



VETERINARY BEHAVIOR SYMPOSIUM PROCEEDINGS 2020

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Evidence of increased positive affective state in dogs after treatment with firocoxib for osteoarthritis pain

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Abstract

Judgment bias (a form of cognitive bias) has been used as an indicator of affective state in human and non-human animal species. In judgement bias tests, determination of a negative or positive affective state is measured via an animal's interpretation of ambiguous stimuli. In dogs, the judgement bias test has been shown to discriminate between dogs with and without separation anxiety and demonstrated that dogs with a chronic painful condition (syringomyelia) show a negative affective state. While judgment bias in dogs has not been shown to be affected by age alone, judgement bias may be influenced by the presence of painful disease such as osteoarthritis (OA).

This study aimed to assess judgement bias in a group of client-owned dogs with and without naturally occurring OA-associated pain and after two weeks of treatment with a non-steroidal anti-inflammatory drug. Twenty-one dogs (7 OA-pain, 14 healthy) were evaluated prior to treatment, 4 dogs with OA-pain were evaluated post-treatment only, and 4 dogs with OA-pain were evaluated both pre and post-treatment. Prior to treatment, age ($p=0.046$) and OA-pain ($p<0.0001$) were significantly associated with higher (more negative) judgment bias scores.

Judgment bias scores decreased significantly ($p=0.010$) after treatment with firocoxib, indicating a more positive affect, and post-treatment scores were not significantly different in healthy dogs ($p=0.841$). These findings must be evaluated in a larger group of dogs but suggest that dogs with naturally-occurring OA-pain have significantly more negative affect than dogs without this condition, and treatment for pain may improve or reverse this negative affect.

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Efficacy of dexmedetomidine oromucosal gel to attenuate anxiety in client owned cats presented for routine veterinary care

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Conflict of interest: Sileo and placebo were provided by Zoetis.
The project was funded by a grant from Fear Free®.

Abstract

The decline in feline veterinary visits is due, in large part, to the perceived stress associated with travel and examination; anxiolytic therapy could help facilitate veterinary visits. In this study, the effect of dexmedetomidine oromucosal gel on owner ratings of behavior during travel and on physiological measures and tractability scores during veterinary exams was evaluated.

Each cat received both dexmedetomidine oromucosal gel and placebo in randomized order 20 minutes prior to departure to the veterinary clinic. Upon arrival, an investigator administered a second dose of dexmedetomidine oromucosal gel or placebo based on behavioral assessment. After 20 minutes, a veterinarian conducted a standardized physical exam. The same protocol was followed for each visit. Outcome measures included owner and veterinary ratings, cat stress scores (CSS), and physiologic measures (temperature, heart rate, respiratory rate, blood pressure).

30 cats were included in the study. No significant differences were found between owner ratings for aggression ($p=0.663$), vocalization ($p=0.145$), and CSS ($p=0.021$) during travel. No differences were found between investigator ratings for aggression ($p=0.523$), sedation ($p=0.500$), or CSS ($p=0.676$). No differences were found between owner and veterinary ratings during examination (all $p>0.1$) or for any physiologic measure (all $p>0.1$). The most common adverse events were hypersalivation ($n=16$) and mild ataxia ($n=7$).

In this study, administration of dexmedetomidine oromucosal gel to cats resulted in no significant difference in travel or veterinary exam anxiety, compared to placebo. Further studies are recommended to evaluate the effect of dexmedetomidine oromucosal gel administered more than 20 minutes before stressful events.

Efficacy of environmental enrichment as part of a multimodal analgesic protocol to treat post-operative pain following hemilaminectomy in dogs with acute intervertebral disc herniation

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Abstract

The goal of this study was to evaluate the effect of environmental enrichment as part of multimodal analgesia on post-operative pain in dogs following hemilaminectomy for acute intervertebral disc herniation. Healthy client-owned dogs undergoing a hemilaminectomy were recruited and randomly assigned to either the enriched (EE) or standard (SE) post-operative environment group. All dogs received the same immediate post-operative analgesia protocol and recovered in an intensive care room (SE) or a separate quiet room (EE) equipped with white noise and classical music. EE dogs also received pheromone therapy, intermittent exposure to essential oil scents, positive human interaction sessions and meals were provided through food toys.

All dogs were evaluated using the modified Glasgow Pain Scale (mGPS) at several time points after surgery (4h, 8h, 12h, 24h, 36h and 48 h) by a single blinded evaluator. A rescue injection of the opioid methadone was given for a mGPS score of 5/20 or higher. Dogs demonstrating anxious behaviors received the antidepressant trazodone.

