



Conference Abstract Book



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Celebrating Animals | Confronting Cruelty



ISAZ 2013 PROGRAM-AT-A-GLANCE

WEDNESDAY, JULY 17, 2013

09:00-15:00	ISAZ Board Meeting Embassy Suites, 511 N Columbus Drive, Illinois Room
18:30-20:00	Registration & Opening Reception <i>Sponsored by Mars-WALTHAM</i> Gleacher Center, 450 N Cityfront Plaza Drive, 6 th Floor

THURSDAY, JULY 18, 2013

**All Thursday events will be held at the Embassy Suites, 511 N Columbus Drive*

08:00-08:45	Registration (Ballroom pre-function area)	
08:45-09:00	Opening Remarks (Ballroom ABCD)	
09:00-09:45	Plenary Session, Louise Hawkley (Ballroom ABCD) <i>Sponsored by Mars-WALTHAM</i>	
09:45-10:10	Coffee Break with refreshments (Ballroom pre-function area) <i>Sponsored by Zoetis</i>	
10:10-11:30	Oral 1. HAI as a Dyadic Relationship (Ballroom ABC)	Oral 2. Animal Welfare, Part I (Ballroom D)
11:30-11:35	Break	
11:35-13:15	Oral 3. HAI and Health Outcomes (Ballroom ABC)	Oral 4. Attitudes Towards Animals, Part I (Ballroom D)
13:15-14:15	Buffet Lunch (Hotel Lobby Atrium)	
14:15-15:35	Oral 5. HAI in Vulnerable Populations (Ballroom ABC)	Oral 6. Animal Welfare, Part II (Ballroom D)
15:35-15:45	Break	
15:45-16:30	ISAZ General Meeting (Ballroom ABC)	
16:30-18:30	Free Time	
18:30-19:30	Cocktail Hour (Ballroom pre-function area)	
19:30-22:00	Conference Dinner (Ballroom ABCD) <i>Sponsored by the American Society for the Prevention of Cruelty to Animals (ASPCA)</i>	

ISAZ 2013 PROGRAM-AT-A-GLANCE (CONT.)

FRIDAY, JULY 19, 2013	
<i>*All Friday events will be held at the Embassy Suites, 511 N Columbus Drive</i>	
08:00-08:25	Registration (Ballroom pre-function area)
08:25-09:15	Plenary Session, Steve Zawistowski (Ballroom ABCD) <i>Sponsored by the American Society for the Prevention of Cruelty to Animals (ASPCA)</i>
09:15-10:45	Poster Sessions (Ballroom EFG) and Coffee Break with refreshments (Ballroom pre-function area) <i>Sponsored by the International Fund for Animal Welfare (IFAW) and Nestlé-Purina</i>
10:45-12:25	Oral 7. HAI and Social, Emotional, and Cognitive Outcomes (Ballroom ABC)
12:25-12:30	Break
12:30-13:30	Oral 9. Animal Populations (Ballroom ABC)
13:30-14:30	Buffet Lunch (Hotel Lobby Atrium)
14:30-15:50	Oral 11. HAI and Stress (Ballroom ABC)
15:50-16:00	Break
16:00-16:45	Roundtable Session (Ballroom ABCD) How to Apply for Funding for Research on Human-Animal Interaction <i>Mars-WALTHAM and the Eunice Kennedy Shriver National Institute for Child Health & Human Development (NICHD)</i>
16:45-17:00	Award Presentations (Ballroom ABCD) Closing Remarks
17:00	Conference Adjourns

PLENARY TALK 1

Title: Social Bonds Within and Across Social Species: Linking Psychology and Physiology

Speaker: Louise Hawkley. National Opinion Research Center (NORC) at the University of Chicago

Correspondence: Hawkley-Louise@norc.org

Among humans, poor social relationships and perceived social isolation have been shown to contribute substantially to physical and mental health, and increase risk for mortality. Research conducted with mice, rats, voles, pigs, and non-human primates has shown that non-human social species also exhibit adverse physiological and mortality consequences when their social needs are not met. The functioning of the hypothalamic-pituitary-adrenocortical axis provides a useful example of commonality and differences across species in the effects of social isolation, real or perceived. In addition, some evidence suggests that cross-species social connections may moderate, mediate, or substitute for the health and physiological effects of within-species interactions. This talk will outline a theoretical framework, review empirical data, and suggest directions for future research on the link between sociality and physiology within and among social species.

PLENARY TALK 2

Title: Mything the Point: Evidence, inquiry and animal shelters

Speaker: Steve Zawistowski. Executive Vice President, National Programs and Science Advisor, The American Society for the Prevention of Cruelty to Animals

Correspondence: stephen.zawistowski@aspca.org

Animals have played a mythological role in many areas of human culture. They have been demons and gods, pests and healers. Tens of millions share our homes and lives as companions, while many others may be relinquished to animal shelters or roam as strays. I will examine some of the myths associated with animal shelters, the development of evidence based shelter programs and suggest where future inquiry may lead.

Oral 1. HAI as a Dyadic Relationship

Title: The relationship between owner personality, owner-dog interaction style, and canine behavior in assistance dog partnerships

Authors: James A. Serpell & Deborah L. Duffy

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Previous studies have found associations between canine behavior problems and aspects of owner personality (e.g. Podberscek et al., 1997). Although the causal mechanisms for such associations are unknown, it is possible that particular owner personality types tend to interact with their dogs in ways that affect the animal's behavior. The present study tested this hypothesis by investigating the relationship between owner personality and interaction style using survey data derived from a longitudinal study of guide and service dog owners.

Guide/service dog owners (N=529) were asked to complete the 10-item Personality Inventory (Gosling et al., 2003) and a series of questions addressing their interactions with their dogs. The data were analyzed for associations between owner's scores on the Big-Five personality factors, their responses to the interaction style questions, and their dogs' behavior as measured by the C-BARQ (Hsu & Serpell, 2003) and other survey items.

The results indicated that owners who scored low on the personality factors 'agreeableness' and 'conscientiousness' tended to correct their dogs' behavior more frequently (Spearman's rho = 0.13, $P < 0.003$ & 0.14, $P < 0.001$, respectively), owners who scored high on 'emotional stability' rewarded their dogs more frequently (rho = 0.12, $P < 0.007$), and owners who scored high on 'openness to experience' rewarded their dogs more frequently and engaged in more frequent active play (rho = 0.18, $P < 0.0001$ & 0.15, $P < 0.001$). These differences in interaction style were also associated with numerous differences in the dogs' behavior. The findings point to an indirect causal relationship between the personalities of assistance dog owners and the behavior of their dogs.

Gosling, S.D., Rentfrow, P.J. & Swann, W.B. 2003. *J. Res. Personality*, 37: 504-528.

Hsu, Y. & Serpell, J.A. 2003. *JAVMA*, 223: 1293-1300.

Podberscek, A.L. & Serpell, J.A. 1997. *Vet. Rec.*, 141: 73-76.

Oral 1. HAI as a Dyadic Relationship

Title: The impact of canine cognitive dysfunction on the dog-owner relationship

Authors: Jonathan E. Bowen^{1,2}, Laura T. Armenti¹, Paula Calvo², Antoni Bulbena², Jaume Fatjo²

Affiliation: ¹Royal Veterinary College, North Mymms, UK. ²C tedra Fundaci n Affinity Animales y Salud, Department of Psychiatry and Forensic Medicine (Universitat Aut noma de Barcelona), Spain

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Canine cognitive disorder is a common neuropsychiatric problem in older dogs that produces a range of impairments which might be expected to have an impact on the dog-owner relationship.

The adult owners of 606 dogs aged 8 years or over completed online presentations of the Monash Dog Owner Relationship Scale (MDORS. Dwyer et al, 2006)) and Canine Cognitive Disorder Rating scale (CCDR. Salvin et al, 2011). The population was divided into 3 groups according to CCDR scale score; normal (n=439), mild (n=121) and severe (n=46) cognitive impairment. Scores for the three sub-scales of MDORS were compared between the three CCDR groups using one-way ANOVA (Kruskal-Wallis test with Dunn’s post test comparison).

For MDORS sub-scale one (dog-owner interaction) normal dogs scored significantly higher than mildly cognitively impaired dogs, but not severely impaired dogs. There was no significant difference between the CCDR groups with respect to MDORS sub-scale 2 score (emotional closeness). For MDORS sub-scale 3 (perceived costs) normal dogs scored significantly higher than mildly cognitively impaired dogs and severely cognitively impaired dogs. With the MDORS scoring system a high score for the perceived costs subscale indicates a low perceived cost of ownership.

The owners of dogs with mild and moderate cognitive dysfunction perceived the costs of ownership to be higher than for normal dogs. This was found to be independent from other factors such as dog or owner age, and includes not only the financial burden but also the impact the dog has on the owner’s lifestyle, such as by preventing the owner from doing things they want to. The impact of medical and behavioural problems on the dog-owner bond is worthy of further investigation.

Dwyer, F. Bennett, PC. Coleman, GJ. 2006. *Development of the Monash Dog Owner Relationship Scale (MDORS)*. *Anthrozoos*. 19(3), 2006: 243-256.

Salvin HE, McGreevy PD, Sachdev PS, Valenzuela MJ. 2011. *The canine cognitive dysfunction rating scale (CCDR): a data-driven and ecologically relevant assessment tool*. *Vet J*. Jun;188(3):331-6.

Oral 1. HAI as a Dyadic Relationship

Title: Understanding the physiological processes that underlie dogs' yawning in response to human yawns

Authors: Alicia Phillips Buttner & Rosemary Strasser

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Over the last decade, there has been renewed interest in understanding the mechanisms that control contagious yawning. Contagious yawning has been linked to empathy in humans (Platek et al., 2003) and other primate species (e.g., chimpanzees, Campbell & de Waal, 2011). However, cross-species studies of contagious yawning between dogs and humans have reported less consistent findings. It has been suggested that contagious yawning in dogs may be the result of stress rather than low-level empathy, since dogs produce 'tension yawns' in uncertain situations (Joly-Mascheroni et al., 2008). We investigated the role of arousal in what has been interpreted as yawn contagion in dogs in order to better understand the physiological processes that underlie yawning in a stressful context. Sixty shelter dogs were exposed to yawning and non-yawning control stimuli demonstrated by an unfamiliar human. We took salivary cortisol samples before and after testing to determine the role of arousal in yawn contagion. The cortisol levels of dogs that yawned only in response to human yawning remained elevated following testing, whereas other dogs had reduced cortisol levels relative to their baseline levels (Repeated Measures ANOVA: $F(1, 45) = 7.687, p = .008$). These findings are in contrast to current ideas in the dog training community that dogs perceive human yawning as a calming signal that reduces stress. We suggest that arousal states may have a substantial influence on how human yawns are perceived by dogs. Specifically, when a human yawn is presented in situations of uncertainty when arousal is high, as in shelter dogs, it may be perceived as a signal for stress. Some dogs then yawn as a means of displacing internal anxiety. Therefore, yawning between humans and dogs may involve some communicative function that is modulated by context and arousal.

Campbell, M.W., & de Waal, F.B.M (2011). Ingroup-outgroup bias in contagious yawning by chimpanzees supports link to empathy. *Public Library of Science One*, 6(4), e18283.

Joly-Mascheroni, R. M., Senju, A. & Shepherd, A. J. (2008). Dogs catch human yawns. *Biology Letters*, 4, 446-448.

Platek, S.M., Critton, S.R., Myers, T.E., & Gallup, G.G., Jr. (2003). Contagious yawning: The role of self-awareness and mental state attribution. *Cognitive Brain Research*, 17, 223-227.

Oral 1. HAI as a Dyadic Relationship

Title: Influence of daily life activities on sympathetic activity during a staged threat situation in owners and their dogs

Authors: Iris Schöberl, Manuela Wedl, Kurt Kotrschal

Affiliation: Konrad Lorenz Research Station Grünau and Department of Behavioural Biology, University of Vienna, Austria

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Humans and dogs engage in mutual social relationships, potentially resulting in physiological effects and health benefits for both partners, which can be manifested in heart rate (HR, a measure of arousal) and heart rate variability (HRV the lower the more stressed the individual). These parameters are may be modulated by daily life activities and interaction style, as it is known that social support dampen stress responses, whereas punitive interactions boost stress responses. We investigated whether play and training during daily life affects owner and dog HR and HRV during a short term challenging situation.

Therefore 120 owners were tested with their hormonally intact dogs before, during and after a mild threat. HR and HRV were measured from owners and dogs by HR monitoring belts (Polar-RS800CX). Information on daily life activities as training methods was collected via questionnaires.

Preliminary analysis showed that the more the dog engaged in running games during daily life, the higher was the dog's HRV before, during and after the threat ($pNN50$: $r_s=0.787$, $p=0.007$; $r_s=0.673$, $p=0.033$; $r_s=0.711$, $p=0.021$). Also owners had higher HRV before, during and after the threat, when their dogs were generally more playful ($pNN50$: $r_s: 0.635$, $p=0.049$; $r_s=0.724$, $p=0.018$; $r_s=0.661$, $p=0.038$). For interaction style it was found that owners with a more punitive training style had a higher increase of HR (DeltaHR: $r_s=0.721$, $p=0.019$) and lower HRV during the threat (SDNN: $r_s=-0.658$, $p=0.039$) compared to owners not using punitive training methods.

As predicted playing seems to positively influence HR and HRV in owners and dogs whereas a punitive interaction style is linked to a lower HRV and to a longer latency of HR to decline to baseline. Our results support the idea, that interaction style during daily life can influence the physiological reaction during challenging situations. Further results, including behavioural observations will be presented.

Oral 2. Animal Welfare. Part I

Title: Cats Inside-Only or Inside and Out? Cat Owners Prevention and Promotion Motivations

Authors: Jill Mosteller and Karen Kraus

Affiliations: Portland State University and Feral Cat Coalition of Oregon, USA

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Recent reports suggest that U.S. domestic cats contribute to killing billions of birds and other mammals each year (Angiers, 2013). People's motivations whether or not they allow their cat(s) to roam outside are examined. One hundred and twenty cat owners who live in the Pacific Northwest, who skew being young (70% 18-32), educated (90% some college or higher), and female (71%), inform this internet survey study. Sixty-eight respondents (56%) report keeping their cat(s) inside. We highlight key differences between both groups that may warrant further investigation with a broader, more representative sample.

Based on a four point scale (1= no influence, 4=strong influence), inside-only cat owners report 'avoiding injury from vehicle traffic' (M=3.5 vs. 2.63, $t=4.78$, $p=.000$), 'injury from other animals' (M=3.21 vs. 2.79, $t=2.07$, $p=.041$), 'avoiding disease' (M=3.03 vs. 2.23, $t=3.86$, $p=000$), 'preventing cats from killing' (M=2.01 vs. 1.50, $t=2.94$, $p=.004$) and 'running away' (M=3.13 vs. 1.96, $t=5.88$, $p=.000$) as being more strongly influential compared to inside-outside cat owners. Conversely, inside-outside cat owners report stronger motivational influences that are promotion focused; enriching the cat's well-being. Mean scores 'to enrich my cat's life' (3.14 vs. 2.42, $t=3.67$, $p=.000$), 'so my cat can interact with nature' (2.94 vs. 2.39, $t=2.83$, $p=.005$), and 'because the cat begs me to go outside' (3.10 vs.1.89, $t=5.77$, $p=.000$) are higher for inside-outside than inside-only cat owners. Both groups report strong love for their feline companions, however, motivations underlying their caretaking responsibilities are different. Inside-only cat owners are prevention focused, wanting to avoid negative outcomes. Inside-outside cat owners are more promotion focused, wanting to promote a positive environment for their cat by allowing them to go outside. 'Preventing cats from killing other animals' scored low for both groups, suggesting this may not be an effective appeal that motivates cat owners to keep cats inside.

Angiers, N. That Cuddly Kitty is Deadlier than you Think. 2013. New York Times, Science,
http://www.nytimes.com/2013/01/30/science/that-cuddly-kitty-of-yours-is-a-killer.html?hpw&_r=0

Oral 2. Animal Welfare. Part I**Title:** The value of using animal photographs in humane education**Authors:** Linda Kalof, Joe Zammit-Lucia, Jessica Bell & Gina Granter**Affiliation:** Animal Studies Program, Michigan State University, East Lansing, MI, USA**Correspondence:** belljes2@msu.edu

Visual depictions of animals can change the position of animals in human culture by impacting human emotional responses. Our study addressed the potential for humane education using a slideshow of animal portraiture photography to enhance positive evaluations of animals in a sample of young adults in a classroom setting.

We used the Personal Meaning Map, a constructivist-relativist instrument that emphasizes learning as a contextual process, to measure changes in students' perceptions of animals. Fifty-one students enrolled at a pre-university college in Montreal, Quebec, participated in the study in 2012. Major conceptual themes that represented the different perceptions of "Animal" were developed based on students' responses on the PMM both pre- and post-slideshow.

Forty-seven of the 51 students (92%) changed their perceptions of "Animal" after viewing the slideshow. Before the slideshow, the students' perceptions of "Animal" were described primarily as *Pets/Symbols*, *Biological/Wild Nature*, *Commodity/Resource*, and/or *Dangerous*. After the show, the major thematic perceptions of "Animal" shifted to *Kinship* ($p = .026$) and *Sentience/Individuality* ($p = .038$), indicating that the students experienced a statistically significant change (based on the McNemar significance probability test) in the meanings they ascribed to "Animal" after viewing the slideshow. The depth and emotion associated with student responses on *Kinship* and *Sentience/Individuality* also increased substantially after viewing the slideshow.

Our finding that viewing animal portraiture improved feelings of kinship with animals and enhanced perceptions of animal individuality in a classroom setting has implications for humane education targeted at improving the relationship between humans and other animals.

Oral 2. Animal Welfare. Part I**Title:** Evaluation of the SPANA animal welfare education programme in Ethiopia**Authors:** Stephen Albone, Nigatu Aklilu, Kefyalew Mideksa & Diana Hulme**Affiliation:** The Society for the Protection of Animals Abroad, London, UK**Correspondence:** Stephen@spana.org

Established in 1923, SPANA is an international animal welfare organisation providing educational and veterinary services in countries with large populations of working animals. SPANA's education programme in Ethiopia involves delivering a weekly one hour lesson to children in Grades 2 and 5 (aged 8+ and 11+ years respectively). The lessons follow a structured animal welfare curriculum.

