI, MRS, cat, cognitive function

Behavioural Studies on the Use of Open Water Systems By Mink (Neovison Vison)

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Abstract

The mink (*Neovison vison*) is a semi-aquatic mustelid whose living habits in the wild are often associated with various types of water systems such as streams, riverbanks, etc. The animals are skillful swimmers and divers. Farmed mink, in contrast typically don't have the opportunity to swim as their cages lack water pools.

40 American mink from a commercial farm were housed in two identically constructed free-range enclosures. Each enclosure housed 20 mink. In each of the enclosures, the mink were offered three different water basins. There was a rectangular "swimming pool," a round "pond" and a running "creek" available.

The mink visited each of the three water basins. The pool had the most visits within each observation week compared to the pond and the creek. In total, the mink spent most time at the pool. Both the results of the direct and the video observation showed that the mink generally accepted all three water basins and used them from the beginning to the end of the study. During the course of the study, an overall increase in frequency and duration of use of the basins was observed. The animals were in good health and the quality of the water was very good.

This fundamental study found that farm mink still use water basins for swimming voluntarily, willingly and extensively, although the animals are considered to be domesticated and this is often used as an argument that the behavior of wild mink can not be compared to the behavior of farmed mink.

Introduction

The mink (*Neovison vison*) is a semi-aquatic mustelid whose living habits in the wild are often associated with various types of water supplies such as streams, riverbanks and lake shores (Dunstone, 1993). The animals are skillful

swimmers and divers (Wenzel, 1990). Farmed mink, in contrast typically don't have the opportunity to swim or dive as their cages lack water pools (Wenzel, 1990; Wiepkema and de Jonge, 1997). The claim, that swimming is an essential behaviour pattern for mink has not yet been proven and many studies have dealt with this question (Cooper and Mason, 2000; Hansen and Jeppesen, 2000; Hansen and Jeppesen, 2001; Mason et al., 2001; Vinke et al. 2006). However, based on the biology of wild mink, European animal welfare recommendations suggest that swimming is an essential behaviour pattern for mink and therefore a swimming basin should be provided for farmed mink (European Convention, 1999). The aim of this fundamental study was to investigate which sizes, shapes and layouts of water basins in mink husbandry are suitable to allow mink to perform their characteristic swimming and diving behaviour..

Animals, Materials and Methods

The study was carried out at a research station of the Ludwig-Maximilians-University of Munich, Germany. 40 American mink (*Neovison vison*) from a commercial mink farm were housed in two identically constructed free-range enclosures (Group A and B), with a size of approx. 300 m² each. In order to be able to identify the individual animals, all mink were microchipped with a transponder (HDX – Transponder, Texas Instruments). In each of the two identical enclosures, the mink were offered three different water basins, which differed in shape, depth and surface area. Following water basins were available to the mink: A rectangular “swimming pool” (surface area approx. 20.5 m², depth approx. 30 cm), a round “pond” (surface area 4.9 m², depth approx. 80 cm) and a running “creek” (length approx. 10 m, depth 3-4 cm, which contained two pools/hollows along its length). The animal behavior of both groups was assessed by direct, as well as video observation. All observations took place on an approximately monthly basis. Each time, both enclosures were observed simultaneously for a total of seven consecutive days. The scan sampling method (Martin and Bateson, 1993) was used for the direct observation. The behavior patterns “at” (at least one paw at the edge of the water basin) and “in” (all four paws in the water basin) were recorded for one hour at sunrise and for one hour at sunset on each observation day every 2.5 minutes. For the video observation, three cameras were installed in each enclosure, one for each of the three water basins. The real-time recordings were carried out on seven consecutive days from sunrise until sunset in each of the five observation weeks. Two hours in the main activity time were analyzed similarly to the direct observation. The statistical analysis was performed in cooperation with the Statistical Consulting Unit, Department of Statistics at the LMU Munich, Germany. P-values of ≤ 0.05 were considered significant.

Results

For the analysis of the direct observation the behaviour patterns “in” and “at” the pool, the creek and the pond were summed up respectively for each observation day. The mink visited each of the three water basins, but the numbers of visits were not evenly distributed. The pool had the most visits within each observation week compared to the pond and the creek. The pond was frequented more often than the creek. Most visits were recorded in the last two observation weeks, when the mink were 26 and 30 weeks of age respectively. These findings are coherent with the results of the video observation. In total the mink spent most time at the pool. The duration of stay at the creek was the lowest. The analysis of variance showed that the total times spent on the pool, the pond and the creek differed significantly from each other. There were no significant differences between group A and group B. It should be noted, that the three water basins were deemed as fixed units in the statistical analysis, disregarding that they differed from each other by several factors, e.g. circumference, surface area, water volume and distance from the nest boxes.