Student t-tests were conducted to compare latency to first methadone dose, first trazodone dose and first meal, number of methadone and trazodone doses and amount of meals ingested in the first 24- and 48-hours post-surgery. After 24- and 48-hours post-surgery, EE dogs required fewer doses of methadone ($p = 0.03$ and 0.04), received trazodone sooner ($p = 0.03$) and ingested more food ($p = 0.02$ and 0.01) compared to SE dogs. These data support using environmental enrichment to reduce pain and improve the wellbeing of dogs recovering from surgery.

Positive reinforcement training of cats classified as strays or abandoned to an animal control facility

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Abstract

Positive reinforcement training (PRT) has been used as a way to assess learning in cats by teaching them to respond to cues. The purpose of this study was to use positive reinforcement training to teach cats to respond to cues in order to assess their ability to learn while in the high-stress environment of an animal control facility. Studies have shown that animals living within a shelter environment have increased cortisol levels associated with higher levels of stress¹. Because an increase in stress can have a negative effect on an individual's ability to learn^{2,3}, this study sought to evaluate if cats plagued with the stress associated with a shelter environment are affected by this reduction in learning. The main objectives of this study were to determine if cats living in the high-stress environment of animal control have the ability to learn and if shelter classifications of stray, owner surrender, group housed, or single housed affected the amount of time it took cats to habituate or learn.

Cats eligible for participation in the study were at least one year of age and were free from injury and disease. Cats that met these criteria were first habituated to the training room and trainer. Habituation consisted of petting and providing treats during 20-minute sessions conducted 5 days a week for 8 weeks. A cat eating a treat from the trainer's hand for two consecutive sessions was the criteria necessary to consider them fully habituated and comfortable with both the trainer and training room. From here, cats were moved into the training group. Training sessions consisted of using positive reinforcement to train cats to respond appropriately to the cues "come" and "sit." These sessions were conducted over a 10-minute time period, three days a week for 8 weeks. Positive reinforcement training involves pairing a verbal cue to a desired behavior and then rewarding the participant with a treat and praise immediately after the behavior is displayed. This teaches the participant the behavior, encourages repetition, and solidifies the behavior within the brain. Once a cat performed the appropriate behavior 80% of the time or greater when prompted by the verbal cue, they were considered to have learned that response. However, the majority of cats in the training group responded 100% of the time to the verbal cue once the behavior was considered learned. After "come" and "sit" cues were mastered, further behaviors were taught such as "up," "nose," and "high-five." Subsequent cues selected were dependent upon the cats preferred movement.

Of the 26 cats that met the criteria to enter the habituation group, 5 were removed due to illness, 14 were adopted before they met training group criteria, and 7 completed habituation and entered the training group. Of the 7 cats in the training group, 1 was adopted before a training session could be conducted. All of the cats in the training group learned all cues taught and retained these cues for the duration of the experiment. When it came to shelter classifications, there was

no significant difference in the amount of time it took stray, owner surrendered, group housed, or single housed cats to habituate, with most cats becoming fully habituated after 3 sessions. There was also no significant difference in the amount of training sessions required for stray and owner surrendered cats to learn a cued behavior. Lastly, there was no difference in the amount of time it took to learn one cued behavior over another one, with most cues taking 3 sessions to master.

In conclusion, this study demonstrated that cats are capable of not only learning in the high-stress environment of the shelter but are also capable of remembering what they have been taught over a period of time. Results of the study indicate that shelter background and housing environment play no role in a cat's ability to learn when faced with the stresses associated with shelter living. The current goal is to expand upon this research in the future and assess if implementing a positive reinforcement training program within a shelter can help increase adoptability, decrease length of stay; and increase retention in the cat's adoptive home.

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Evaluation of repeated dosing of Sileo® (dexmedetomidine oromucosal gel) for treatment of noise aversion in dogs over a series of noise events

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Background

Noise aversion is a common behavioural disorder in dogs; affected dogs show fear behaviours in response to certain noise stimuli. Pharmacologic treatment has been effective for many dogs; clinical reports have suggested anxiolytic treatment lowers the need for treatment over time. The aim of this study was to evaluate the effect of dexmedetomidine oromucosal gel for dogs with noise aversion over a series of noise events.

Methods

Owners of enrolled dogs completed records for ten noise events indicating whether their dog received dexmedetomidine oromucosal gel and pre- and post-treatment anxiety scores; adverse events were noted.