In order to evaluate the effectiveness of the programme SPANA has developed a *Caring for Animals Questionnaire*. The questionnaire was administered to a total of 1163 children in three schools delivering the SPANA education programme and a control group of three schools with no formal animal welfare education programme. A baseline questionnaire consisting of 54 items drawn from an item bank of 108 items was administered in October 2011 prior to the start of the intervention. A follow-up questionnaire composed of the remaining 54 items was administered in May 2012. During each assessment period three versions of the questionnaire were used with overlapping items to facilitate equating of scores. Matched baseline and follow-up questionnaires were obtained for 920 children (79%).

Rasch modelling was used to construct an interval level measure from the questionnaire data. The constructed measure was then standardised with a mean of 100 and standard deviation of 15. An advantage of this approach is that it allows direct comparison of the differences between baseline and follow-up scores. For the control group a mean difference of 3.7 standardised points was found, indicating that the children's score develops naturally over time without any specific educational intervention. By contrast a mean difference of 11.4 was found for the intervention group. A comparison of the control and intervention groups revealed an effect size of 0.52. These results indicate that the SPANA education programme gives a considerable boost to the children's Caring for Animals score.

Oral 2. Animal Welfare. Part I

Title: Beyond the lens – using mixed methods to explore welfare discussion in veterinary consultations

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To understand further how general practice veterinarians support welfare, particularly regarding behavioural medicine, real life insight was sought using a mixed methods approach. Seventeen routine, dog booster vaccination consultations were videoed, involving six veterinarians in two UK small-animal practices. Thematic analysis identified topics discussed and who instigated the discussion. Post-consultation questionnaires provided participant information and perceptions.

Five main discussion topics were identified: navigation, medical, husbandry, behaviour and cost. Veterinarians led discussion of all topics except behaviour which varied between veterinarians and was instigated approximately equally by veterinarian and client. The questionnaire data showed that all clients considered their dog performed one or more behaviours of concern (58 problems in total). However, only 10 were discussed with the veterinarians, none more than superficially and no further assistance offered.

Delayed interventions for behaviour problems can lead to stress/injury to people and rehoming/euthanasia for dogs. Factors impeding the discussion of behaviour included veterinarians' experience and/or confidence and clients' perspectives on relevant sources of help (Roshier & McBride, 2012).

Human-animal interactions are multi-factorial and have reciprocity. Video-recording enables the collection of verbal and visual data in a format suitable for multiple reviews, thus widening the potential for analysis. Supporting such data with participant background and perspectives further aids understanding of the context. Thus, factors that could otherwise go undetected are illuminated. This study illustrates the need for a holistic approach to data collection in the field of human-animal interactions.

Roshier, A.L. & McBride, E.A. (2012) Veterinarians' perceptions of behaviour support in small-animal practice. *Veterinary Record*. doi:10.1136/vr.101124.

Oral 3. HAI and Health Outcomes

Title: Pet's presence, others' presence, and blood pressures during the daily lives of pet owners with pre-to mild hypertension

Authors: Erika Friedmann¹, Sue A. Thomas¹, Heesook Son², Deborah W. Chapa², & Sandra McCune³

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As the population ages the number of older adults living with hypertension (HTN) is rising dramatically. Uncontrolled HTN increases cardiovascular and renal mortality. Ambulatory (A) blood pressure (BP) is a better predictor of HTN-related morbidity and mortality than office BP. Lower BP is the most important therapeutic goal in HTN. Any reduction in BP has significant benefits for older adults. This study evaluates the impact of the presence of pet dogs, cats, and other people on ABP during the daily lives of community living older adult pet owners. In a repeated measures observational study of 32 pet owners (21 dog; 8 cat, 3 cat&dog; 29 women) aged 50-83 years with pre to mild HTN, owner's ABPs were recorded every 20 minutes for 1 day during waking hours at study entry, 1 month, and 3 months. Activity monitors and diaries provided information about activity, mood, and presence of pets and/or other people at each assessment. In generalized estimating equation (GEE) analyses average ABPs were significantly [systolic(S) BP: dog $p=0.008$, cat $p>0.009$; diastolic(D)BP: dog $p<0.002$, cat $p<0.001$] different (SBP/DBP mmHg: dog 3.1/1.5; cat - 3.0/2.2) when pets were present after controlling for participant's mood ($p>.05$), and activity intensity ($p=.026/p=.441$), location ($p=.013/p=.004$), and the presence of other people ($p=.947/p=.723$). In the home setting results were similar. The presence of a dog was associated with lower systolic and diastolic BP and of a cat was associated with lower diastolic BP and higher systolic BP during their owners' normal daily lives. Another person did not contribute to ABP beyond the other contextual variables. This finding suggests that pets, especially dogs, may be effective as an adjunctive intervention to slow the development or progression of HTN in older adults. Comparison of ABPs of pet owners with non-owners during their daily lives is warranted and underway.

Oral 3. HAI and Health Outcomes

Title: The effects of bi-weekly visits accompanied by either a dog, a robot seal (PARO) or a soft toy cat on sleep patterns and mental health of nursing home residents

Authors: Karen Thodberg¹, Lisbeth Uhrskov², Janne W. Christensen¹, David Edwards³, Pia H. Poulsen¹, Birthe Houbak¹, Vibeke J. Damgaard², Ingrid Keseler², Poul Videbech⁴

Affiliation: ¹Department of Animal Science, Aarhus University, Denmark; ²Department of Organic Psychiatric Disorders and Emergency Ward, Aarhus University Hospital, Denmark; ³Department of Molecular Biology and Genetics, Aarhus University, Denmark; ⁴Centre for Psychiatric Research, Aarhus University Hospital, Denmark

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The use of visiting dogs as a therapeutic tool in nursing homes is becoming more widespread. Previous studies suggest that contact to dogs can have positive effects on elderly people. We compared effects of visitors accompanied by either a dog, a robot seal (PARO) or a soft toy cat on sleep patterns and psychiatric well-being of elderly people in a randomized design.

A total of 121 residents (mean age: 82.4) of four Danish nursing homes were included. Twenty persons dropped out during the study. Each participant received 2 visits per week for 6 weeks. Before and after the series of visits, and in the third and sixth week, the sleep pattern was measured using actigraphy technology. The residents were interviewed before and after the visit period and scored on psychiatric scales (GDS:Geriatric-Depression-Scale, GBS:Gottfries-Bråne-Steen, MMSE:Mini-Mental-State-Examination). Furthermore, baseline data e.g. age; gender; BMI; and diagnosed psychiatric diseases were recorded.

Data were analysed in a mixed model with visit type and age as fixed effect; nursing home as random effect, and the inclusion of relevant covariates (e.g. MMSE and age). Results are given as $lsmeans \pm SE$. We found that sleep duration (min) increased in the third week, when the visitor was accompanied by a dog, compared to the robot seal and the soft toy cat (dog: 596 ± 24 ; seal: 524 ± 23 ; cat: 505 ± 20 , respectively; $F_{2,39}=4.73$; $P=0.0145$). No effects were found in the sixth week and after the visit period had ended. No effects on sleep fragmentation were found. We found no effect of visit type on BMI ($F_{2,86}=0.34$; $P>0.05$), GDS ($F_{2,82}=0.89$; $P>0.05$) and GBS ($F_{2,90}=0.36$; $P>0.05$).

In conclusion, the visit type did not affect the long-term mental state of the inhabitants. At present the causal relationship between sleep duration and the dog accompanied visits remains to be explained.

Oral 3. HAI and Health Outcomes

Title: Is childhood dog ownership associated with increased physical activity, improved fitness and lower weight status? A review of the evidence

Authors: Carri Westgarth¹, Sandra McCune², Alexander J. German¹, Rosalind M. Gaskell¹ & Susan Dawson¹

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Adults who own dogs are more physically active than those who do not own dogs, and owners that walk their dogs regularly may also have lower weight status. However, the benefit of dog walking for children is less clear. This target group is particularly important given increasing rates of childhood obesity, and declining physical activity (PA). The objective of this review is to summarise current evidence from observational studies, to determine whether owning a dog contributes to increased activity, better fitness and decreased likelihood of obesity in children (up to 12yrs). Two Australian studies demonstrated some positive association between dog ownership and PA in children (Salmon et al., 2010, Christian et al., 2012). One UK study also suggested that children's PA levels at age 9-10 yrs are marginally greater if they owned a dog (Owen et al., 2010), but whether the children were also less likely to be obese was not reported. Another Australian study suggested that dog ownership was associated with decreased likelihood of being overweight or obese in 5-6yr old, but not 10-12yr old children (Timperio et al., 2008). However, no association between dog ownership and the odds of obesity or overweight was found in a large UK birth cohort (Westgarth et al., 2012). Further, for 9-10yr old children in the recent Liverpool *SportsLinx* study, no clear association was seen between either dog ownership or dog walking and both weight status or physical fitness (Westgarth et al. unpublished). In summary, there appears to be some evidence that owning a dog can increase childhood PA, but this may not translate to increased fitness and reduced risk of obesity as often postulated. Publication bias in reporting dog ownership as a finding may also be an issue.

Owen, C. G., Nightingale, C. M., Rudnicka, A. R., Ekelund, U., Mcminn, A. M., Van Sluijs, E. M. F., Griffin, S. J., Cook, D. G. & Whincup, P. H. 2010. Family Dog Ownership and Levels of Physical Activity in Childhood: Findings From the Child Heart and Health Study in England. *American Journal of Public Health*, 100, 1669-1671.

Salmon, J., Timperio, A., Chu, B. & Veitch, J. 2010. Dog Ownership, Dog Walking, and Children's and Parents' Physical Activity. *Research Quarterly for Exercise and Sport*, 81, 264-271.

Timperio, A., Salmon, J., Chu, B. & Andrianopoulos, N. 2008. Is dog ownership or dog walking associated with weight status in children and their parents? *Health Promotion Journal of Australia*, 19, 60-63.

Christian, H., Trapp, G., Lauritsen, C., Wright, K. & Giles-Corti, B. 2012. Understanding the relationship between dog ownership and children's physical activity and sedentary behaviour. *Pediatric Obesity*, Online first.

Westgarth, C., Heron, J., Ness, A. R., Bundred, P., Gaskell, R. M., Coyne, K., German, A. J., McCune, S. & Dawson, S. 2012. Is Childhood Obesity Influenced by Dog Ownership? No Cross-Sectional or Longitudinal Evidence. *Obesity Facts*, 5, 833-844.

Oral 3. HAI and Health Outcomes**Title:** Associations of pet ownership with adiposity in middle age: The CARDIA Study**Authors:** Pamela J. Schreiner**Affiliation:** Division of Epidemiology & Community Health, University of Minnesota**Correspondence:** schre012@umn.edu

Pet ownership has been suggested as a means of weight control, particularly among dog owners. However, these associations may be confounded by lifestyle and demographics that are independent of pet ownership. We examined cross-sectional associations of pet ownership with body mass index (BMI) and waist girth in the Coronary Artery Risk Development in Young Adults (CARDIA) Study.

839 individuals completed a survey of pet ownership in the Minneapolis field center of CARDIA, a multicenter biracial cohort study, as part of the Year 25 follow-up visit. Information on demographics (age, sex, race, marital status) and psychosocial characteristics (e.g., discrimination, television-watching habits and depression) was collected along with BMI and waist girth. Linear and polytomous regression analyses were performed using SAS v. 9.2.

Mean age was 50.5 years, 65.9% were white and 45% were men. 21.6% self-reported current dog ownership, 20.5% current cat ownership, 12.4% currently owning both, 34.2% past owners of either, and 11.3% never owners. Mean BMI and waist girth were 29.6 kg/m² and 94.3 cm, respectively; adiposity did not differ by pet ownership status in either crude or multivariable-adjusted models. Using multivariable polytomous regression, only race and marital status were statistically significantly associated with pet ownership: odds ratios for whites vs. blacks were 10.8 for owning both cats and dogs; 8.2 for cats; 5.9 for dogs; and 2.3 for past owners. Compared to married/cohabiting participants, unmarried participants had 71% lower odds and widowed/divorced/separated participants had 54% lower odds of being cat and dog owners; unmarried participants had 63% lower odds and widowed/divorced/separated participants had 59% lower odds of being dog owners. Marital status was not associated with either cat or past ownership.

These results suggest that while pets are not associated with lower adiposity in middle age, they may be markers of family stability and cultural norms.

Oral 3. HAI and Health Outcomes

Title: Use of Animal-Assisted Therapy with Oncology Patients

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Introduction: Since Boris Levinson, PhD initially published *Pet Oriented Child Psychotherapy* (1969), a work about the psychological healing benefits children experienced through interaction with dogs, the body of knowledge regarding dogs' strong relationship with and healing capacity for our species has continued to expand through a number of researchers. Studies of Animal-Assisted Therapy (AAT) in hospital settings have demonstrated correlations between AAT and reduction in patients' stressors, such as lack of sleep, worries about outcomes, and being in a strange environment (Coakley and Mahoney, 2009). This evidence-based project piloted the use of dog visits as a complementary therapy for oncology patients experiencing pain and anxiety.

Literature Review: A review of the literature supported that AAT provides positive benefits for patients, such as invoking past memories of patients' own pets, decreasing patients' pain and anxiety levels, and improving social interactions (Halm, 2008). Limited research was available about use of AAT in managing oncology patients' pain and anxiety (Coakley and Mahoney, 2009; Johnson, Meadows, Haubner and Sevedge, 2008). From January 2011 through June 2012, three thousand five hundred and -eighty-nine patients presented to Harris Health System with cancer diagnoses. This project aimed to determine if oncology patients experiencing pain and anxiety could benefit from dog visits, evidenced by reduced pain scores, heart rate, and blood pressure post animal visitation.

Results & Implications: An analysis of findings in a sample of 50 patients on one unit over four months in 2012 revealed that 58% of patients had lower blood pressure, 50% had lower heart rate after visit, and 18% showed a decline in pain level one hour post animal visit. Other healthcare settings may consider implementation of AAT as a complementary therapy intervention to reduce pain and anxiety experienced by admitted oncology patients.

Coakley AB, Mahoney EK. (2009). Creating a therapeutic and healing environment with a pet therapy program. *Complement Ther Clin Pract.* 2009 Aug;15(3):141-6.

Halm MA. (2008). The healing power of the human-animal connection. *Am J Crit Care.* Jul;17(4):373-6.

Johnson RA, Meadows RL, Haubner JS, Sevedge K. (2008). Animal-assisted activity among patients with cancer: effects on mood, fatigue, self-perceived health, and sense of coherence. *Oncol Nurs Forum.* Mar;35(2):225-32.

Levinson BM., Mallon GP. *Pet-Oriented Child Psychotherapy* Edition 2. (1997). Thomas, Charles C. Publisher, Ltd. Springfield, IL.

Oral 4. Attitudes Towards Animals. Part I

Title: Think or Swim: Human Perceptions of Fish Sentience

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This paper presents the results of a survey designed to gather human perceptions of fish sentience. Fish sentience, particularly consciousness and the capacity to experience pain, is currently the focus of lively scientific debate, with a growing body of empirical research presenting supportive evidence (Braithwaite 2010), and a scholarly camp arguing that fishes lack the nervous system sophistication to think or feel anything (Rose et al. 2012).

We conducted an online survey to explore public attitudes to fishes. We were particularly interested in examining how beliefs regarding fishes' capacity to think and feel might correlate with demographic categories (e.g., gender and age) and lifestyle choices (e.g., going fishing or not; eating fish or not). The survey was distributed between December 2012 and January 2013 via several social media outlets. Anglers, divers, aquarists, vegetarians and vegans were among the interest groups targeted.

The 1,015 respondents were a decidedly non-random population sample: a majority were female (n=781, 78%), and a majority reported not eating fish (n=687, 68%). We calculated an overall sentience score (OSS) for each respondent based on seven questions relating to fish sentience—their capacity for: pain, pleasure, emotions, mind, preferences, personalities, and play. The highest possible OSS was 3 and the lowest was 1.

Several of our hypotheses held true: females had a significantly higher OSS than males ($F=2.85$ $M=2.80$, $p=0.02$); respondents who don't eat fish (n=687, OSS=2.90) viewed fishes as more sentient than did pescetarians (n=288, OSS=2.65, $p<0.001$), as did non-anglers (n=935, OSS=2.85) compared to anglers (n=80, OSS=2.55, $p<0.001$). Education level, and geographic location were poor predictors of OSS. Interestingly, respondents in the 35-49 age category (n=371, OSS=2.88) had a higher OSS than did younger (n=350, OSS=2.81; $p<0.02$) and older (n=291, OSS=2.79; $p<0.001$) respondents.

Braithwaite V. 2010. *Do Fish Feel Pain?* Oxford: Oxford University Press.

Rose JD, Arlinghaus R, Cooke SJ, Diggles BK, Sawynok W, Stevens ED, Wynne CDL. 2012. Can fish really feel pain? *Fish and Fisheries* DOI: 10.1111/faf.12010

Oral 4. Attitudes Towards Animals. Part I

Title: It's time to talk about housing policy: Pets, housing policy and housing in/stability in the public and private rental sectors in Sydney, Australia

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There is growing concern in Australia about the security and affordability of rental housing. High rates of renter mobility and shortfalls in affordable rental stock are evident across the public, private and non-government housing sectors. Current scholarly understandings of the functionality and inequity of these markets highlights social factors such as income, age and household composition. The place of pets and the role of pet-restrictive policies have not been examined despite significant pet ownership in Australia: 60% of households include one or more pets but only limited pet-friendly rental housing is available, a situation closely paralleling the US and UK.

Using a critical discourse and thematic qualitative analyses of state government 'model' tenancy agreements we present data about housing policy in the private and social housing sectors in New South Wales, Australia. The experiences of tenants subject to these agreements are highlighted through two projects: (1) research with 400 households who have rented privately in Sydney since 2000; and (2) analysis of the experiences of tenants involved in a major social housing estate redevelopment. We demonstrate that current private and public sector rental agreements construct pets as a housing 'problem': a threat to housing quality and community stability that requires management by housing providers. Further, the large-scale restructuring of Australian cities compounds the problems associated with pet restrictive policy because pets are invisible within large-scale estate redevelopment policy.

Pet restrictive policies, which fail to recognise or allow for the benefits that can accrue from pet ownership at the individual and community scale, cause housing instability and act as a barrier to housing mobility. This compounds the disadvantage of at risk groups such as low-income households, women escaping domestic violence, single person households, sole parents and older people; groups that HAI research establishes can experience significant benefits from pet ownership.