Discussion

The results of the direct as well as the video observation showed that the mink in both groups (A and B) generally accepted all three water basins and used them from the beginning to the end of the study. These general observations are consistent with the behaviour of semi-aquatic living wild mink described in the literature (e.g. Dunstone, 1993, Wiepkema and de Jonge, 1997). The outcome of this fundamental study was that farm mink still use water basins for swimming voluntarily, willingly and extensively. During the course of the study (from August to December) an overall increase in frequency and duration of use of the basins was observed. This does not comply with the results of Hansen and Jeppesens study (2001), who found a higher swimming activity of their mink in the warm summer months. This could be due to the fact that in the present study the animals were observed for only one season from 14 up to 30 weeks of age. It seems possible that an increased swimming activity can only be found when the mink grow older. As it was not possible to distinguish the individual animals in the direct and the video observation, we were not able to tell whether all mink used the swimming facilities or whether only several animals caused the majority of the water contacts, as described by Hansen and Jeppesen (2001). They found that mean duration of stay at the bath and the amount of swimming bouts per day differed greatly between the animals. At the analysis of the video recordings in the present study at least half of the animals in each group (10) could be seen at the same time, which allows the conclusion that at least a majority of the animals actually used the water basins.

Acknowledgements

This study was funded by the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), Germany

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Keywords

Mink, welfare, behavior

Thunderstorm Fears and Phobias in Australian Dogs—Demographic Data And Perceived Efficacy of Treatment Options

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Introduction

Fearful and phobic reactions to thunder storms in dogs are not only distressing for owners but also severely compromise the welfare of the dog. Dogs may display behaviours that range from being annoying to owners through to life threatening for the dog. Currently there is a lack of information about Australian dogs affected by thunderstorms. There are wide ranges of treatments that have been suggested for storm fears and phobias, however, very little has been reported about the efficacy of treatments tried by owners.

This study reports the demographic details of 170 Australian dogs affected by storm fears and the behaviours displayed during storms. Additionally the treatments tried by the dog owners and the outcomes are reported. The participants are part of a double-blinded placebo controlled study investigating the effectiveness of a homeopathic remedy for anxiety and distress caused by thunderstorms.

Methods

Participants were recruited from veterinary clinics around Australia and advertising the study in pet publications and radio. Potential participants were screened for the health of the dog, current medications, vaccination status and exposure to substances with a reported homeopathic effect. 318 dogs were admitted to the trial; data from 170 was analyzed. Owners described their dog's storm reactions, what treatments were tried and their perceived efficacy.

Results

The dogs were drawn from all states excepting Tasmania. Dogs lived in the suburbs (60%), country properties (20.6%), country towns (14.7%) and inner city (4.7%). 52.4% of dogs lived with two people.

92 dogs were female (93.5% spayed), 74 male (82.2% neutered). Mean age was 7.6

years (SD 2.7) and mean weight 20.5kg (SD 12.9). 99 dogs were purebred along with 71 mixed breed dogs. The most common breeds were golden retrievers (11, 6.5%), border collies (10, 5.9%) and Staffordshire bull terriers (10, 5.9%). These are common in Australia but appear over represented in the trial.

Owners reported their dogs performed 14 different types of behaviours during storms. Behaviour performed by the largest percentage of dogs during every storm were running around (40%, n=146), trembling (72%, n=159), pacing (60%, n=152), hiding (46.1, n=152), being vigilant (43%, n=146) and seeking their owner (62%, n=157).

42.1% dogs were reported as worsening, 50.3% unchanging, and 7.5% improved. 87 owners (54.7%) treated their dog with 51.8% trying 1 treatment, 25.9% trying 2, 12.9% trying 3 and 9.4% trying 4 or more treatments.

Forty-three treatments were reported broadly veterinary prescribed medications, training programs, management and alternative therapies. Most therapies were reported as having no effect on changing the dog's behaviour. Valium was used most frequently, with 22 dogs being treated and 63.6% showed improvement.

Discussion

There are limitations on the conclusions that can be drawn from this study; however, these results suggest that Australian dog owners are not getting effective treatment advice for dogs suffering storm fears. Further work is needed to identify if some breeds of dogs are more susceptible to storm fears.

The Effect of Variable Feeding Trials on Activity, Animal Welfare, and Management Sustainability In Captive Black Rhinoceroses (*Diceros Bicornis*): A Pilot Study

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Black rhinoceroses in captivity are more prone to a sedentary lifestyle which may contribute to an increased occurrence of metabolic disorders. This study hypothesized that a variable feeding schedule would increase activity levels in a group of 3 rhinoceroses housed at the Cleveland Metroparks Zoo with no negative impacts on animal welfare and could be easily achieved in a keeper's work day. Behavioral data demonstrated differences in activity budget between a predictable and a variable feeding schedule, i.e. rhinos increased (Ha: $\text{diff} > 0$ if $\text{Pr}(T > t)$; 0.9942) time spent resting and eating by 11.40018%, and increased time (Ha: $\text{diff} = 0$ $\text{Pr}(T < t)$; 0.0973) resting without eating or drinking by 1.806585%. However, these differences did not describe a change in total activity. Descriptive analysis revealed that the rhinos decreased their preference for a specific yard from 89% to 66% when variable feeding was offered in that yard. Behavioral data demonstrated that the rhinos did not spend significantly more time (Ha: $\text{diff} < 0$ if $\text{Pr}(T < t)$; 0.9514) pacing before a variable feeding (1.806585%) than after a variable feeding (0%). There was no difference (Ha: $\text{diff} = 0$ if $|T| > |t|$; $1.9774 > 0.00079705$) in mean daily fecal corticosterone concentration from a predictable to a variable feeding schedule. Keepers reported that the variable feeding protocol required 30-60 minutes of keeper time daily. These findings suggest that a captive black rhino variable feeding protocol does not increase activity, has minimal negative effects on animal welfare, and can be accomplished in addition to the normal duties of a keeper.