Results and Conclusions

Twenty-two client-owned dogs completed recordings for ten events. Logistic regression results showed a significant effect for time of event with decreased probability of receiving treatment for subsequent events (OR=0.75, p=0.0017). Within an event, significant improvement in anxiety was seen (median improvement 11 points; paired Wilcoxon; p<0.0001).

In-hospital administration of dexmedetomidine oromucosal gel for stress reduction in dogs during veterinary visits: a randomized, double-blinded, placebo-controlled study

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The research project was funded by Zoetis animal health, the distributor of dexmedetomidine oromucosal gel (Sileo®) in the United States, but was independently performed at the University of Pennsylvania School of Veterinary Medicine.

Abstract

Visiting veterinary clinics has been demonstrated to be a stressful experience for the majority of dogs and is a common reason that owners delay treatment for their pets (Döring, Roscher, Scheipl, Küchenhoff, & Erhard, 2009; Volk, Felsted, Thomas, & Siren, 2011). The objective of this study was to assess the efficacy of dexmedetomidine oromucosal gel in alleviating acute stress during standardized veterinary visits for physical examinations when administered by owners in the exam room. This study was a randomized, cross-over, placebo-controlled, double-blinded trial. Mixed effect logistic regression was used. Age, gender, weight, noise level, and sedation scores were considered confounding factors. Statistical significance was assumed for a value of $p < 0.05$.

Results showed that dexmedetomidine oromucosal gel significantly decreased the behavior categories of stress/fear vocalization (whining, yelping, grumbling) ($p < 0.01$), avoidance behaviors (oriented towards the door, attempting to exit the room, trying to jump from the table) ($p < 0.01$), and further stress-indicating activities (panting, trembling) ($p = 0.016$) during the physical examination. Stress/fear vocalization occurred less frequently during the second visit compared to the first visit and was more likely to occur in dogs that were young and male. Nevertheless, after correcting for age, gender, and visit number, dexmedetomidine oromucosal gel still had a significant effect in reducing stress/fear vocalization during the physical examination.

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The Impact of Fear Free[®] Practices on Canine Stress During Transportation – a Pilot Study

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This study was funded by Fear Free[®].

Background

Handling dogs with less fear and resistance benefits the dog and the veterinary team. This study's purpose was to determine whether using Fear FreeSM principles during transportation from a shelter to a veterinary teaching hospital would decrease canine stress as measured by salivary cortisol, heart rate (HR), respiratory rate (RR); and fear, anxiety and stress (FAS) scores.

Methods

Shelter dogs (n=16) were randomized into Fear Free (FF) and traditional (T) transport groups. The dogs were driven 100 miles from the shelter to the veterinary teaching center. FF dogs were transported with Adaptil sprayed blankets, toys filled with treat paste, chew toys, and classical music. The dogs were transported in plain kennels, then housed in kennel runs with thrice daily outdoor walks. Salivary cortisol levels, HR, RR, and FAS scores were collected prior to transport, upon arrival at the destination, and 24 hours after arrival. A two-way mixed ANOVA was used for analysis.

Results

There was no significant difference between groups for any of the measures. However, there was a medium effect size ($\eta^2=0.092$) for the impact of group on RR. FF dogs tended to have lower RR immediately after transport and the following day.

Discussion

This pilot study showed no difference between dogs transported traditionally or using Fear Free principles, but suggested that a follow-up study of at least 48 dogs would have shown superiority of the Fear Free method. Smaller dogs did not produce enough saliva for cortisol samples, and should be excluded from subsequent studies if possible.

Australian dog trainers' perceptions and management of canine separation anxiety

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Abstract

Canine separation anxiety is common. Many dog owners don't seek help from veterinarians but may consult dog trainers. While substantial literature abounds about separation anxiety (de Assis, et al. 2020; Ogata, 2016, Sherman & Mills 2008) there is a little reporting dog trainers' experiences. This study compared Australian dog trainers' perceptions and management of separation anxiety.

An online survey was distributed via training organizations, resulting in 63 completed surveys. It contained questions about: demographics (8), prevalence and diagnosis (6), contributing factors (2), and management (4). Medians, percentages, 95% confidence intervals, and Mann-Whitney tests were calculated. Respondents were grouped into reward-based (n=41) and balanced (n=22) based on respondent's description. Reward-based trainers used positive reinforcement to teach new behaviors and avoided use of positive punishment; balanced trainers used positive and negative reinforcement as well as positive and negative punishment.