Oral 4. Attitudes Towards Animals. Part I**Title:** Dog Breed Stereotypes and Effects of Handler Appearance on the Perception of Pit Bulls**Author:** Lisa Gunter**Affiliation:** Foothill College, Los Altos, CA & Pawsitive Tails, San Francisco, CA**Correspondence:** dogspeaksf@gmail.com

Previous research has indicated that dog breed stereotypes exist and that the appearance of a human handler alongside a dog can affect perceptions of the dog's temperament (Walsh, McBride, Bishop & Muser Leyvraz, 2007). The present study examined 228 participants' perceptions (age range 15-61, mean = 22) of a pit bull-type dog compared with a Labrador Retriever and Border Collie; and whether the addition of a rough adult male, elderly woman or male child influenced the dog's perceived characteristics of approachability, aggressiveness, intelligence, friendliness, trainability or adoptability.

Analysis suggests that participants viewed the pit bull significantly less favorably in all characteristics when evaluated with the other breeds (Aggressiveness paired t-tests, Labrador Retriever: $t = 14.23$, $p < .0001$ and Border Collie: $t = 13.44$, $p < .0001$). When comparing impressions of the pit bull alone versus alongside a handler, perceived intelligence significantly increased across all handler conditions. Additionally, perceptions of friendliness (Male child paired t-test, $t = -4.06$, $p < .0001$) and adoptability (Elderly woman paired t-test, $t = -4.71$, $p < .0001$) increased while aggressiveness decreased (Male child paired t-test, $t = 5.10$, $p < .0001$) in both the elderly woman and male child conditions, and the perception of friendliness decreased with the presence of the rough adult male (Rough male paired t-test, $t = 2.03$, $p < .046$)

These results suggest possibilities for the use of handlers in photographs to positively affect the perceived qualities of pit bull-type dogs among the general population and particularly those who are considering adopting a dog.

Walsh, E. A., McBride, E. A., Bishop, F., & Muser Leyvraz, A. (2007, October). *Influence of breed, handler appearance and people's experience of dogs on their perception of the temperament of a breed of dog in Ireland*. Podium presentation delivered at the 16th annual meeting of the International Society for Anthrozoology, Tokyo, Japan.

Oral 4. Attitudes Towards Animals. Part I

Title: A framing analysis of newspaper reporting on dog-related urban issues in Calgary, Canada (2006 – 2012)

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Over 1/3 of households in many countries include a dog. Sharing public space with dogs has implications for social dynamics and population health. Municipal governments may influence human-dog interactions *via* policies that (i) regulate dog-owner responsibilities and (ii) address management of public space where dogs are allowed (Borthwick, 2009; Rock, 2012). This study analyzed newspaper framing of dog-related urban issues to understand representations of dogs' health-promoting roles in society.

A systematic search identified 81 newspaper articles published in Calgary between 2006 and 2012 related to dogs and shared public space. Frames were categorized using themes from public health research: dogs as facilitators of (i) physical activity, (ii) social solidarity, and (iii) social conflict.

Most articles (76%) included social conflict frames. Public parks shared by people and off-leash dogs were represented as settings for conflict. Dog-owners were framed as sources of conflict, while dog-behavior was mentioned less often. Conversely, 26% of articles represented the social solidarity potential of dogs, emphasizing their role in generating positive social interactions. Dogs were framed as facilitators of physical activity *via* dog-walking in 20% of articles.

Newspapers may disproportionately emphasize social conflict surrounding dogs, despite growing evidence of their health-promoting potential. Media representation of dogs' positive contributions could foster increased tolerance of dogs, particularly when supported by effective municipal policy related to public space management and dog-owner responsibilities.

Borthwick, F. (2009). GOVERNING PETS AND THEIR HUMANS: Dogs and Companion Animals in New South Wales, 1966-98. *Griffith Law Review*, 18(1), 185–201.

Rock, M. (2012). Pet bylaws and posthumanist health promotion: A case study of urban policy. *Critical Public Health*, Accepted for publication.

Oral 4. Attitudes Towards Animals. Part I**Title:** Association of veterinarians' empathy towards animals and cattle pain scoring**Authors:** Ingela Wikman^{1,2}, Marianna Norring^{1,2}, Ann-Helena Hokkanen^{1,2}, Laura Hänninen^{1,2}**Affiliations:** ¹Research Centre for Animal Welfare, Faculty of Veterinary Medicine, University of Helsinki, Finland; ²Department of Production Animal Medicine, Faculty of Veterinary Medicine, University of Helsinki, Finland**Correspondence:** ingela.wikman@helsinki.fi

The recognition of animal pain is prerequisite for analgesics administration. Treatment of animal pain and empathy is considered a desired skill among veterinarians. The aim of this research was to study perception of cattle pain and attitudes to treat cattle pain in Finnish veterinarians and students.

A web-based questionnaire was sent to Finnish veterinary students in preclinical and clinical phase, and veterinarians with production animal orientation. Questions were asked about demographics, opinions of disbudding and pain medication (on a five point Likert scale), pain scoring of cattle conditions and procedures (on an eleven point scale). Empathy in humans was measured with the validated questionnaire, the Interpersonal Reactivity Index (human IRI). Subscales of human IRI, empathic concern and perspective taking, were reworded to measure empathy towards animals (animal IRI). Linear mixed models were used to study the effect of education level, working experience of veterinarians, age, sex, pet affection, human IRI, and family size on average pain scores and animal empathy scores.

A response rate of 40 % was achieved and 93% of the veterinarians and students would treat disbudding pain with sedation, local anesthetics and non-steroidal anti-inflammatory drugs. Respondents evaluated disbudding without non-steroidal anti-inflammatory drugs as the most painful procedure. Animal IRI was greater than human IRI and was affected by respondents' empathy ($P < 0.005$), family size ($P < 0.005$), pet affection ($P < 0.005$). Higher average cattle pain scoring was associated positively with animal IRI and age of respondents ($P < 0.005$ for both) and higher average pain scores were associated negatively with working years as veterinarian ($P < 0.05$). The Finnish veterinary students and working veterinarians all scored higher on animal empathy than human empathy. Veterinarians recognized the need for pain treatment in animals well.

This study was funded by Ministry of Agriculture and Forestry in Finland.

Oral 5. HAI in Vulnerable Populations**Title:** The impact of dogs living with the homeless, and implications for welfare and rehabilitation**Authors:** Charlotte Nivelet, Céline Sissler-Bienvenu, Hanna Lentz, Kate Atema, Christophe Blanchard**Affiliation:** International Fund for Animal Welfare**Correspondence:** llentz@ifaw.org

In the past decade the number of homeless individuals has grown significantly in France and subsequently the number of dogs living with this population has increased. This has raised questions about the relationship between homeless individuals and their dogs, as well as their impact on the the community. The well-being of homeless individuals is often addressed through the provision of facilities and programs that support and encourage their reintegration into society, but these interventions have not typically included considerations for companion dogs.

A study of homeless individuals in Reims, France was conducted to understand the relationships that form between individuals and their dogs, the demographics of the dog population, and conditions in which they live. The study was conducted over a period of three days in conjunction with local organizations that provide homeless support services. The first day consisted of a series of observations in which information about the type of dogs and their general health and well-being was collected. In following days, a series of 15 interviews were conducted with homeless dog-owners, the majority of which were young males. A qualitative analysis then captured the nature of individuals' relationships with their dogs and areas in which these experiences may be consistent throughout the population.

Observational results indicate that these dogs tend not to demonstrate behaviors that could be perceived as "dangerous" or threatening to the community, and that they tend to be kept in good physical condition and are well-mannered. However, the strength of this relationship may also hinder individuals from taking advantage of human support services. Results indicate that resources aimed at improving human health and well-being may inadvertently exclude dog owners. We conclude that supporting the natural strength of the relationship between the homeless and their dogs will increase opportunities for successful reintegration into society.

Oral 5. HAI in Vulnerable Populations

Title: Effect of Equine Facilitated Psychotherapy on Posttraumatic Stress Symptoms in Youth with History of Maltreatment and Abuse

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Chronic and severe maltreatment of children in the form of abuse and neglect can provoke a host of neuropsychological and physiological anomalies that manifest as developmental, emotional, behavioral, cognitive and psychosocial disorders and posttraumatic stress disorder (PTSD). Considering the multidimensional landscape of trauma/PTSD alongside the non-verbal and symbolic language of children, a non-didactic, somatic treatment intervention that engaged the body's own inner communication system appeared best suited for young victims of severe maltreatment. This paper describes the results of utilizing equine facilitated psychotherapy (EFP), an experiential, cognitive-behavioral based intervention, for the treatment of PTSD symptoms of maltreated youth.

A purposive sample of eleven youth ages 10-18 who presented with PTSD symptomatology participated in eight, 1.5-2 hour weekly EFP outpatient sessions. Therapy included both mounted and ground-work activities. Pretest-mid-posttests were administered to determine the impact of the intervention (symptom reduction) and the strength of the human-animal bonding between equines and participants using the Children's Revised Impact of Events Scale -13 (CRIES-13) and the Human-Animal Bond Scale (HABS) respectively. Data analysis conducted via non-parametric sign tests, using weighted measures indicated identical significant results both for the CRIES-13 (9 positive pairs, 2 negative pairs, $p = 0.033$) and the HABS (9 positive pairs, 2 negative pairs, $p = 0.033$). Interestingly, there was no correlation between the CRIES-13 and HABS instruments (Spearman's $Rho = -0.228$, $p = .25$). This implies that the EFP treatment effects are multi modal, working in multiple directions at the same time.

Significant results in both measures suggest that the EFP model presented may be a viable psychotherapy for traumatized youth suffering PTSD symptomatology. Implications for the field include EFP's suitability for trauma sufferers at different phases of both lifespan and trauma recovery. Limited sample size and the absence of a control group indicate further investigation is warranted.

Oral 5. HAI in Vulnerable Populations

Title: Children exposed to intimate partner violence and concomitant animal cruelty

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Recent research suggests concomitant exposure to animal cruelty in families who have experienced intimate partner violence (IPV) may be an additional risk factor for mental health and behavioral problems in youth (e.g., Simmons & Lehmann, 2007). The current study had two aims: 1) to compare the severity and frequency of IPV exposure among youth who report or do not report exposure to animal cruelty in the home and 2) to compare the unique mental health and behavioral correlates of children's exposure to IPV in the presence or absence of related animal cruelty.

Participants included 52 mothers and their children ages 7- 12 who were receiving residential or non-residential services from a domestic violence agency and who reported owning a pet currently or within the past year. Independent samples t-tests determined children who reported they had observed a pet being hurt or killed in their home had significantly higher mean rates of directly witnessing multiple forms of IPV than children who had not witnessed animal cruelty ($t(43) = -2.30, p = .027$). Independent samples t-tests also determined that children of mothers who reported their partner had hurt or killed one of their pets were characterized by significantly higher mean rates of anxiety and depression symptoms ($t(50) = -2.02, p = .049$), externalizing behavior problems ($t(50) = -2.01, p = .05$), and PTSD symptoms ($t(50) = -2.20, p = .032$) as measured by t-scores on the Child Behavior Checklist (Achenbach, 2001).

Our analyses suggest children who witness harm to pets in the home are more likely to be directly exposed to multiple facets of family violence, and exposure to concomitant animal abuse may exacerbate the already potentially deleterious effects of childhood exposure to IPV on youth's mental health and social functioning. The results illustrate how addressing human-animal relationships can inform clinical assessment and intervention when working with families experiencing IPV.

Achenbach, T., & Rescorla, L. (2001). Manual for the ASEBA school-age forms & profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.

Simmons, C. A., & Lehmann, P. (2007). Exploring the link between pet abuse and controlling behaviors in violent relationships. *Journal of Interpersonal Violence, 22*, 1211–1222.

Oral 5. HAI in Vulnerable Populations

Title: In a clasped paw and hand: a case study of homeless people and their pets in Portland, Oregon

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Research into the effect of companion animals on homeless people's well being is limited. Previous studies have focused on anecdotal information from homeless companion animal caretakers. This paper looks at the effect of animal companionship on homeless and low-income individuals in a period when the companion animals received free veterinary services.

Portland Animal Welfare Team is a non-profit organization located in Portland, Oregon that dispenses free veterinary medical services to the homeless and low-income of the surrounding area. Participant-observation and statistical surveying occurred over the course of a three-month period between September 2012 and December 2012 during Paw Team's monthly clinics. All clients received at Paw Team during this period were asked if they had been previously seen at Paw Team and if so whether they felt their pets were healthier. Clients were also asked about whether or not they felt that their pets physical health was affecting their own stress level and stress management as well as housing situation and employment.

Analysis of the survey data shows a correlation between good physical companion animal health and decreased stress levels in their caretakers. Clients that were received consecutively by Paw Team during the survey period and who felt that their companion animal was in good health showed a decreased stress level and increased satisfaction with their housing and employment. Those clients that indicated that their companion animal had serious health issues indicated increased stress levels and dissatisfaction with their housing situation and employment. The findings from this study indicate a potential correlation between physical companion animal health and the emotional health of their human caretakers. This would suggest an increased need for low-cost and free veterinary services for the homeless to address not only the physical health of the companion animal but also the emotional health of the caretaker.

Oral 6. Animal Welfare. Part II**Title:** Auditory Stimulation and Kenneled Dogs**Authors:** Lori R. Kogan, Alicia C. Kaempfe, Regina Schoenfeld-Tacher, & Allen A. Simon**Affiliation:** Clinical Sciences Department, Colorado State University, Fort Collins, CO, USA**Correspondence:** Lori.kogan@colostate.edu

Dogs are kenneled in professional facilities for a variety of reasons. The kennel environment, even for short periods, however, is a potential psychogenic stressor for most dogs. Continual stress and the resultant anxiety are undesirable for both ethical and physiological reasons. One growing area of research pertaining to the welfare of kenneled dogs is environmental enrichment, including auditory stimulation.

The current study investigated the impact of music (classical, heavy metal, and specifically designed/altered classical) on activity level, vocalization, and body shaking of 117 kenneled dogs. The sample consisted of 34 dachshund rescue dogs and 83 boarded dogs of various breeds. The mean age of the dachshunds was 5.27 years and the mean age of the boarded dogs was 5.92 years. Results suggest that classical music leads to dogs in kennels spending more time sleeping ($F_{8,354} = 12.24, p < 0.000$) and less time vocalizing ($F_{8,354} = 3.61, p < 0.000$) than when exposed to other types of music or no music. Heavy metal music, compared with other music types, appears to increase body shaking ($F_{8,354} = 96.97, p < 0.000$), a behavior suggestive of nervousness.

In conclusion, it is suggested that playing classical music in a shelter environment may help mitigate some of the stress inherent for many kenneled dogs. Future research includes the opportunity to study the effects of different music genres both in kennel environments as well as other potentially stressful situations (i.e., veterinary clinics/hospitals). Research in this area is important in helping to advance our knowledge pertaining to the use of sensory stimulation to improve animal well-being and welfare.

Oral 6. Animal Welfare. Part II

Title: The effect of dog-human interaction on cortisol and behavior in registered animal-assisted activity dogs

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There is a growing body of evidence to support the benefits of animal-assisted activities (AAA) for humans. However, the effect of the interactions on the animal participants has been minimally investigated and the welfare of these animals has been questioned. Salivary cortisol and behavioral observation have been utilized to formulate an objective assessment of animal welfare. Our goal was to test the null hypothesis that salivary cortisol concentration and behavior in AAA dogs would not be different in an AAA environment compared to home or neutral environments.

Fifteen healthy adult dogs registered with an AAA organization were recruited. Saliva samples were collected from each dog every 30 minutes, starting 30 minutes prior to and 30 minutes after a standardized 60-minute session across 3 settings: an AAA session (AS) for college students in the communal area of a residence hall; a neutral session (NS) located in a novel room without interaction with a stranger; and a home session (HS). Each session was videotaped continuously and behaviors were coded at three separate 5-minute intervals while the dog was petted by a stranger in the AS or handler in the NS and HS.

Salivary cortisol levels were not different in the AS compared to HS, but were significantly higher in the NS compared to AS and HS. Dogs exhibited significantly more standing and ambulating behavior in the AS compared to HS. Salivary cortisol level was negatively correlated with panting and standing at specific time points in the NS and AS, respectively.

During a 60-minute AAA session, salivary cortisol concentration and behavior were not different compared to when dogs spent the same amount of time in the home setting, suggesting that they were not stressed when being used as AAA animals. The physical environment may be an important consideration when evaluating the effect of AAA on dogs.

Oral 6. Animal Welfare. Part II

Title: Providing pet caregivers options for informed decision-making in the health consequences of spaying and neutering their dogs

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Pet owners in the U.S. and European countries differ in their perspectives on managing the welfare of their companion animals with regard to spay/neuter, particularly in dogs. The majority of dogs in the U.S. are subjected to very early depletion of gonadal hormones through gonadectomy; in European countries, these procedures are generally avoided. Given the importance of gonadal hormones in body growth and development, this cultural contrast invites an analysis of the multiple organ systems that may be adversely affected by gonadectomy. Currently, dog caregivers have little evidence-based information to make important decisions regarding gonadectomy that could affect health.

We have begun a long-term project to examine the effects of gonadectomy on a variety of joint disorders and cancers in dogs, taking into account the variables of breed membership, gender and age at the time of gonadectomy. The project, using our extensive hospital case-record database over a 13-year period, has so far included Golden Retrievers and Labrador Retrievers, with completed statistical analyses on the Golden Retriever. For joint diseases, the risks of hip dysplasia, cruciate ligament tear or rupture and elbow dysplasia are increased 2- to 4-fold by gonadectomy performed early; these risks include some breed-specific differences.

For cancers, a major enhancement of the risk of mast cell tumor in late-spayed females by 3- to 4-fold was seen in both breeds. Lymphoma and hemangiosarcoma, which were significantly increased by gonadectomy in Golden Retrievers, were not affected in Labrador Retrievers. The occurrence of mammary cancer in intact females was minor in comparison to the other cancers mentioned above in spayed females.

The results of this project so far reveal that, while there are breed-specific differences in the disease-related effects of gonadectomy, in these two popular companion and service dogs, the quality of life and long-term health may be eroded by not considering the timing of gonadectomy.

Oral 6. Animal Welfare. Part II

Title: Companion animal owners' perceptions of their animal's behavioural response to the loss of an animal companion

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The loss of a companion animal is well accepted to result in a significant experience of grief for the owner (e.g., Zilcha-Mano 2011; Hunt et al 2008) although, at present, little is known about how other animals in the household are affected by such a loss (Schultz 1996). This paper discusses how companion animals' respond to the loss of a conspecific through owner reported behavioural changes.

A questionnaire was distributed via informative publications produced by the Royal Society for the Prevention of Cruelty to Animals (RSPCA) across Australia and New Zealand and through a selection of veterinary clinics within New Zealand. The questionnaire covered owner demographics, demographics of up to four deceased animals and up to four animals remaining in the household after an animal companion passed away, behaviour that was exhibited or that changed in remaining animals after a companion passed away and the duration of these behaviours.

From a total of 306 returned questionnaires, 414 companion dogs and cats had experienced the loss of an animal companion. Seventy five percent (n=311) of these animals were reported to display a behavioural change by their owner. Dogs were reported to display a reduction in food consumption (p=0.008), an increase in sleeping (p=0.008), a decrease in vocalisations (p=0.006) and were described as appearing withdrawn (p<0.0001). These behavioural changes were more often described if the deceased conspecific was also a dog (p<0.05). Cats, on the other hand, were reported to display an increase in vocalisations (p=0.009), an increase in aggression towards other animals in the household (p=0.05) and were described as appearing depressed (p=0.002). The behavioural changes described in cats were also more often reported if the deceased conspecific was a cat (p<0.05).

These findings demonstrate that owners describe common behavioural changes in their companion animals, subsequent to the loss of a conspecific.

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Zilcha-Mano S., Mikulincer, M., Shaver, P.R. 2011. An Attachment perspective on human-pet relationships: Conceptualization and assessment of pet attachment orientations. *Journal of Research in Personality* 45: 345–357.

Oral 7. HAI and Social, Emotional, and Cognitive Outcomes

Title: Creating social connections in higher education: Insights from the Campus Canines Program at the University of Pittsburgh

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The purpose of this study was to capture the relationships made during the Campus Canines Program (CCP), an animal-assisted activity program, at the University of Pittsburgh. Meaningful social relationships are an important piece to creating and sustaining student involvement, and therefore retention, in a college environment.

This study used a case study approach that included two mixed-method online instruments. Both surveys are comprised of close-ended quantitative questions and open-ended qualitative questions. During the 2012 Spring Academic Term, a census of the entire CCP population was conducted. This census determined the entire student population to be 270 and volunteer population to be 20. All 270 CCP students were selected for this study and 69 responded to the survey with a 25.5% response rate. All 20 CCP volunteers were selected to participate in this study and 11 responded to the survey with a 55% response rate.

Overall, the results suggest that the Campus Canines Program does create a program for student involvement and may support established relationships. The key findings include (1) the dogs are the attraction to the program and may ease communication, (2) human interactions are happening at the Campus Canines Program, and (3) the Campus Canine Program may provide stress relief for the student participants. In the first key finding, the dogs act as a social stimulant. This supports the literature that states animals provide a safe environment to promote communication between people. The second key finding shows that the Campus Canines Program specifically supports established relationships between friends and family. These results support the literature which indicates that the human-animal relationship may aid in the development of social networks. Lastly, the third key finding shows that stress relief is a benefit of this program. This does support the literature that states interaction with animals produces physiological benefits.

Oral 7. HAI and Social, Emotional, and Cognitive Outcomes

Title: Interactions with dogs improve affective states of adolescents in substance abuse treatment

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Adolescents with substance use disorders are at elevated risk of developing long-term substance abuse problems. Therefore, engagement in treatment is critical in reducing the impacts of substance abuse and dependence. Interaction with companion animals can provide important psychological and physiological human health benefits, and could enhance substance abuse treatment and recovery. We investigated the effectiveness of a human-animal interaction activity program, specifically involving dogs from an animal shelter, in improving affective states of adolescent males in inpatient substance abuse treatment. We hypothesized that adolescents would express improvements in affect when participating in human-animal interaction activities (treatment condition) as compared to “treatment-as-is” activities (control condition). Using a mixed within- and between-subjects, repeated measures crossover design, we assessed effects of condition and test time (pre- vs. post-activity) on affective states as determined by the *Positive and Negative Affect Scale-Expanded Form* subscales. Self-report scores on the first (N=15) and second (N=12) exposures to the treatment and control conditions were evaluated using a mixed linear model. Condition affected scores on the second exposure (*subscales: Positive Affect*, $F_{(1, 11)}=5.56$, $p<0.05$; *Attentiveness*, $F_{(1, 11)}=5.71$, $p<0.05$; *Serenity*, $F_{(1, 11)}=9.81$, $p<0.01$), with scores being significantly higher in the treatment than control condition. Significant interactions were detected between condition and test time in regards to: 1) *Sadness* scores on the first exposure ($F_{(1, 28)}=5.61$, $p<0.05$), with lower post-treatment compared to pre-treatment scores, and 2) *Joviality* scores on the second exposure ($F_{(1, 22)}=10.83$, $p<0.01$), with post-treatment scores being higher than pre-treatment, and pre- and post-control, scores. These results indicate that dog interaction activities induced an immediate improvement in affect. Such activities may provide a useful method for restoring the response to natural (non-substance related) affective stimuli in adolescents with substance use disorders. The beneficial effect of human-animal interactions on affect could provide a cost-effective means for enhancing treatment interventions.

Oral 7. HAI and Social, Emotional, and Cognitive Outcomes

Title: Exploring the role of pets as a source of social interaction and emotional support for children

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The relationship between children and companion animals has many elements in common with human-to-human social interactions, including shared activities and emotional support (Wynne et al, 2011).

A study was designed to explore the role of pets as a part of the child's social network. One hundred and forty-three 8-10 year-old children participated (71 boys, 71 girls). Ninety-two came from families owning at least one pet.

In an online questionnaire each participant was presented with two 3rd person scenarios (a child arriving at home and wanting to play, and a child arriving at home after having problems at school) and three 1st person scenarios (having trouble sleeping, having an argument with a best friend and going on holiday). They were asked to rank the resources that would be sought out in each scenario, from a list of choices. Analysis was using one-way ANOVA (Kruskal-Wallis, with Dunn's post-test comparison).

In the 3rd person scenarios a dog was rated as the preferred play partner over parents, grandparents, games/TV or a cousin, but not over a friend or sibling. A dog ranked equal with parents, friends and siblings for having problems at school. When having trouble sleeping the three equally preferred options were to turn on a light, seek parents or the pet. After an argument with a best friend, the three equally preferred options were to seek out the pet, the parents or siblings. No significant difference was found between choice of companion for a holiday.

These results are in accordance with the view that pets fulfil multiple roles as a source of support and as a companion (Lakestani et al, 2011). Further, the bond between children and pets seems to be more similar to a close family relationship.

Wynne CDL, Dorey NR, Udell MAR. 2011. *Dogs Interactions with Children*. In: How Animals Affect Us. Ed McCardle, McCune S, Griffin JA, Maholmes V. American Psychological Association, Washington, USA.
Lakestani N, Donaldson ML, Verga M, Waran N. 2011. *Attitudes of Children and Adults to Dogs in Italy, Spain and United Kingdom*. Journal of Veterinary Behavior 6, 121-129.

Oral 7. HAI and Social, Emotional, and Cognitive Outcomes**Title:** Effects of a Group-Based Dog-Assisted Reading Program for Children Age 8-9**Authors:** Meike Heyer¹ & Andrea Beetz^{2,3}**Affiliation:** ¹Dept. of Special Education, University of Flensburg, Germany; ²Dept. of Behavioral Biology, University of Vienna, Vienna, Austria; ³Dept. of Special Education, University of Rostock, Rostock, Germany**Correspondence :** andrea.m.beetz@gmail.com

Dog-assisted reading programs are a popular intervention to promote reading skills in children in one-to-one or group settings. It is assumed that the presence of the dog helps to decrease stress levels and promotes relaxation and motivation.

In our study the effects of a 14-week dog-assisted reading program were evaluated, in two groups of eight children each with low reading skills (age 8-9; intervention group IG: 4 male, 4 female) and in control-groups (CG) of 4 male and 4 female children who received the training with a stuffed toy dog.

Reading skills, motivation, self-concept and emotions in the context of learning and reading were assessed before (t1), directly after (t2) and seven weeks after the intervention (t3) via standardized measures.

From t1 to t3, the IG had significantly more improved in reading skills in comparison to the CG (repeated measures ANOVA $F=11.83$, $p=.004$). Over the summer break (t2-t3) the reading skills of the IG even further improved in contrast to the CG ($F=4.75$, $p=.047$). While the IG reported significantly lower social integration and more negative self-concept at t1 (Mann-Whitney U-Tests: $p<.05$; 7 subscales), no differences between groups were found at t2. The IG improved also more in attention and motivation during reading ($F=17.52$, $p=.001$; $F=5.95$, $p=.029$). Improvement in reading was correlated with improvement in social integration ($r_s=.538$, $p=.032$) and positive self-concept ($r_s=.617$).

These findings suggest that a dog can significantly increase the effect of a reading program for children, promoting skills and self-concept related to reading.

Oral 7. HAI and Social, Emotional, and Cognitive Outcomes

Title: Measuring the Efficacy of an Animal-Assisted Therapy Protocol within a Family Preservation and Reunification Program – The Savio Study

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Although substantial observational and anecdotal evidence supports the ability of a variety of animal-assisted therapies (AAT) to affect clinical interventions, rigorous studies with randomized controls, large cohort sizes, consistent AAT protocols, validated measurement instruments and tracking of long-term clinical outcomes are lacking. The Savio Study is measuring the impact of a dog-assisted therapy protocol within a family preservation and reunification program. A total of 200 families that meet eligibility requirements and consent to participate are being randomly assigned to control and study cohorts. The control cohort receives the standard-of-care program and the study cohort receives the standard-of-care program plus the AAT protocol. The AAT protocol, which takes place during the therapeutic supervised visitation sessions used to develop positive family interactions and parenting skills, consists of four animal interactions targeting four of the most common family problems in this population – supervision of children, expectations of the children, bonding with the children and disciplinary practices. Each of the four interactions has three versions based on a commonly employed cognitive learning model, resulting in a total of twelve sessions. The protocol is designed to be relatively consistent to reduce variability, as well as to facilitate implementation by other child welfare and AAT organizations. A variety of proximal response, distal response and clinical outcome measurements are being used to quantitatively compare the control and study cohort families. One of these is a validated instrument, the North Carolina Family Assessment Scale for Reunification (NCFAS-R), routinely used by clinicians to assess changes in family functioning associated with therapy. Data gathered at the beginning and end of the twelve control and study cohort therapy sessions are being analyzed for statistically significant differences between the two cohorts. Results of a mid-study data analysis and the challenges of conducting large clinical studies in a family services environment will be presented.

Oral 8. HAI and Childhood Disorders

Title: The effect of Dolphin Assisted Therapy on the cognitive and social development of children with Down syndrome

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We investigated the effect of Dolphin Assisted Therapy (DAT) on the development of speech/language and social behaviour in children with DS. Our working hypothesis was that DAT improves the social and cognitive functions with respect to verbalization and thereby promotes task performance in children with DS.

A semi cross-over design was used to study forty-five children with DS of which 18 received a weekly one-hour session of DAT for 6 weeks (group A), 12 children (group B) started with swimming pool sessions (control period of 6 weeks) and thereafter received DAT like in group A and 17 children (group C) were put on the waiting list (control period of 6 weeks) before receiving DAT as in the other groups. The parameters “verbalization”, “impulsiveness”, “proper understanding of rules”, “recognition of persons” and “contact” were measured using Matson Evaluation of Social Skills for Individuals with Severe Retardation (MESSIER) before and after DAT as well as before and after each of the control periods. A repeated measures ANOVA revealed no significant changes for any of the variables during the control periods (swimming pool respectively waiting list). Following the period of DAT there was a significant improvement of the parameters “verbalization” ($F=3,755$; $p=0.036$) and “recognition” ($F=4,426$; $p=0,026$). The results of this study provide support for our proposed hypothesis.

To monitor the wellbeing of the dolphins during the study, their behaviour was investigated prior to the study at rest, during training sessions and during the pilot therapy session. The respiratory frequency of the animals was recorded, as a parameter of excitement, increased activity or stress. During training and therapy sessions as well as afterwards during the resting period, the animals showed the same behaviour as on the days without sessions (Boneh 2003). It should be emphasised that the children did not swim with the Dolphins during the sessions.

Oral 8. HAI and Childhood Disorders

Title: Understanding dog walking from the perspective of a child with autism

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Physical activity presents a challenge for individuals with autism because of social and motor impairments. Dog walking may appear a simple activity (Beck, 2011), however, its complexity becomes visible when a child with autism attempts to carry it out. The paper considers dog walking from the perspective of a child with autism.

A micro video-analysis of dog walking at an individual-level identifies sequences of actions that comprise this activity and the skills and knowledge prerequisite for engagement in it. The analyzed data are part of a larger study on the use of therapy dogs for facilitating social engagement of children with autism (Solomon, 2010, 2012). Five children with autism (4 boys/1 girl; ages 3-13) were video-recorded with five dogs (two Australian Shepherds, a Labrador Retriever, a Golden Retriever and a Yorkshire Terrier) and a trainer. Three hours of dog walking were analyzed to establish its sequential organization and knowledge prerequisite for participation.

Analysis suggests that the sequential components of the activity from the child's perspective are: holding the leash, coordinating pace and speed with the dog, and coordinating child-dog joint orientation to surrounding environment.

Implications for the use of dog walking to promote physical activity, social engagement and community participation of children with autism are discussed.

Beck, A. M. (2011). Dog walking as a new area of inquiry: an overview. In R.A. Johnson, A.M. Beck, & S. McCune (eds.) *The Health Benefits of Dog Walking for Pets and People*. pp. 1-6. Lafayette, IN: Purdue University Press.

Solomon, O. (2010). What a Dog Can Do: Children with Autism and Therapy Dogs in Social Interaction. *Ethos, Special Issue: Autism, Rethinking the Possibilities*, 38(1), 143-166.

Solomon, O. (2012). Doing, being, and becoming: the sociality of children with autism in activities with therapy dogs and other people. *Cambridge Anthropology* 30 (1), 109-126.

Oral 8. HAI and Childhood Disorders

Title: The social and emotional benefits of therapeutic riding on children with autism spectrum disorder

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This qualitatively enhanced quantitative exploratory study examined how therapeutic riding affects the emotional and social behaviors of children with autism spectrum disorder. Quantitative and qualitative data were gathered via questionnaires and interviews from parents of the treatment ($n = 8$) and comparison groups ($n = 5$). Parents of participants took part in a pre-intervention interview as well as completed pre- and post-intervention questionnaires. Participants were ages 5 to 12 years old; 3 girls and 10 boys. Treatment group received 15 weeks of therapeutic riding, consisting of one 30-minute session per week. The comparison group received a multidisciplinary educational approach.

The research question that guided this research was: Does therapeutic riding have a beneficial effect on the social and emotional lives of children with a diagnosis of autism spectrum disorder, as assessed by the Social Communication Questionnaire (SCQ), the Child Behavior Checklist (CBCL), the Social Responsiveness Scale (SRS), and the Sensory Profile (SP)? A paired t -test exposed significant pre and posttest differences within the treatment and comparison groups.

Quantitative results for the treatment group revealed an increase in social and emotional functioning in the forms of increased social communication ($p = .034, p < .05$); social interactions and reciprocal social skills ($p = .012, p < .05$), communication skills ($p = .003, p < .05$), and multisensory integration in social situations ($p = .028, p > .05$); and a decrease in autistic mannerisms, restricted and repetitive behaviors ($p = .040, p > .05$). Quantitative results for the comparison group also showed an increase in social and emotional coping strategies ($p = .006, p > .05$) and a decrease in sensory-seeking behaviors ($p = .019, p > .05$).

These findings indicate that therapeutic riding may be an efficacious treatment option for increasing social and emotional functioning for children with autism spectrum disorder.

Oral 8. HAI and Childhood Disorders

Title: The Setting as an Interactive Presence, reflections on Child Psychotherapy in a Petting Zoo

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Psychoanalytic literature is replete with references to the therapeutic setting, either regarding it as a frame or a vehicle for the unfolding therapeutic process, or as a system of rules and guidelines that are part of the contract between therapist and patient. It is interested with the characteristics and components of the setting only when the patient himself deals with them.

The environment of the therapeutic petting zoo possesses a number of unique characteristics, some of which enhance its ability to become an entity capable of interacting with the patient within it. Specifically, here the therapeutic setting is not merely passive, but can be active and autonomic; exhibit agency and intent, and can react to the patient and sometimes initiate interaction with him. The uniqueness of this setting is presented by the way it enables an inner scene to be dramatized concretely and played out by the participants that interact in this external reality. It can be claimed that at times, parts of the setting (rather than just the therapist) are experienced by the patient as a living interactive presence that invites him to partake in an interactive voyage to a third reality. This reality is what we commonly refer to as transitional space.

We believe that the conception of the setting as presented above can be axially applied to any given therapeutic setting. At one end is the completely passive setting, constant and present, unresponsive, while on the opposite end is an environment consisting of active autonomous components, with agency and the ability to respond and to initiate interactions. The closer the setting characteristics are to the latter, the more they take part in interactions with the patient and the greater the potential for processes of an intersubjective nature between setting and patient.

Oral 8. HAI and Childhood Disorders

Title: Social behavior of children with autism in the presence of animals compared to toys

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Background: Animals can stimulate social interaction among humans. The purpose of this study was to examine the interactions of children with autism spectrum disorder (ASD) in the presence of animals (two guinea pigs) compared to toys.

Methods: Ninety-nine children aged 5.2 to 12.7 years ($M = 9.2$; $SD = 2.3$) participated in groups of three (one child with ASD and two peers). For each child with ASD (24 male; 9 female), two typically-developing peers (28 male; 38 female) were randomly selected from the same classroom (15 classrooms total). Each group of children was video-recorded during three 10-minute sessions with toys and three 10-minute sessions with animals. Animal participants included 30 guinea pigs (two per classroom). Two blinded observers coded child behavior. Data were analyzed using hierarchical generalized linear modeling.

Results: Participants with ASD demonstrated more social approach behaviors (including talking, looking at faces, and making tactile contact with people), $\beta = 0.31$, $SE = 0.05$, $t(586) = 6.82$, $p < .001$, and received more social approaches from their peers, $\beta = 0.26$, $SE = 0.07$, $t(586) = 3.83$, $p < .001$, in the presence of animals compared to toys. They also displayed more prosocial behaviors, $\beta = 0.66$, $SE = 0.12$, $t(586) = 5.47$, $p < .001$, and positive affect, including smiling, $\beta = 0.88$, $SE = 0.12$, $t(586) = 7.49$, $p < .001$, and laughing, $\beta = 0.57$, $SE = 0.18$, $t(586) = 3.08$, $p < .01$, as well as fewer self-focused behaviors, $\beta = -2.75$, $SE = 0.11$, $t(586) = -24.77$, $p < .001$, and negative affect, $\beta = -0.50$, $SE = 0.17$, $t(586) = -2.97$, $p < .01$, in the presence of animals compared to toys.