All respondents ranked owner compliance as important or extremely important for separation anxiety management. Most (82.5%) used multiple methods to identify separation anxiety but few referred to a veterinarian for diagnosis. Reward-based trainers ranked assistance from a veterinarian and owner's willingness to try medication as more important than balanced trainers ($p < 0.0001$). Significantly fewer reward-based trainers reported that medication was rarely necessary: 4.9% reward-based compared with 50% balanced trainers, 95% CIs [0.6, 16.5] and [28.2, 71.8] respectively. Almost half (52.6%) of the reward-based trainers compared with 95.5% balanced trainers believed separation anxiety was preventable ($p < 0.0001$). This study highlights differences in opinions and treatment of separation anxiety between two common training styles in Australia.

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Effects of trazodone on behavioral and physiological signs of stress in dogs during veterinary visits

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Funded in part by the American College of Veterinary Behaviorists Research Grant, supported by Fear Free®, and the Clinical Animal Behavior Service, UC Davis School of Veterinary Medicine.

Abstract

The objective of this study was to determine the efficacy of trazodone in reducing stress in dogs during veterinary visits. Twenty dogs with a history of anxiety during veterinary visits were scheduled for two veterinary visits one week apart and randomly assigned to receive either oral trazodone (9-12 mg/kg) or placebo before the first visit and the other treatment before the second visit.

Owners administered the treatment 90 minutes before the car ride to the veterinary clinic. During each veterinary visit, we gathered information from owner surveys of OSS (owner stress score) and DSS (dog stress score), investigator evaluations of dogs' behavior, analyses of video-recordings, components of heart rate variability (HRV), and serum cortisol levels.

Owner-reported DSS was significantly lower when the dogs were on trazodone during the physical examination ($p=0.005$), yet not significant at other conditions. There were no significant differences between the treatments in OSS and investigator-reported scores of dogs' sedation, aggression, and compliance levels. When the dogs received trazodone, standard deviation of normal-to-normal R-R intervals (SDNN), root mean square of successive heartbeat interval differences (rMSSD), and respiratory rate were lower, and heart rate was higher ($p<0.001$).

Based on video analyses of the dogs while in the exam room, dogs' level of stress was significantly less when on trazodone ($p<0.001$). There were no significant differences in serum cortisol levels between groups. These findings show evidence that trazodone is effective in reducing some measurements of dogs' stress levels during veterinary visits.

Detection of gastrointestinal parasitism at recreational canine sites in the USA: the DOGPARCS study

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Introduction

The rapid growth in off leash dog parks provides opportunity for canine socialization activities but carries risk of exposure to intestinal parasites. This study assessed the prevalence of these infections in dogs visiting off-leash dog parks.

Methodology

Fresh defecations were collected from dogs visiting parks in 30 metropolitan areas across the USA. Samples were analyzed by coproantigen immunoassay (CAI) (Fecal Dx® and Giardia Test, IDEXX Laboratories, Inc.) and zinc sulfate centrifugal flotation (CF). Owners responded to a questionnaire on their dog's signalment and use of heartworm/intestinal parasite control medications (HWCM).

Main Results

Samples were examined from 3006 dogs, 87.9% aged at least 12 months, visiting 288 parks. At least one intestinal parasite was detected in 622 (20.7%) samples, nematodes in 263 (8.8%), with hookworms, whipworms and ascarids in 7.1, 1.9 and 0.6% of samples, respectively. A sample positive for one or more intestinal parasites was found in 245 (85.1%) parks, with nematodes found in 143 (49.7%). Combined, CAI and CF detected 78.4% more intestinal nematode infections than CF alone. Hookworm and whipworm infections were detected in all age groups, but ascarids were only detected in dogs less than 4 years-old. Approximately 42% of dogs aged less than 1 year were positive for nematodes or Giardia. Based on owner reports, HWCM was current for 68.8% of dogs, dogs previously diagnosed with intestinal parasitism were more likely to be receiving a HWCM than those without such history, and a significantly lower ($P=0.0003$) proportion of dogs receiving a HWCM were positive for intestinal nematodes compared with those not on such medication.

Principal Conclusions

Intestinal parasites, the most common of which were Giardia, *Ancylostoma caninum* and *Trichuris vulpis*, were found in 20% of dogs and 85% of dog parks across the USA. Enhanced detection of canine intestinal parasitism was achieved by combining CF and CAI. Canine intestinal parasites are common across the USA and dog health can be improved by regular testing of fecal samples and routine administration of medications effective against the most common infections.

Link to full, open source publication in 2020 Parasites & Vectors: [2019 DoGPaRCS](#)

Owner assessment of stress in pet cats: an internet-based survey

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Funding for this study was provided by Vetoquinol. Lisa Radosta provides regular consulting services for Vetoquinol and Krista Sirois is currently undertaking a residency in veterinary behavior sponsored by Vetoquinol.

Abstract

The aim of the study was to evaluate prevalence of fear and stress in pet cats in their home environments and owner interpretation of their cat(s)' behavior to determine areas to improve welfare of pet cats.

An internet-based survey was posted on several public websites and collected details about each cat's temperament, personality and home environment as described by their owners. A total of 2626 responses were collected over a 3-month period. The relationships between questions and owner description of cat's temperament were analyzed using multivariate analysis.

Cats that spent <15 mins eating per day were more likely to be described as fearful (odds ratio 1.132, P 0.0437). Cats that spent 60-120 mins per day playing were least likely to be described as fearful, nervous or aggressive (odds ratio 2.2, P <0.0001). Male cats were more likely to be described as friendly and/or confident (odds ratio 1.837, P <0.0001). Only 34% of owners had designated playtime with their cats daily (n = 896). Aggression toward unfamiliar people, noises and other animals was reported most commonly. Fear of loud noises (n = 1332; 52.7%) and unfamiliar animals (n = 1455; 57.5%) were common in all cats, regardless of how their owners described them.

The data demonstrated that fears of noises and unfamiliar people are common even in cats not described by their owners as fearful. These were also common reasons for cats to display aggression. These are areas of focus to prevent significant welfare issues in cats at home.

Effects of a single dose of oral gabapentin in dogs during a veterinary visit: a double-blinded, placebo-controlled study

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This project was supported by Fear Free Veterinary College Research Grants and the Purdue University-VCS Graduate Competitive Research Fund.

Abstract

Visiting a veterinary clinic may be a stressful event for pets, leading to impaired welfare. Various medications including gabapentin are currently recommended for dogs to reduce fear and anxiety. Gabapentin is a structural analog of GABA used as an antiepileptic medication and to treat neuropathic pain. To date, there are no published studies investigating the efficacy of gabapentin for reducing fear and anxiety in dogs.

This randomized, double-blinded, placebo-controlled, cross-over study evaluated the anxiolytic effects and safety of a single dose of gabapentin (50 mg/kg PO) prior to a veterinary visit. Non-aggressive dogs not receiving any other medications were solicited for the study from the local community. Anxiolytic effects were evaluated by video recorded behaviors and physiological variables before, during, and after a standardized, 5-minute-long, mock veterinary examination. Treatments were compared with mixed effects linear models. Twenty-two privately owned dogs (9 spayed and 3 intact females, 9 neutered and 1 intact male) were recruited for this study. Median age was 4.4 years (range 1.5-8.7 years), and median body weight was 23.5 kg (range 11.3-32.7 kg).

During the veterinary examination, the mean ($\pm$ SD) total frequency for lip licking was significantly less for the gabapentin treatment (9.8 ± 10.1) compared to the placebo (15.0 ± 14.7) ($P=0.001$). There was no significant difference in other fear/anxious behaviors such as the frequency of shake offs, yawning, whining, growling, attempts to jump off the examination table, or duration of panting. Few adverse events, such as mild sedation were reported by owners.

Impact of classical counterconditioning (quiet kennel exercise) on barking in kennelled dogs

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Abstract

Excessive barking, which is often the primary source of noise pollution in dog kennels, has been proven to have a negative impact on welfare. Many facilities, especially animal shelters, have limited staff and resources, so it is important to minimize barking in an easily implemented manner.

This study aims to show proof of concept that clinical recommendations which suggest strategies to decrease barking through classical counterconditioning are effective. This pilot study was conducted in one ward of day-time boarding kennels at the North Carolina State University College of Veterinary Medicine Health and Wellness Center. A Quiet Kennel Exercise (QKE) was implemented that utilized classical counterconditioning in order to change the dog's emotional state to a more positive one, which should reduce the motivation to bark.

During the initial baseline period, data was collected three times per day. Data collected included decibel readings, number of dogs present, and number of dogs barking. People passing through the ward acted as they normally would. Then, the QKE period began and for 10 days people passing through the ward were asked to simply toss each dog a treat, regardless of the behavior of the dog in the kennel. The same data was recorded as in the baseline week. Descriptive results show a trend of reduction in the maximum level of barking after QKE, especially in the afternoon. The statistical analysis did not show significance supporting the hypotheses. This is likely due to high variability in data measured and small sample size.