Conclusion: The presence of animals appears to increase positive social behaviors among children with ASD.

O9. Animal Populations**Title:** A Maine Case Study- free-roaming cat interventions and collaboration**Authors:** Katie D. Lisnik**Affiliation:** The Humane Society of the United States, Washington, DC, USA**Correspondence:** klisnik@humanesociety.org

The state of Maine has 1.3 million residents and is over 90% forested. With harsh winters and large populations of coyote and fishers, free-roaming cats face a more precarious existence than their counterparts in the warmer areas of the country. This study, funded by The Sewall Foundation, researched free-roaming cat interventions by a variety of parties, and surveyed residents to establish community cat demographics over the past 3 years. Data from the project, still ongoing, shows that free-roaming cats are an issue even in colder regions, although not on the same population scale as has been found in other parts of the country.

This study first assessed interventions conducted by 474 municipal animal control entities, 191 veterinarians, and 85 animal shelters across Maine. Awareness of free-roaming cat populations was ascertained, along with the scale of spay/neuter and trap/neuter/return programs. Close to half of the reporting sheltering organizations reported receiving over 30 requests for free-roaming cat assistance in an average year. The study also focused on collaboration in different regions of Maine, highlighting the need for communication and acceptance of stakeholders' missions and goals pertaining to cats. The last part of the study focused on cat ownership demographics and public perceptions of free-roaming cats, as well as message development on spay/neuter of free-roaming cats and a pilot educational campaign. The survey found 53% of ME households owning an average of 1.61 cats, which works out to be 467,000 cats. This is in line with AVMA (1) estimates of 498,000 owned cats. Eleven percent of Maine households (548,000) feed 0.4 cats daily on average, which provides an estimate of 24,000 free-roaming cats in Maine.

AVMA, 2012. U.S. Pet Ownership & Demographics Sourcebook. American Veterinary Medical Association, Schaumburg, IL.

O9. Animal Populations**Title:** Estimating and evaluating cat population and cat sheltering trends in the United States**Author:** Andrew N. Rowan**Affiliation:** The Humane Society of the United States, Washington, DC, USA**Correspondence:** arowan@humanesociety.org

The domestic cat population in the United States has grown substantially in the past forty years from 30 million to 80 million. However, the actual rate of cat ownership in terms of % of households with cats has only risen from 30% in 1986 to 33% in 2010. The latest AVMA survey reports that the cat ownership rate has dropped to 30.4% of households and the total number of cats to 74 million. However, the detailed information from the AVMA survey indicates a large variation in cat ownership from one state to another. If one develops an index of cat ownership (% of HHs times average number of cats per owning household) it varies from 0.26 in Louisiana to 0.89 in Vermont (mean of 0.63 +/- 0.13). There have been no studies that have investigated this range of cat ownership from one state to another. These differences will be described and possible reasons for the differences discussed. In addition, trends in cat shelter numbers will be detailed.

O9. Animal Populations

Title: The role of human factors in the welfare and management of dog populations in developing communities

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Population density is often assumed to be a key factor regulating demographic processes, including births and deaths, in domestic dog populations (WHO & WSPA 1990; Hampson *et al.* 2007; Totton *et al.* 2010). This implies that free-roaming dogs are predominately unowned or owned but neglected by their owners and that their population is regulated solely on the basis of competition for resources, particularly food, at the population level. However, there is no robust empirical evidence to support this assumption. Furthermore, no study has comprehensively measured the contribution of births, deaths and movement of dogs to variations in population size, or the factors that regulate these processes, including human factors.

We present the results of a three year study undertaken in four dog populations, two in Bali, Indonesia, and two in Johannesburg, South Africa, with the aim of quantifying domestic dog population demographic processes, and the various factors influencing these processes. During the study period over 3,000 dogs and 650 litters were tracked and relevant data collected at the individual level by direct observation and owner reporting every 12 weeks.

Our findings suggest that population density is unlikely to be a key factor regulating demographic processes. Rather, the majority of free-roaming dogs in these four representative communities are owned and fed regularly by their owner. We also demonstrate that human factors may have other significant effects on dog population dynamics. For example, at least 30% of the dogs recruited into the research populations were deliberately obtained from outside the population by local residents. This presents a challenge with regards to designing effective population management, and highlights the importance of understanding and involving local communities when designing population management or rabies control strategies.

Hampson, K., Dushoff, J., Bingham, J., Bruckner, G., Ali, Y.H. & Dobson, A. (2007) Synchronous cycles of domestic dog rabies in sub-Saharan Africa and the impact of control efforts. *Proceedings of the National Academy of Sciences*, **104(18)**, 7717-7722.

Totton, S.C., Wandeler, A.I., Zinsstag, J., Bauch, C.T., Ribblw, C.S., Rosatte, R.C. & McEwen, S.A. (2010) Stray dog population demographics in Jodhpur, India following a population control / rabies vaccination program. *Preventive Veterinary Medicine*, **97**, 51-57.

WHO & WSPA (1990) Guidelines for Dog Population Management. *WHO/ZOON/90.166*. World Health Organization (WHO) and World Society for the Protection of Animals (WSPA), Geneva.

O10. Attachment to Animals

Title: Confirmatory Factor Analysis on a Newly Created Pet Attachment Scale and Induction to Attachment Theory

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Over the past several decades, scholars in human-animal bond studies have attempted to measure the strength/quality of people's attachment to their pets. Since existing pet attachment scales often lack evidence to support their construct validity, a theory-based pet attachment scale, with 24 items, was newly developed. The pet attachment scale consists of four sub-constructs: Proximity Seeking (PS), Separation Distress (SD), Safe Haven (SH), and Secure Base (SB) (Ainsworth, 1989).

Since the pet attachment scale was developed with a priori hypothesis of the relationship among its items, a series of confirmatory factor analyses (CFA) was completed in a sample of social workers in the United States ($N=675$, white=90.5%, female=82.0%, mean age=50.3, $SD=10.8$). A baseline four-factor model (PS, SD, SH, and SB) was compared against two-, three, and five-factor models to identify the best-fit model with the data set. The CFA revealed that the five-factor model ($\chi^2_{(232)}=855.748$, $p<0.001$, RMSEA=0.068, SRMR=0.037, CFI=0.953, TLI=0.944) was superior when compared to other models. In the five-factor model, three original sub-constructs (PS, SD, SB) were retained but the fourth sub-construct (SH) was further divided into "Pets' Responsiveness to Owner's Needs" and "Sense of Security." Consequently, this five-factor model is theoretically plausible because most items were retained in the original sub-constructs from attachment theory. Moreover, the analyses implied that pets' sensitivity to owner's feelings might impact the strength/quality of pet attachment, indicating that animal species (e.g. dogs, cats, and birds) might affect the quantity/quality of the pet-human interactions.

Overall, the study findings suggest that (1) pets could be an attachment figure for pet owners, (2) the structure of pet-owner attachment is similar to the one of human-human attachment. In the presentation, (3) missing concepts not captured in the pet attachment scale, and (4) the overall usefulness of the scale in research and practice will be discussed.

O10. Attachment to Animals**Title:** Dog-walking and motivation: Differences between regular and infrequent dog-walkers**Authors:** Ashley Hope¹ & Joey Farrell²**Affiliation:** ¹University of Western Ontario, ²Lakehead University**Correspondence:** ahope3@uwo.ca

Background: Dog-walking offers dog owners and dogs a way to accumulate health-benefiting physical activity and helps achieve recommended levels of activity (Hoerster et al., 2011; Oka & Shibata, 2009; Reeves et al., 2011). Understanding the type of motivation an individual has toward dog-walking can provide insight into this activity, because self-determined forms of motivation are related to maintained activity (Deci & Ryan, 2008). Satisfaction of three basic psychological needs [BPN] (autonomy, competence, & relatedness) are said to promote processes that facilitate these forms of motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). The study, therefore, investigated motivational differences between regular and infrequent dog-walkers and explored factors that influenced motivation (including BPN).

Method: Ninety-four dog owners, 55 and older, completed demographic information and a motivation questionnaire (BREQ-2). *T*-tests and Mann-Whitney *U* were used to determine motivational differences between regular (≥ 150 minutes/week) and infrequent (≤ 120 minutes/week) dog-walkers. Additionally, nine regular dog-walkers completed pilot interviews that explored factors that influenced motivation to dog-walk.

Results: Regular dog-walkers, on average, reported walking 6.6 days/week in the summer and 6.3 days/week in the winter, while infrequent dog-walkers walked 2.6 days/week in the summer/1.8 days per week in the winter. Regular dog-walkers had significantly higher levels of intrinsic motivation ($U=355.50, p<.001$) and integrated ($t=-4.050, p<.001$) & identified regulation ($U=186.00, p<.001$), as well as lower levels of amotivation ($U=530.50, p<.001$) than infrequent dog-walkers. Although preliminary, interviews suggested that regular dog-walkers presented ideas and feelings that indicated that the BPN are relevant to and satisfied by dog-walking.

Conclusions: Results from the current study suggest theoretical intervention may be beneficial for infrequent dog-walkers. Further investigation can expand on these results and could include interviewing infrequent dog-walkers. These individuals are of interest, because supporting their dog-walking will help promote physical activity that meets or exceeds recommended levels, which could influence health and well-being for humans and dogs.

O10. Attachment to Animals**Title:** Attachment to Goats: Implications for Human Well-Being**Author:** R. Lee Zasloff**Affiliation:** American River College, USA**Correspondence:** zaslofr@arc.losrios.edu

The attachment bond between people and pets such as dogs and cats has been studied extensively to determine the role it may play in human health and well-being. However, no previous studies have examined attachment relationships between people and farm animals. For this study, a text analysis was conducted of open-ended responses from 392 people with goats who had participated in an online survey in January 2010.

Nearly 97% of respondents had reported feeling emotionally attached to all or some of their goats. The current study categorized open-ended responses from the 2010 survey according to the four attachment criteria of proximity maintenance, safe haven, secure base, and separation distress from human attachment theory (Zilcha-Mano, Mikulincer, and Shaver, 2010).

The analysis found that responses corresponded to all four human attachment criteria. Proximity maintenance included responses such as “We enjoy the company of the goats themselves”. Safe haven included responses such as “I have a stressful job and my goats are like therapy for me”. Secure base was demonstrated with responses such as “They teach the children responsibility. It has also given them more self-confidence to be able to go in front of people and speak”. Separation distress was expressed with statements such as “When my favorite goat died, it was more of a loss than when my mother died”.

Attachment can have important implications for health and well-being. Exploring interactions with animals other than typical pets can broaden our understanding of human relationships with many different species.

Zilcha-Mano, S., Mikulincer, M., and Shaver, P.R. “An attachment perspective on human–pet relationships: Conceptualization and assessment of pet attachment orientations”. *Journal of Research in Personality* 45 (2011) 345–357.

Oral 11. HAI and Stress

Title: Heart Rate Variability During a Memory Task, Does Touching a Pet or a Person Affect the Response?

Authors: Nancy R. Gee¹, Erika Friedmann², Marcus Stendahl¹, Amy Fisk¹, & Victoria Coglitore¹

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There is a commonly held belief that the presence of a companion animal can be relaxing, comforting, and reduce stress responses. The presence of a dog was associated with reduced responses to stressors in several studies but touching a dog was not related to reduced responses in others. The current study was designed to evaluate the effect of touching a dog on stress responses to a working memory task (WMT). Heart rate variability (HRV) responses to a WMT while touching a dog were compared with responses while touching a stuffed dog and a person. HRV was recorded while 38 university students aged 22 to 28 years sat on the floor next to a randomly assigned co-participant (real dog, stuffed dog, or human) and listened to a reading, completed a WMT, and listened to a reading. This procedure was repeated with the two other co-participants, in a randomized block order. All participants wore an HRV monitor and placed their non-dominant hand on the co-participant throughout the appropriate phase. The WMT involved pointing to increasingly complicated sequences of geometric shapes until the participant failed three times at one level. Linear mixed models analysis for nested data revealed that the memory task was stressful, with parasympathetic nervous system arousal significantly lower during the memory task than the pre- or post-memory listening tasks (RMSSD: $p_s < .001$, $= .023$; high frequency: $p_s < .001$, $= .001$). Neither of the measures differed significantly among the three conditions. There also were no significant interactions, indicating that the stress response to the memory task did not differ when the participants were touching the three different co-participants. Touching a dog did not reduce arousal in response to a stressful memory task. This research suggests that a dog may not be effective at reducing stress responses to this type of stressor or that the presence of a dog is more effective than touching a dog at reducing stress responses. Further investigation will be required to evaluate these possibilities.

Oral 11. HAI and Stress**Title:** The role of stress and attention in understanding why animals can be good for people**Authors:** Brad P. Hodge, Pauleen C. Bennett**Affiliation:** La Trobe University, Bendigo**Correspondence:** pauleen.bennett@latrobe.edu.au

Much of the literature pertaining to human-animal interactions and, in particular how these can be beneficial for humans, is inherently flawed by low sample numbers, poor study design and a lack of theoretical context. The current research program proposes and tests an addition to theory that conceptualises the way in which we attend to animals as being central to understanding the possible benefits of human-animal interactions. This addition to theory is referred to as the biophilic attentional bias. To test whether people preferentially attend to animals and whether this, in turn, affects how they respond to a stressful situation.

Fifty-eight undergraduate students were subjected to the Trier social stress test in an office which contained either a fish tank containing 12 goldfish, or the same fish tank obscured by a large cardboard box. Gaze direction and recall of surroundings was assessed alongside physiological and self report measures of stress. Findings indicate that participants preferentially attended to the fish, $t(49) = -3.16, p = .003, d = 0.90, 95\% \text{ CI}[-1.28, -.4]$, and that this preferential attention was associated with reduced recall of the surroundings, $t(56) = 2.72, p = .009, d = 0.74, 95\% \text{ CI} [-2.94, -0.44]$.

It is proposed that these mechanisms are central to the reduction in stress reactivity found for the participants with fish present; the interaction effect between heart rate and fish presence being of particular note, $F(2.91, 136.57) = 2.68, p = .05, d = 0.48$. These findings support the proposition that benefits associated with human-animal interactions are at least in part, a function of the way in which humans preferentially attend to animals. As an addition to human animal-interaction theory, the biophilic attentional bias construct provides a testable foundation for future research. It is able to account for a broad range of responses to animals that include both approach and avoidance behaviour, in a way that other theoretical accounts have not been capable of doing.

Oral 11. HAI and Stress**Title:** The psychological and physiological effects of using a therapy dog in mindfulness training**Authors:** Courtney L. Henry & Susan L. Crowley**Affiliation:** Department of Psychology, Utah State University, USA**Correspondence:** courtney.henry@gmail.com

Research from various fields has demonstrated the benefits of human-animal interaction for physical and mental health. Recently, animal-assisted therapy (AAT) has become increasingly popular in mental healthcare settings. However, there is limited research investigating the efficacy of AAT as an adjunct to psychotherapy treatment in outpatient sites. Therefore, it is necessary to empirically explore what therapy animals may contribute to specific treatment interventions. The present study was a randomized control trial examining the psychological and physiological effects of adding AAT to a modified Mindfulness-Based Stress Reduction program (MBSR) for clients experiencing psychological distress. It was hypothesized that AAT will be particularly complementary to mindfulness-based interventions because the therapy dog will provide a focus for attention to the current experience and exemplify acceptance and “being.” Subjects ($n = 21$) were randomly assigned to the MBSR or MBSR + AAT group and then completed an intervention consisting of six 50-minute individual therapy sessions. Each session included didactic and experiential components modified for delivery with or without a certified therapy dog. State and trait mindfulness, state and trait anxiety, psychological distress, blood pressure, and heart rate were assessed. Results indicate that all participants experienced significantly fewer anxiety and depressive symptoms, decreased psychological distress, and increased mindfulness skills from pre- to post-treatment. Additionally, state anxiety, systolic blood pressure, and heart rate decreased within sessions. Although no significant difference was found between the control and experimental groups, large effect sizes for specific aspects of client satisfaction were found, indicating that AAT may increase treatment acceptability. Future studies need to increase methodological rigor and statistical power by including multiple therapist/dog teams and increasing sample size. Moreover, researchers must more thoroughly examine the role the dog might have in altering the social environment, such as reducing stigma surrounding mental health services and enhancing the therapeutic alliance.

Oral 11. HAI and Stress

Title: The Effect of Fascination Type on Attention Restoration, Mood Repair, and Stress Recovery as Mediated Through Relaxation Response in College Students Viewing Images of Animals

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Today's college students face attentional challenges that often leave them feeling mentally fatigued and irritable. Attention Restoration Theory holds that viewing softly fascinating natural scenes restores fatigued directed attention (Kaplan, 1995a). Psycho-Evolutionary Theory holds that such scenes also reduce physiological stress and improve mood (Ulrich et al, 1991).

Eighty-six, randomly assigned participants took part in a 1 x 2, between-subjects lab experiment that examined the effect that scene type (wildlife theoretically and empirically classified as eliciting hard or soft fascination) had on attention, stress, and mood restoration. After performing 37 minutes of affective and cognitive stressor tasks, 90 wildlife images were presented for 10 minutes. Participants then completed a relaxation measure, an attentional measure, a mood measure, and provided a salivary cortisol sample (measurement of physiological stress).

Scores on physiological stress reduction differed significantly between fascination conditions (Unpaired, 1-tailed t-test, $t = 1.42, p < .05$). Scores on mood repair subscales (low arousal/high positive affect vs. high arousal/high negative affect) differed significantly [$F(1,84) = 8.90, p = .01$]. Partial mediation through relaxation was discovered for positive mood (positive correlation) and negative mood (negative correlation). Attention restoration was non-significant.

This study supports Psycho-evolutionary theory assertions that benefits may be derived from even limited time viewing of softly fascinating animals.

Kaplan, S. (1995a). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15, 169-182.

Ulrich, R., Dimberg, U. & Driver, B. L. (1991). Psychophysiological indicators of leisure benefits. In B.L. Driver, P.J. Brown, & Peterson, G. (Eds) *Benefits of leisure*. State College, PA: Venture

Oral 12. Attitudes Towards Animals**Title:** An examination of what constitutes a pit bull in the US and UK**Authors:** Christy L. Hoffman¹ & Carri Westgarth²**Affiliation:** ¹Canisius College, Buffalo, NY; ²University of Liverpool, Liverpool, UK**Correspondence:** hoffmanc@canisius.edu

Pit bull terriers are commonly kept as pets in the United States (US) and United Kingdom (UK). In parts of the US, and throughout the UK, they are banned by breed specific legislation (BSL). Shelter workers frequently must decide which breed(s) a dog is, and this decision may influence whether the dog is placed for adoption, particularly in places with BSL. Previous research comparing genetic testing of dogs to shelter worker breed identification has indicated that basing breed identification on appearance and behavior is inaccurate (Voith et al., 2009). In our study, shelter workers in the US (n=416) and UK (n=54) were shown pictures of 20 dogs (primarily bull breeds or bull breed mixes) and were asked what breed each dog was and whether they would use the term “pit bull” to describe each dog’s breed identity. Seven of the dogs were identified as pit bulls/pit bull mixes by the majority of US participants, whereas only 1 was identified as a pit bull/pit bull mix by the majority of UK participants. When asked whether 10 bull breed and mastiff breed names were alternative names for pit bull type dogs, a greater percentage of US than UK participants responded in the affirmative for 9 of the breeds listed (e.g. 26.7% of US participants vs. 9.3% of UK participants equated the American Bulldog to a pit bull type). Our findings indicate a lack of consensus, both between and within the US and UK, about what constitutes a pit bull terrier. This study has implications for areas where dogs deemed pit bull type are often seized or euthanized due to BSL.

Voith, V. L., Ingram, E., Mitsouras, K., & Irizarry, K., (2009). Comparison of adoption agency breed identification and DNA breed identification of dogs. *Journal of Applied Animal Welfare Science* 12: 253-262.

Oral 12. Attitudes Towards Animals

Title: Testing the role of social identification with animals in predicting attitudes toward animals: An application of intergroup theories to the realm of human-animal research

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Social psychological principles have rarely been applied in empirical research on human-animal relations (cf. Plous, 2003). The present studies apply principles from theories of intergroup relations (Tajfel & Turner, 1986) to predict human attitudes toward animals. We also investigate if social identification processes can be extended such that humans come to develop a sense of inclusive identification with all animals (including non-human animals; Amiot et al., 2007).

Two correlational studies were conducted in Québec among university students ($N=239$; aged 18-46) and online in the USA using Amazon Mechanical Turk ($N=183$; aged 19-72). The questionnaire assessed participants' perceived similarities between humans and animals, perceptions of the social status of animals relative to humans, and level of social identification with animals (adapted from Leach et al., 2008); The attitudes measures assessed speciesism (Herzog et al., 1991), participants' justifications for using animals, and their moral concerns toward animals (Bastian et al., 2012).

In both studies, the new identification with animals scale presented adequate reliability, structural validity, and normality ($M_s=4.36 - 4.90$). Multiple regressions revealed that perceiving similarities between humans and animals predicted higher identification with animals while perceiving that humans are superior to animals predicted lower identification with animals. Identification with animals predicted lower speciesism and lower justifications for using animals but more moral concerns toward animals. Mediation analyses using bootstrapping methods confirmed the mediating role of identification with animals in the associations between perceptions of human-animal similarities and status differentials on the one end, and the attitudes measures on the other (i.e., all 95% confidence intervals did not span 0).

The findings confirm the applicability of social psychological principles to human-animal relations and represent the first attempt to assess a highly inclusive superordinate social identity – social identification with animals.

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Bastian, B., Costello, K., Loughnan, S., & Hodson, G. (2012). When closing the human-animal divide expands moral concern: The importance of framing. *Soc. Psych. and Pers. Science*, 3, 421-429.

Herzog, H., Betchart, N., & Pittman, R. (1991). Gender, sex role identity and attitudes toward animals. *Anthrozoos*, 4, 184-191.

Leach, C. W., van Zomeren, M., Zebel, S., Vliek, M. L. W., Pennekamp, S. F., Doosje, B., Spears, R. 2008. Group-level self-definition and self-investment: A hierarchical (multicomponent) model of in-group identification. *J. of Pers. and Soc. Psych.*, 95, 144-165.

Plous, S. (2003). Is there such a thing as prejudice toward animals? In S. Plous (Ed.), *Understanding prejudice and discrimination* (pp. 509-528). New York: McGraw-Hill.

Tajfel, H. & Turner, J. C. (1986). The social identity theory of inter-group behavior. In S. Worchel and L. W. Austin (Eds.), *Psychology of Intergroup Relations*. Chicago: Nelson-Hall.

Oral 12. Attitudes Towards Animals**Title:** The ideal companion dog: a cultural perspective?**Authors:** Beatrice Boccini¹, Pauleen C. Bennett², Silvana Diverio³**Affiliation:** ¹ Veterinary Consultant, Perugia, Italy; ² School of Psychological Science, La Trobe University, Victoria, Australia; ³ Laboratory of Ethology and Animal Welfare, Faculty of Veterinary Medicine, Perugia University, Italy**Correspondence:** silvana.diverio@unipg.it

The growing problem of stray dogs is one of the most widely discussed social and economic problems in Italy, because of dog-related health risks, high public costs and compromised dogs' welfare. Relinquishing a dog to a shelter often reflects a breakdown of the owner-dog bond, which could result from a deep sense of dissatisfaction.

The aim of this study was to investigate Italians' preferences in relation to their ideal companion dog by using a questionnaire developed by King et al., (2009). 770 Italian volunteers, aged 18-64 years, were surveyed about their preferences with regard to management, economic costs and the dog's physical and behavioural characteristics. Data were analysed by descriptive statistics. Desirable dog behaviour was rated according to relationship dimensional areas (Marchesini, 2000).

Behavioural aspects of the ideal dog were perceived as the most important, especially those relating to calmness and ease of management. In agreement with what was observed in the Australian survey, Italian participants rated being safe with children, being fully housetrained and being physically healthy as extremely important for their ideal dog, whereas considered not important was biting people on command and being a good hunter. In addition, some critical aspects of the dog-owner relationship, which could endanger its stability, were highlighted. The results could indicate educational areas to work on for preventing dog relinquishment. In addition, comparison of this Italian survey with those conducted in other countries could help in understanding the role played by culture on the perception of the ideal companion dog.

King, T, Marston, LC, Bennett, PC. 2009. *Describing the ideal Australian companion dog*. Applied Animal Behaviour Science, 120: 84-93.

Marchesini, R. 2000, *Lineamenti di Zooantropologia*, Calderini Edagricole, Bologna.

Oral 12. Attitudes Towards Animals

Title: “20 Cups of Coffee”: Understanding the Balinese relationship with their dogs through participatory methods

Authors: Kate Natrass Atema

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The “Bali Street Dogs” of Indonesia are largely owned, but few receive adequate guardianship. Veterinary and zoonotic health concerns, animal abuse, and social conflicts over dog issues have escalated particularly since the introduction of rabies to Bali in 2008.

In order to understand the relationship of Balinese with their dogs and to advance the welfare of animals and communities in this context, we initiated a participatory community dog welfare project in Gianyar Regency in January 2012. Participatory methods were developed in the international humanitarian aid sector, and have been adapted to the care of equine and bovine working animals. The Bali dog project seeks to adapt these methods to the care of animals whose value in communities is not primarily economic.

The first year of the project engaged 13 communities (banjars) through sequential facilitated community meetings, individual discussions and limited veterinary services. Communities warmed quickly to topics of dog guardianship which they had hitherto not considered in the context of community, or solvable, concerns. The many questions and discussions on animal care, human-dog conflicts and rabies reflected an inherent compassion for dogs that is compromised by a lack of understanding in how to care for them properly and powerlessness against social and political pressures.

At the end of the first project year, attitudes toward dogs had improved markedly, primarily due to the empowerment derived from understanding issues and recognizing possibilities for addressing them. This perception and the underlying feeling of “ownership” provides momentum for the long-term engagement of communities in the project.

The necessary balance of anthropological and scientific skills is important and productive for furthering the participatory approach, but stretches staff resources and challenges collection of scientific data. A priority for Year 2 is the integration of a feasible monitoring system to assess improvements in animal welfare.

POSTER 1

Title: Exploring the “Black Dog” Syndrome: How Color Can Influence Perceptions of Companion Animals

Authors: Heather C. Lum, Nicole Nau, & Kymberly McClellan

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The “Black Dog” syndrome is a phenomenon in which black dogs and cats are seen as less desirable, less adoptable, and more likely to be euthanized. This has been seen anecdotally by animal shelter workers for years but given the limited detailed records that many shelters keep, there is little empirical evidence of this. This study examines how our opinions towards pets may be influenced by their color.

65 participants (24 males, 42 females, $M=21.09$, $SD=7.20$) completed the study. Participants were shown pictures of both cats and dogs of varying colors and breeds and answered questions relating to perceived attributes about the animal including whether the animal was friendly, aggressive, and adoptable.

A 2 (Gender) X 6 (Animal Type) ANOVA was performed for the perceived attributes of both the dog and cat images. There was a main effect for friendliness ($F(1,63)=3.748$, $p=.004$) Further analysis revealed that the white cat was considered the friendliest followed by the orange cat, while the black cat was the least friendly. Similarly, the yellow dog was considered the friendliest while the brown dog was second, and the black dog was last. This trend also held true for the perceived adoptability ($F(1,63)=1.092$, $p=.037$) such that the lighter colored pets were considered more adoptable than the darker colored ones. Lastly, there was a main affect for aggression ($F(1,63)=2.884$, $p=.041$). The black dog was considered the most aggressive followed by the brown dog, and yellow dog.

The results of this study do indeed indicate a bias in opinions of different colored dogs and cats. By researching this problem, we may be one step closer to answering the question of why some dogs and cats are seen as less adoptable than others which could lead to adoption programs dedicated to addressing and resolving this issue through education and outreach.

POSTER 2**Title:** The Influence of a Dog Size and Color on Assessment of Responsibility**Authors:** Heather C. Lum¹, Maurina Grandinetti¹, Shane E. Halse¹, Valerie K. Sims², & Matthew G. Chin²**Affiliation:** ¹Psychology Program, Penn State Erie, the Behrend College; ²Department of Psychology, University of Central Florida**Correspondence:** hcl11@psu.edu

It has been reported that larger dogs and those with a darker coat are less likely to be adopted and more likely to be euthanized (DeLeeuw, 2010). The goal of this study was to examine how the size and color of a dog may influence assessments of fault and responsibility during a human-animal interaction scenario.

251 participants (61 males, 190 females, Mean Age=20.37, $SD=3.19$) completed this online study. Participants read a scenario in which a child reaches out to pet a dog and it bites the child. The age of the child (3, 7, 11, or 15), the color of the dog (black or white), and the size of the dog (small or big) were manipulated in the scenario. The participant was then asked to assess who was at fault (the child, parent, dog, or dog owner) and what the consequences should be.

A 2 (Participant Gender) X 2 (Dog Size) X 2 (Dog Color) X 4 (Child's Age) MANOVA was performed on the scenario assessments. There was a main effect for dog size for the blame given to the dog ($F(1,81)=3.460$, $p=.010$). Further analysis revealed that the participants believed that the larger dog ($M=4.01$, $SD=1.28$) should be held more responsible for biting the child than the small dog ($M=2.78$, $SD=.986$). There was also a participant gender by dog color effect ($F(3,81)=2.541$, $p=.042$) for the scenario assessments. Post-hoc analyses revealed that the female participants were more likely to blame the child for the incident if the dog was white than if it was black while the color of the animal was not significant for the male participants.

These findings suggest that size and color of the pet does matter. This has implications for perceptions of pets, relinquishment rates to shelters as well as overall adoption and euthanasia rates.

DeLeeuw, J. L. (2010). Animal shelter dogs: factors predicting adoption versus euthanasia. Thesis (Ph.D.)--Wichita State University, College of Liberal Arts and Sciences, Dept. of Psychology.

POSTER 3

Title: Founding a new research centre on Human-Animal Interaction in Spain: Cátedra Fundación Affinity Animales y Salud

Authors: Jaume Fatjó, Paula Calvo, Antoni Bulbena

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Human-Animal Interaction (HAI) has become an important field in current science. In Spain several private associations were already working in HAI in 2010, but few research and action protocols had been developed. This presentation describes the creation of a reference research centre on HAI in Spain.

In 2010 a multidisciplinary group of scientists and health professionals prepared a proposal to create a research centre on HAI. They sought to bring together three important stakeholder sectors in HAI: academia, private corporations and the public health system.

In 2012 the research centre called “Cátedra Fundación Affinity Animales y Salud” (“Affinity Foundation Chair for the Study of Animals and Health”) was officially presented. This resulted from an agreement between the Autonomous University of Barcelona, the Affinity Foundation (linked to a private pet food company) and the MAR Health Park (a large, integrated healthcare services organisation in Barcelona).

The aims of this chair are research, education and the dissemination of information about HAI, including collaborations with HAI research groups from other countries. The chair is mainly focused on three aspects of the impact of HAI: human and animal health, consequences of coexistence in society and animal assisted interventions.

Therefore, this agreement between the three stakeholder sectors has proved to be successful to develop a leading organization on HAI. The involvement of the human health system and a multidisciplinary group of scientists seems to be crucial to encourage private companies to give support to such a challenging project.

POSTER 4**Title:** Toward a functional animal screening tool for animal-assisted interactions**Authors:** Maureen MacNamara**Affiliation:** University of Denver Graduate School of Social Work, USA**Correspondence:** mmacnam2@du.edu

No activity involving animals compares with the intrinsically stressful social interaction that takes place in animal-assisted interaction sessions. No other animal-related event, no sport nor competition requires animals to enter the intimate zones of unfamiliar humans and remain there for several minutes or longer while an unfamiliar person engages in petting, hugging, or directing (training, riding) the animal (MacNamara & Butler, 2010).

The individuals served by animals involved in today's animal-assisted interactions are often more chaotic and unpredictable than the settings for which most selection tools were designed. The limitations of current screening tools include the utilization of a "one size fits all" approach; focus on the setting rather than specific client goals; ignore the need for specific skills related to participant goals and objectives; and may intermingle behavior and skills required for service dogs under the Americans with Disabilities Act (Lucidi, Bernabo, Panunzi, Dalla Villa, & Mattioli, 2005). Thus, it can be argued that current screening tools do not provide an accurate picture of the handler's and animal's 'fit' with participant goals or reflect the challenges encountered in sessions in which animals actually work.

This session will illustrate how identification of the specific tasks required of animals in goal-directed animal-assisted interactions can enhance selection potential working dogs as well as serve as an evaluation of currently working dogs. A brief overview of the use of these considerations in the selection and evaluation of other species will be suggested.

MacNamara, M. A., & Butler, K. A., (2010). In Fine, A. H. (ed.) (2010). *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice*. 3rd Edn. San Diego, CA: Academic Press.

Lucidi, P., Bernabo, M., Panunzi, N., Dalla Villa, P., & Mattioli, M. (2005) Ethotest: A new model to identify (shelter) dogs' skills as service animals or adoptable pets. *Applied Animal Behaviour Science*, 95 Pp. 103–122

POSTER 5

Title: Knowledge and attitude of teachers towards rabbits in Japanese kindergartens keeping them for educational purposes

Authors: Mari Morimoto & Hajime Tanida

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Japanese kindergartens have kept animals for educational purposes. However, Tanida et al. (2003) pointed out that animals at kindergartens are recognized as “teaching materials” rather than as “living creatures”, and their living conditions and the level of welfare are of secondary importance for most teachers. The low level of animal welfare also could arise from teachers’ ignorance of animals. The aim of this study was to survey teachers’ knowledge and attitude towards rabbits at kindergartens.

The test and questionnaire survey on rabbits were sent to teachers in 30 kindergartens by mail. The questions of the test were based on 5 freedoms of animal welfare. Before the mail survey, on-site inspection on housing condition of rabbits was conducted at 16 kindergartens.

The average scores of teachers’ knowledge and attitude were 67.8 and 51.3, respectively. There was no significant difference on the average score of knowledge between the teachers with pets and without pets, but there was significant difference ($p < 0.05$) on the average score of attitude between the teachers with pets and without pets. Pet ownership of teachers affected teachers’ attitude on rabbits but not their knowledge.

There were no significant correlations between the average scores of teachers’ knowledge or attitude and the evaluation scores of housing condition of rabbits, suggesting that teachers’ knowledge and attitude on rabbits did not affect housing conditions of rabbits.

Pet ownership among teachers could affect their attitude towards rabbits at kindergarten but further study on the quality of relationship between teachers and pets is necessary to confirm these results.

POSTER 6

Title: Could the inclusion of dogs and horses in a psychodynamic psychotherapy provide for a more optimal treatment for patients with personality disorders?

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Objective: Patients in mental health care often suffer prolonged feelings of insecurity and low self-esteem, which can be attributed to insecure attachment patterns or early developmental disorders often rooted in the pre-verbal stage. This forms the basis for psychological dysfunction on several domains in later life. The helping factor of creating an intersubjective relationship in conventional psychotherapy with a psychotherapist can be difficult for these patients.

We hypothesize that, a newly designed treatment model, *Equestrian Focal Psychodynamic Psychotherapy* (EFPP), in which nature, animals and especially horses are included as transference objects facilitates forming this intersubjective relationship and provides for a more optimal treatment. We present preliminary results of a comparative study, self-reported experiences of patients and an introduction to the treatment model.

Method: In a pre-post non-randomized design we measured the degree of change of psychological dysfunction and depression using respectively BSI- and BDI-questionnaires with patients with personality disorders (N=24) and compared it to a waitinglistgroup (N=24). Participants were 70% women, M age: 38.7 (SD 7.92), 95% had a problematic attachment representation. Additionally we gathered qualitative material through a selected coding text analysis of evaluation reports aimed to find expressions of corrective emotional experiences.

Results: Unpaired t-test showed significant change regarding psychological dysfunction (BSI) $t(48) = -3.27, p < .05$. and depression (BDI) $t(48) = -2.91, p < .05$ after EFPP. Qualitative measures described manifestation of corrective emotional experiences which occurred in relation to dogs, horses and their handlers.

Conclusion: Data from this mixed method study suggest a trend that EFPP provides for change in patients with personality disorders and contributes to a more optimal intersubjectivity to process pre-verbal experiences. Further research is needed to establish stronger conclusions by increasing N, including different comparison groups with a focus on the concept of working alliance.

POSTER 7

Title: Effects of a dog-assisted program on the mood in a prison and evaluation by dog handlers

Authors: Naoko Koda, Yoshio Miyazi, Yasumori Adachi, Gen Watanabe & Chiemi Miyazi

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A dog-visiting program was conducted for inmates in a specialized unit of a prison for the first time in Japan. As one of the rehabilitation programs, this program was provided as preparatory education for the specific training of stress management and communication, and its psychosocial features and effects were investigated using questionnaires.

Seventy-two male inmates (27 persons with mental retardation, 38 persons with psychiatric problems and 7 persons with both) participated in this study. They were divided into 8 groups (8 or 10 persons) and interacted with dogs and people once a week for 70 minutes per session for 12 sessions per course. Six male and 42 female volunteers participated in the program as handlers with their trained pet dogs. In every session, 3-7 dog-handler pairs interacted with the inmates. Questionnaire surveys were conducted regarding the mood of inmates and handlers both before and after each session. The handlers also filled in an evaluation questionnaire about the sessions after each session.

The mood of both the inmates and handlers improved after sessions (paired t-tests, $ps < 0.05$). The handlers' mood was in the normal range. The handlers evaluated the sessions positively as a whole. When making an overall evaluation about the session, the handlers considered whether they could interact with the inmates well as the most important indicator, followed by indicators of whether their dogs' stress level was low, and whether they could handle their dogs well (multiple regression analysis, $F(3,520) = 77.07$, $p < 0.001$, $R^2 = 0.30$).

The program was effective for improving the mood of not only the inmates but also the handlers. Moreover, the program could be conducted without much burden on the handlers. The handlers considered not only the interaction with the inmates, but also welfare of their dogs to be important.

POSTER 8

Title: The call of the wild (and the caged): The impact of a zoo's exhibition styles on the attitudes of its human visitors

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For better or worse, modern zoos provide many visitors with the only direct interaction they will have with many non-human species. Zoos can uniquely present conservation messaging in an animal-relevant context, but questions remain regarding how the presentation of captive animals influences human perception. The purpose of this research was to increase understanding of how exhibit naturalism may influence observer affective response and attitudes towards the species on display.

Visitors to the Chicago Zoological Society's Brookfield Zoo were surveyed throughout the summer of 2012 ($N=216$) while viewing one of three exhibits featuring varying degrees of naturalism. The sites used included an unnatural, grotto-style lion enclosure, a relatively naturalistic African wild dog enclosure, and a naturalistic wolf enclosure.

Analysis supported relationships between location, satisfaction, affective response, and attitude towards a species. As predicted, guests reported that the lion exhibit was less suitable for its inhabitants than either other enclosure, $F(2,213) = 13.68, p < .01$. Perceived suitability was also related to higher reported positive affect, $r(182) = .39, p < .001$, and positive experience at that exhibit, $r(214) = .51, p < .001$, indicating that suitable exhibition style and positive experiences are related. Positive affect also correlated with feeling connected with animals, concern for captive animals, and concern for the exhibited species.

These findings suggest that exhibit style impacts how people experience the zoo, and this experience in turn is related to concern for the animals on display as well as their species overall. Well-constructed habitats that effectively represent the needs of particular species to a wide audience may create zoos that function as positive learning environments for all visitors. Future studies should include experimental methods of assessing the influence of exhibit features on observers.

POSTER 9**Title:** An evaluation of perceptions of parrots as human companions**Authors:** Pauleen Bennett and Scott O'Hara**Affiliation:** School of Psychological Science, La Trobe University, Victoria, Australia**Correspondence:** Pauleen.Bennett@latrobe.edu.au

Research examining relationships between humans and companion animals has focused on dogs and cats. However, many other species are kept as companions, including parrots. Parrots lack many of the 'cute' and 'cuddly' features that are believed to have promoted pet ownership throughout humans' evolutionary history. They are, however, described on numerous internet sites as being wonderful companions. In this project we examined parrot owners' perceptions of parrots and compared these with the perceptions of other companion animal species. We also examined whether parrot owners are psychologically attached to their pets. Over 1000 adult participants (86% female) completed an online survey that was distributed internationally. We modified the Comfort from Companion Animals Scale to assess perceptions of parrots, dogs, doves and goldfish and asked participants to complete the Lexington Attachment to Pets scale in relation to various companion animal species. Parrot owners perceived parrots to have excellent companionship qualities, equal to or better than dogs. Non-parrot owners, in contrast, perceived parrots to have better companionship qualities than goldfish, but nowhere near the standard they perceived dogs to offer. Participants who owned parrots reported being more enthusiastic about initially acquiring their pet, they spent more time planning and preparing for its arrival than owners of other species, and they were just as strongly attached to their birds as were owners of other species. People who owned multiple pets tended to be more strongly attached to their parrots than to other animals, although the effect size was fairly small ($d = .27$). Attachment to a pet parrot was not correlated with various psychological outcomes, including loneliness, perceived stress and general wellbeing. The results indicate that perceptions of animal companions may vary with experience, and that parrots may, for some people, provide a level of companionship equivalent to that provided by more popular pets.

POSTER 10

Title: The HAI-Viability for Research Collaborators Assessment: An Instrument to Assess HAI Organizations' Potential as Research Collaborators

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The Human-Animal Interaction - Viability as Research Collaborator Assessment (HAI-VRCA) was designed to systematically assess the potential of non-profit organizations (e.g. animal-assisted therapy, animal-assisted activity, and/or equine assisted therapy providing organizations) as partners in empirical research studies exploring the human-animal bond. The instrument was developed to provide an objective measure of an HAI providing organization's ability to work with researchers in the creation of reliable and valid data. Each of the 15 items addresses one or more of the following criteria: the organization's reliability, degree of organization, and the ability to follow established protocol. Each criterion was included based on previous research on the evaluation of not-for-profits (e.g. membership dues and funding type) as well as HAI specific issues (e.g. protocols for handling animals and monitoring animal fatigue/health). Potential scores range from 0 – 15, with higher scores indicating greater potential as a collaborator in a research project.

The HAI-VRCA was developed to analytically rank HAI providing organizations within the state of Missouri as part of the Human-Animal Interaction for People in Transition (HAIPT) project. The primary goals of HAIPT were to identify viable HAI organizations for research and program collaboration in Missouri. The HAI-VRCA was created to assess each organization's overall quality along with providing objective data to rank organizations as potential sites for future research and program collaboration. Pilot testing was conducted in the first and second phase of the HAIPT project. During the first phase organizations were ranked based on information provided on websites and attained through telephone conversations with providers. In the second phase pilot testing continued with assessments being conducted in the field. The instrument was revised to better assess organizations and identify quality outcomes which could be used across varying types of HAI organizations. The methodological process of development and the final instrument are presented.

POSTER 11**Title:** The effect of therapy dogs on metacognition and prefrontal activity**Authors:** Justin J. Couchman, Nancy R. Gee, Raela M. Wiley, Shaun J. Zmuda, Hannah S. Manning, Alexis A. Perez**Affiliation:** State University of New York at Fredonia**Correspondence:** couchman@fredonia.edu

Metacognition, or thinking about thinking, is the ability to self-monitor cognitive processes. The current experiments used a perceptual discrimination uncertainty-monitoring task to examine the effect of therapy dogs on the metacognitive abilities of children and adults. Previous studies suggest metacognitive processes are mediated partially by executive functioning, and that a dog's presence may impact executive functioning. These processes, associated with the prefrontal cortex, are usually more developed in adults.

In Experiment 1, children completed a sparse-dense perceptual discrimination on a computer. Children classified a black dog as having fewer ("sparse") or more ("dense") white spots. Difficulty levels ranged from 1 (easiest sparse) to 41 (easiest dense), with the perceptually most difficult trials falling in the middle. Auditory feedback indicated whether responses were correct or incorrect. A third "uncertainty" response skipped the current trial, avoiding both penalty and reward. Participants completed the task With or Without a Dog present. In the With Dog condition, participants rested one hand on the dog during the task. Results showed a main effect of level on uncertainty responding for both conditions, and a significantly different pattern between conditions, $F(2,117) = 119.13, p < 0.001$. Children followed a more characteristic metacognitive pattern when the dog was present.

In Experiment 2, adults sat with and without a dog for two minutes while electroencephalography (EEG) measured their neural activity. They then completed the sparse-dense task. We found stronger activity in prefrontal areas when the dog was present. Adults demonstrated adaptive metacognitive monitoring in both conditions.

Interacting with a therapy dog impacted the performance of children and adults, though the effects were realized differently. Adults found the dog to be a welcome distraction from penalties. Children did not find the dog distracting, and may have been able to focus more on their own performance when the dog was present.

POSTER 12**Title:** Exploring therapy dogs' welfare in animal-assisted interventions**Authors:** Lisa M. Glenk^{1,2}, Birgit U. Stetina³, Oswald D. Kothgassner⁴, Rupert Palme¹, Berthold Kepplinger^{2,5}, Halina Baran²**Affiliation:** ¹Department of Biomedical Sciences, Institute of Medical Biochemistry, University of Veterinary Medicine Vienna, Vienna, Austria; ²Karl Landsteiner Research Institute for Neurochemistry, Neuropharmacology, Neurorehabilitation and Pain Treatment, Landeskrankenhaus Amstetten-Mauer, Austria; ³Workgroup Counselling Psychology, Department of Psychology, Webster University Vienna, Vienna, Austria; ⁴Department of Applied Psychology: Health, Development, Enhancement & Intervention, Working Group Clinical Psychology, University of Vienna, Vienna, Austria; ⁵SeneCura Neurological Rehabilitation Center Kittsee, Kittsee, Austria**Correspondence:** Lisa.molecular@gmail.com

The use of animals for human benefit has become increasingly popular in mental health care. To date, research is primarily centered on human physical and psychological health rather than animal welfare. Therapy dogs not only undergo special training, they are required to remain calm under stressful conditions and deal with unfamiliar people and environments. Thus, the main purpose of our study was to evaluate the physiological and behavioral effects of animal-assisted interventions (AAIs) on therapy dogs (n = 21) of different age, gender and certification status.

The dogs participated in weekly group therapy (8-10 patients) sessions in adult mental health care. We determined home and pre-post session levels of salivary cortisol, a glucocorticoid hormone which is related to psychological stress and arousal. Moreover, video recordings were analyzed to monitor dogs' motion (lay, sit, stand, walk and run) and specific behaviors (yawning, lip licking, paw lifting, body shake and body stretch).

We found that salivary cortisol levels do not increase during AAIs in certified, experienced therapy dogs or therapy dogs in training. However, only in dogs that were off the lead during therapy, working cortisol levels significantly decreased (ANOVA for repeated measures, $p < 0.01$). There was no difference between baseline samples taken at work or at home. Video analysis of five dogs' motion and specific behaviors during five subsequent AAI sessions indicated no differences in frequency or duration of behaviors, but negative correlations of lip licking and cortisol were detected.

The results of this investigation shall provide insights into the physiological and behavioral welfare of dogs in AAIs. In follow-up studies, we also included additional measures of stress (salivary IgA) and heart rate measurements into our methodological design. Rewards and challenges of combined measurements will be reviewed.

POSTER 13**Title:** The “guilty look” in dogs: current research and future directions**Author:** Julie Hecht**Affiliation:** Horowitz Dog Cognition Lab, Barnard College, USA**Correspondence:** DogSpies@gmail.com

When we see someone standing by a broken lamp constricting his posture, putting his head down and averting his gaze, we often make inferences about that person’s emotional state. Humans often refer to this as guilt, and we understand guilt to have behavioral and emotional underpinnings.

Many people do not hesitate to extend this attribution to their companion dog. “I behave in a particular way when I feel guilty; my dog behaves in a similar way in equivalent circumstances; I know intuitively that my behaviour is motivated by guilt; therefore the behaviour I see in my dog is also accompanied by feelings of guilt” (Bradshaw and Casey 2007).

This review discusses the scientific inquiry into the “guilty look” in dogs, the methodologies employed and the main findings. The research suggests the “guilty look” is not necessarily a reliable indicator of whether a dog engaged in a misdeed, and such displays can be a response to owner scolding or a learned, ritualized act associated with punishment (Vollmer 1977; Horowitz 2009; Hecht et al. 2012). Given the prevalence of this attribution, additional scenarios yet to be investigated will be explored. Finally, this review will discuss how the attribution of this cognitive domain to dogs might impact the dog-human relationship.

Bradshaw, J. W. S. and Casey, R. A. 2007. Anthropomorphism and anthropocentrism as influences in the quality of life of companion animals. *Animal Welfare* 16: 149–154.

Hecht, J., Miklósi, Á. and Gácsi, M. 2012. Behavioral assessment and owner perceptions of behaviors associated with guilt in dogs. *Applied Animal Behaviour Science* 139: 134–142.

Horowitz, A. 2009. Disambiguating the guilty look: salient prompts to a familiar dog behaviour. *Behavioural Processes* 81: 447–452.

Vollmer, P. 1977. Do mischievous dogs reveal their guilt? *Veterinary Medicine, Small Animal Clinician* 72: 1002–1005.

POSTER 14**Title:** Brief forms of the Animal Attitudes Scale**Authors:** Harold Herzog¹ & Stephanie Grayson²**Affiliation:** ¹Department of Psychology, Western Carolina University; ²California School of Professional Psychology**Correspondence:** herzog@email.wcu.edu

Researchers occasionally need brief or very brief measures of attitudes or psychological traits (Gosling, Rentfrow & Swann, 2003). The 20 item Animal Attitudes Scale (AAS) is one of the most widely used measures of human attitudes toward the use of other species (Herzog, Betchart, & Pittman, 1991). Using data gathered as part of another study (Grayson, 2012), we developed a five item (AAS-5) and a ten item (AAS-10) version of the AAS.

Four hundred participants (average age = 42) completed an on-line questionnaire that included the AAS and a question about the subjects' diets. Based on factor analyses and item content, we constructed a five and a ten item version of the AAS. Both short versions correlated highly with the full 20 item AAS (r 's = .951 for the AAS-5 and .976 for the AAS-10), and both scales were reliable (AAS-5 α = .816; AAS-10 α = .905). Subjects with non-traditional diets had higher scores on both scales than traditional omnivores (AAS-5, $t(396) = 12.484, p < .001$; AAS-10, $t(396) = 12.177, p < .001$).

The AAS-5 and the AAAS-5 have excellent psychometric properties, and we encourage their use by researchers who need brief measures of attitudes toward the use of other species.

Gosling, S. D., Rentfrow, P. J., & Swann, P. J. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*, 504-528

Grayson, S. (2012), Measuring speciesism: Scale development and validation. Meeting of the International Society for Anthrozoology, Cambridge, UK.

Herzog, H. A., Betchart, N. S., & Pittman, R.B. (1991). Gender, sex role orientation and attitudes toward animals. *Anthrozoös, 4*, 184-191.

POSTER 15**Title:** Construction of Canine Care and Welfare Scale and Children's Perceptions of Dogfighting**Authors:** Maria A. Iliopoulou & Rene Rosenbaum**Affiliation:** Department of Sustainability (former CARRS), Michigan State University, USA**Correspondence:** iliopoul@gmail.com

There are more than 40,000 dog fighters in the United States. In Detroit, increased prevalence of dogfighting is associated with a lack of educational interventions aiming to prevent animal cruelty and neglect (Kalof and Taylor, 2007). Animal care and welfare education can be an effective tool to raise awareness, to shape human perceptions regarding animals and to induce behavior change (Serpel, 2008). Humane education has been employed for over hundred years, but research based interventions and evaluations are limited (Serpel, 2008). Our study is a first step toward intervention/evaluation development. This cross-sectional study explores the validity and reliability of the Dog Care Scale to assess children's canine care and welfare knowledge (CCWK). It also investigates the relationship between levels of CCWK and children's perceptions of dogfighting. We hypothesized that children possessing a higher level of CCWK will more likely perceive dogfighting as animal abuse than will children with a lower level of this knowledge. We also explored the relationship between children's perceptions of dogfighting as animal abuse with the following independent variables: age, gender, canine pet ownership, level of CCWK, socioeconomic status, and prevalence of dogfighting in the community. Another outcome was determination of baseline CCWK in study participants. Five hundred children aged 11 to 19 years from Detroit schools were included. Exploratory and Confirmatory Factor Analysis were employed to determine factor structure, validity, reliability and scale scores. Multiple Logistic Regression was employed to determine whether children's perceptions of dogfighting are associated with the described independent variables.

Kalof, L., and Taylor, C. (2007). The Discourse of Dog Fighting. *HUMANITY & SOCIETY* Vol. 31, No. 4.
Serpell, J., A. (2008). On Measuring Progress In Animal Welfare (Report for the World Society for the Protection of Animals) retrieved on 10/13/11

POSTER 16**Title:** Value of Guest Interaction in Touch Pools at Public Aquariums**Authors:** Brian Ogle, Michael Noonan**Affiliation:** Masters of Science, Anthrozoology Program – Canisius College, USA**Correspondence:** brianogle88@gmail.com

175 million individuals visit an Association of Zoos and Aquariums facility annually, which are “committed to promoting high standards of excellence in all aspects of conservation education.” The purpose of this study was to demonstrate the effectiveness of interactive exhibits at instilling conservation behaviors and appreciation towards wildlife.

Aquarium visitors completed a survey prior to visiting an interactive exhibit that allowed them to touch aquatic invertebrate species. After visiting the exhibit, participants were asked to complete another survey. Comparison of pre- and post-test measures revealed that the aquatic interaction increased how knowledgeable individuals felt about aquatic wildlife (Cohen’s $d=0.52$, $p<0.001$) and the likelihood that participants felt they would take action to protect aquatic wildlife ($d=0.60$, $p<0.001$). The aquatic interaction, however, had only a small effect on how much participants valued aquatic wildlife ($d=0.20$, NS) and virtually no effect on how strongly participants felt about the importance of protecting aquatic wildlife ($d=0.01$, NS). The study also demonstrated that visitors who had prior interactive experiences with zoo or aquarium animals indicated higher knowledge of wildlife than those who had not previously engaged in such experiences ($d=0.46$, $p=0.02$).

POSTER 17

Title: Dead or alive: Positive changes in general feelings about bats after an educational presentation including a taxidermy or live bat

Authors: Samantha N. Hynes, Matthew G. Chin, and Valerie K. Sims

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Previous research done by Costa, van Rensberg and Rushton (2007) demonstrated that interactive learning had a more positive impact on student learning than non-interactive lectures. Also, Swanagan (2000) found that patrons of zoos were more likely to support conservation messages if they experienced higher levels of interaction with exhibits.

In the current study, college students were invited to attend one of three educational presentations about bats that involved either a low, intermediate or high level of interaction with a bat. We hypothesized that regardless of the level of interaction, participants would learn the factual information presented, but the higher level of interaction would cause the biggest perceptual change in terms of how participants felt about the bat and the highest degree of learning. Each participant completed a questionnaire before the presentation that determined their initial feelings about bats as well as their initial factual knowledge. Participants then watched a 20-minute-long presentation about bats, during which they were exposed to either bat bio facts alone, a taxidermy bat as well as the bio facts, or a live bat as well as the bio facts. After the presentation, participants took the same questionnaire again to determine changes in feelings and factual knowledge.

Across the board, all participants showed significant increases in their factual knowledge. However, participants in both the taxidermy and live bat conditions had greater positive change in their feelings about bats in general than the participants who just viewed the bio facts ($F(2,87)=4.45, p=.014; p<.05$ for post-hoc comparisons). These results imply that zoos and other educational facilities need to use either a taxidermy bat or a live bat in combination with factual information during presentations to their patrons if they wish to change the public's perceptions of misunderstood animals such as bats.

Costa, M. L., van Rensburg, L., & Rushton, N. 2007. Does teaching style matter? A randomized trial of group discussion versus lectures in orthopedic undergraduate teaching. *Medical Education* 41: 214-217.
Swanagan, J. S. 2000. Factors influencing zoo visitors' conservation attitudes and behavior. *The Journal of Environmental Education* 31: 26-31.

POSTER 18**Title:** Experiencing Gratitude and Companion Animals**Author:** Linda Kline**Affiliation:** California State University, Chico**Correspondence:** lkline@csuchico.edu

Previous research has explored physical health and psychological benefits for humans related to pet ownership and interactions with animals. The present study investigated the relationship between living with pets and gratitude. Gratitude has been associated with positive experiences such as subjective well-being. Sixty undergraduate students enrolled in psychology classes (48 females and 12 males, mean age = 23.8 years) completed the Gratitude Questionnaire (GQ-6), and responded to several questions about pets. In particular, participants indicated whether or not they currently lived with a pet and, if so, whether or not the animal was their pet. Over the next 10 days, participants completed an online daily survey. Each day, participants reported gratitude in daily mood, positive and negative affect (PANAS), gratitude-relevant events and the intensity of the gratitude elicited by each event. Several independent-samples t-tests were conducted to compare gratitude as an affective trait, as well as daily experiences of gratitude, for individuals who lived with a pet and those who did not live with a pet. There was no significant difference in gratitude as an affective trait (GQ-6 scores) for those living with a pet and individuals not living with a pet. There was a significant difference in the frequency of daily grateful experiences, $t(58) = 1.85, p < .05$. Individuals living with a pet reported more gratitude-eliciting situations ($M = 2.93/\text{day}, SD = 2.26$) as compared to individuals who did not live with a pet ($M = 2.03/\text{day}, SD = 1.25$). Content analysis of the descriptions of gratitude-eliciting situations revealed that the presence of pets created specific gratitude-eliciting events (whether the animal was their pet or belonged to a roommate). Despite the limitations of this young, educated sample of participants, these results suggest the need to continue to explore the relationship between living with pets and gratitude.

POSTER 19**Title:** The effect of animal-assisted therapy on pain medication use after joint replacement surgery**Authors:** Julia Havey, Frances Vlasses, Peter Vlasses, Patti Ludwig-Beymer**Affiliation:** Loyola University Chicago, Marcella Neihoff School of Nursing, USA**Correspondence:** jhavey@lumc.edu

The concept of animal-assisted therapy (AAT) is not new but applying evidenced based methodology to its uses is. The purpose of this study was to evaluate the effect of AAT on mean daily dose oral pain medications in adults during the acute postoperative days following total joint replacement surgery.

A retrospective comparison of patients from two acute care hospitals; one hospital with and one without an established AAT program was conducted. Demographically matched adults on key data elements including: age, gender, ethnicity, length of stay, post-operative day, surgeon, procedure, and nursing unit were identified from each facility (total N=92). Electronic data mining of the electronic medical record using the same software at both facilities and paper chart review were used. 4 to 5 dog/handler teams from a pool of 89 total teams with 45 different dog breeds are scheduled for AAT visits at the facility on a rotating daily basis. Oral pain medication use for an entire 24 hour period was tallied to measure daily use. Pain medication doses were converted into a common morphine equivalency.

Analysis demonstrated the AAT visit cohort received pain medication of $t=15.32$ mean morphine equivalent daily use compared to $t=21.16$ in the cohort that did not receive an AAT visit (Unpaired t test, $p=0.007$). The effect was more pronounced when distributed by post-operative day. There was 28% less pain medication use in the AAT group compared to the non-AAT group. Our preliminary evidence suggests that AAT may contribute to reducing the amount of pain medication used during the acute postoperative period following total joint replacement. Future research which includes assessment of psychosocial, emotional, and functional benefits of AAT is indicated.

Glacken, J., Lawrence, M.K. 2005. Content validation and pilot studies of the Therapy Effectiveness Evaluation for Animal-Assisted Therapy instrument, *American Journal of Recreation Therapy*, Summer, 21-24

Stanley-Hermanns, M., Miller, J. 2002. Animal-assisted therapy, *American Journal of Nursing*, 102(10), 69-76

POSTER 20

Title: Mastery, Empathy and Social Conscience through AAT (MESCAAT), Primary Model

Authors: Jennifer L. Emmert

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In 2009 I designed and piloted Mastery, Empathy and Social Conscience through AAT (MESCAAT) to augment treatment plans for people whose mental health concerns could result in diminished capacity for establishing and sustaining social connections that can factor heavily into overall functioning.

In 2012 we worked with a local residential and day treatment psychiatric facility serving children and adolescents in need of moderate to acute treatment. Under our primary MESCAAT model we served 25 long-term residential and day treatment children (5 per 5-week series) aged 11-17 with concerns including schizophrenia, depression, anxiety, behavioral and developmental disorders and PTSD. We rotated 10 dogs throughout the year--three terriers, two retrievers, two "doodles", a spaniel, a bulldog, and a shepherd. All dogs had been evaluated for therapy work and had experience visiting healthcare facilities with their guardians.

Child-dog "teams" were pre-set by AAT staff using clinicians' notes on participants. Each session in the series' was 60-90 minutes total and included dog training instruction by our AAT Programs Dog Evaluator, journaling lead by programming staff, and interactive play. Participants were introduced to a variety of activities that emphasize reciprocity and build self confidence. We stressed the importance of learning about your canine teammate, identifying needs, acknowledging limitations and accommodating them. Within each series, after four training sessions, the child-dog teams conducted a group AAT visit at one of our local residential senior centers.

Based on self reporting in journal entries and observations by clinicians and residential staff, the program was effective at giving most children a sense of accomplishment, feeling of connectedness, improved behavior (even if not initially) both when with the pets and when anticipating being with them, increased a sense of self determination and over half were reported to be more compliant after each session.

POSTER 21

Title: A brief review of comparative human-animal personality and areas for future study

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Research on animal temperament has increased significantly over recent years. Animal temperament is very similar to human personality, and is defined as individual differences that are consistent over time and between situations (Réale *et al.*, 2007).

There is some evidence suggesting that dogs physically resemble their owners (Roy and Christenfeld, 2006). However, to our knowledge, despite some studies have measured the personality of both pets and owners (e.g. Gosling and Bonnenburg 1998), there is only a limited amount of research which has investigated directly and objectively the potential match between pets and owners' personalities. Furthermore, such comparison would be biased if pet personality is assessed by the owners, as this is often the case (Gosling and Bonnenburg 1998; Gosling *et al.*, 2003).

We suggest that an owner's personality might impact upon their pet's personality. Alternatively, when selecting a pet, humans could choose one that matches their own personality. This review discusses studies which could include volunteer workers at rescue centres and farms to investigate how humans select their favourite animal, according to both human and animal personalities. This paper reviews current work relating to personality comparisons/matches/resemblance between humans and animals and suggests potential for future work using methods recently developed to accurately measure animal personality (e.g Réale *et al.*, 2007).

POSTER 22

Title: How companion animal ownership influences the belief that animals experience emotions such as grief

Authors: Jessica Walker^{1,4}, Nicky McGrath^{1,3}, Ian Handel³, Natalie Waran², Clive Phillips¹

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There has been little research investigating the way in which the public attributes emotions to animals. The experience of owning, or being with animals, affects how animals are perceived, and companion animal ownership is well documented as leading to increasingly positive and empathetic attitudes towards animals (e.g. Knight and Barnett 2008; Morris et al 2012). Consequently companion animal owners may be more willing to attribute emotions to animals than non-owners.

We surveyed 1000 members of the public (via face-to-face interview) to investigate how companion animal ownership affects the attribution of emotions to animals and beliefs about whether animals can grieve. Variables underlying companion animal ownership were investigated in Minitab (version 16) using multivariate statistical techniques.

An association was found between respondents who owned a companion animal and the belief that some animals could experience grief ($p=0.02$). The more important a companion animal was perceived to be, the more likely owners were to believe that animals could experience emotions ($p=0.001$), in particular grief ($p<0.0001$). Furthermore, as the number of animals owned by the respondent increased they became more likely to believe that animals grieve ($p=0.01$).

Respondents that did not own a companion animal were more likely to believe that animals do not experience emotions, including anxiety ($p<0.0001$), distress ($p=0.001$) and depression ($p=0.022$), do not show behavioural changes when they are experiencing grief ($p<0.05$) and do not grieve as a result of separation from a conspecific ($p=0.02$). Respondents that did not own a pet during childhood were more likely to believe that animals do not experience any emotions ($p=0.03$).

Our findings show that companion animal ownership plays a significant role in the public perception of the emotional experiences of animals and belief in the animals' ability to grieve.

Knight S and Barnett L 2008 Justifying attitudes toward animal use: A qualitative study of people's views and beliefs. *Anthrozoos Vol 21(1)*: 31-44.

Morris P, Knight S and Lesley S 2012 Belief in animal mind: Does familiarity with animals influence beliefs about animal emotions? *Society and Animals 20*: 211-224.

POSTER 23**Title:** The influence of oxytocin receptor genotype polymorphisms on canine affiliative behavior**Authors:** Giovanna Rosenlicht¹, Craig Ruaux¹, Sarina Rodrigues Saturn² & Lisa Lit³**Affiliations:** ¹College of Veterinary Medicine, Oregon State University, USA; ²Department of Psychology, Oregon State University, USA; ³Canine Cognitive Research Center, University of California, Davis, USA**Correspondence:** Giovanna.Rosenlicht@oregonstate.edu

Extensive research has been done on the effect of oxytocin levels and oxytocin receptor genotype (OXTR) on human social communication and behavior. OXTR in humans has been determined through comparisons of Single Nucleotide Polymorphisms (SNP's) in the intronic region of the oxytocin gene. In humans, four genotypes have been found to be associated with varying ability to interpret the affective state of others. Recognition of a possible association between OXTR and canine behavior has the potential to assist in the determination of appropriate candidates for placement as service dogs, as well as helping to identify shelter dogs with particular affective needs. The proposed research will examine the effect of genetic variations of the oxytocin receptor genotype (OXTR) on dog's approach time to an unfamiliar person, and ability to tolerate stress.

Subjects will include 20 Labrador retrievers and 20 Border Collies recruited from private owners and trainers. Inclusion criteria will include: >18 months old, neutered or not currently pregnant or housed with reproductive animals, and minimal relationship to other participants (maximum relationship via common grandparents).

Behavioral testing will utilize a standardized testing room, where an unfamiliar person is seated. The owner or handler will then leave the room. Using an observational paradigm and use of video recordings, two trained evaluators will quantify latency to approach to the unfamiliar person and response to a stressor (loud noise). Subjects will be divided into two subgroups for each breed on the basis of approach latency and response to stressor. Buccal DNA samples will be collected. Using known and novel SNP's, OXTR haplotype frequencies within each breed group will be determined, then compared between groups. Finally intergroup correlational analysis will be conducted to probe the relationship between OXTR variations and response.

POSTER 24

Title: Does owner personality influence the physical activity and social interactions of their dog(s)?

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This study explored whether a dog's physical activity patterns together with both dog-human and dog-dog social interactions are influenced by the personality of the dog's owner. Informed by the human personality and exercise literature and using semi-structured interviews, an Internet based questionnaire was designed to provide information regarding seven aspects of a dog's daily activity profile: frequency and duration of dog walking, number of different routes walked, the number of other people and dogs met whilst out on walks and participation in and number of dog-centred activities involving the owner aside from walking. Respondents (N = 486) also completed the 44 item Big Five personality questionnaire (John and Srivastava, 1999). General or generalised linear models were conducted for each of the dependent variables, to compare their relation with each of the five personality variables, owner age, and whether the owner was with their dog during work hours. Dogs whose owners had a high agreeableness score met a greater number of other people on walks (Wald $\chi^2_1=4.44$, $p=0.035$), whereas those with a high conscientiousness score met fewer people (Wald $\chi^2_1=6.14$, $p=0.013$). Other significant personality effects involved interactions between two personality traits. For example, dogs of owners with low neuroticism and extraversion scores met a significantly higher number of other dogs/week whilst out on walks (Wald $\chi^2_1=11.48$, $p=0.001$). Similarly, dogs whose owners scored high on conscientiousness and low on extraversion were walked more frequently ($F_{1,182}=11.65$, $p=0.001$). Personality was unrelated to duration of walking and both measures of other dog-centred activities involving owners. Dogs whose owners were present during working hours were walked for significantly longer ($F_{1,185}=6.89$, $p=0.009$), on more different routes ($F_{1,184}=6.01$, $p=0.015$) and met a greater number of other dogs (Wald $\chi^2_1=7.97$, $p=0.002$). Further investigation of owner personality and the value of dogs accompanying their owners during their working hours offer potential for improved understanding of this important aspect of the human-canine relationship.

John, OP, Srivastava S, The Big Five Trait Taxonomy: History, measurement and theoretical perspectives. In L.A. Pervin and O.P. John (Eds), *Handbook of Personality: Theory and research* (2nd ed) pp 102-139, New York: Guilford Press 1999

POSTER 25

Title: The use of a Treasure Hunt to increase Physical Activity in Owners and Dogs (*Canis familiaris*) within a U.K. Dog Park

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As increasing demand for public space restricts dog-walking access, designated dog walking areas (dog parks) are growing. However, common features including limited size and multiple seating areas create environments that do little to promote walking. The current study investigated the impact of a socially driven treasure hunt on the physical activity of owners and their dogs at an off-lead U.K. dog-park.

Thirteen existing dog park users (29 – 71 years, 11 female 2 male) and their dogs (1 – 6 years, 4 female 9 male) undertook a two-week intervention involving searching for a key to open a rewarded box. Each participant was invited to replace the reward and re-hide the key within the park, thus attempting to encourage walking and space use. Number of owner steps were recorded utilizing the pedometer 'Yamax Digi-walker SW200' while distance travelled, time spent moving, and percentage of the park space covered by the dog were recorded using a 'Dorr GPS route logger' at each park visit (allocated time 30 minutes) during the intervention (B), 2 weeks preceding (A_1) and 2 weeks post-intervention (A_2). Following each condition, owner levels of enjoyment, perceptions of their dog's enjoyment & levels of interaction between owner & dog were obtained via self-report questionnaire.

Significantly fewer steps were taken by participants during A_2 in comparison to both A_1 (One-Way ANOVA, post-hoc comparison $p = 0.039$) and B (One-way ANOVA, post hoc comparison $p = 0.014$) and their park enjoyment was significantly greater in this condition compared to B (Wilcoxon signed rank, $p = 0.004$). There were no significant main effects of condition on any of the three dog related outcome measures (One-way ANOVA tests, $p > 0.05$).

These findings suggest that a treasure hunt is an unsuccessful intervention in terms of promoting physical activity in owners and their dogs and providing enjoyment to owners.

POSTER 26**Title:** Psychosocial and Environmental Factors Associated with Dog Walking**Authors:** Elizabeth A. Richards¹ (erichards@purdue.edu), Meghan H. McDonough², Nancy E. Edwards¹, Roseann M. Lyle², Philip J. Troped³**Affiliations:** ¹Purdue University School of Nursing; ²Purdue University Department of Health and Kinesiology; ³University of Massachusetts Boston, Department of Exercise and Health Sciences**Correspondence:** erichards@purdue.edu

Dog ownership and dog walking are associated with higher levels of physical activity (PA). However, not all dog owners walk their dog(s) at a level sufficient for health benefits. Therefore, identifying correlates of dog walking may help to inform the design of more effective interventions to promote this specific form of PA. The purpose of this study was to examine psychosocial and environmental correlates of dog walking and the relationships of dog walking with overall PA. In 2010, 391 dog owners ($M_{age} = 43.6 \pm 12.3$ years) completed a survey on dog walking. Multiple logistic regression and structural equation modeling were used to examine psychosocial and environmental correlates of dog walking status, weekly minutes of dog walking, and relationships of dog walking with overall PA.

Self-efficacy for dog walking, dog-related outcome expectancies, family social support, dog social support, and neighborhood walking environment were associated with a 1.5 to 3.9 greater odds of being a dog walker. Self-efficacy mediated relationships between family support, dog support, and presence of a yard and dog walking. Neighborhood environment, including the presence of greenery and trails, was also positively associated with duration of dog walking. Every 30 minute increase in dog walking was associated with a 24% greater odds of meeting PA guidelines by walking. All relationships were significant at $p < 0.05$.

Individual, social, and environmental factors consistent with a social ecological framework were positively associated with dog walking. Dog walking interventions should include strategies that target dog walking self-efficacy, social support, and the neighborhood environment.

POSTER 27

Title: Human-Animal Interactions Can Attenuate Salivary Cortisol Levels in College Students Exposed to an Induced Stress Event

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Previous research has suggested that the presence of a pet during a stressful event may lower several physiological measures associated with stress such as heart rate, blood pressure, or autonomic reactivity. Most of the previous studies have focused on the benefits of human-animal interactions in medical or psychiatric populations, the elderly, children, or pet owners (for review, see Beetz et al. 2012). In the following study, we add to the existing literature by examining the role of the stress hormone cortisol in a healthy population of 42 female college students (19-29 years of age), without having the prerequisite of pet ownership. It was predicted that the presence of a certified therapy dog during the social stress test would offset the rise in cortisol levels compared to a control group that underwent the same procedures but without the therapy dog present. Salivary cortisol samples were taken upon arrival, within 5 minutes of the introduction of the stressor, and 20 minutes after the stressor. Participants also completed the Perceived Stress Scale and a caffeine intake questionnaire (since caffeine can act as a possible confounding factor) following the social stress test. We found that the experimental group with the therapy dogs present reported less perceived stress compared to controls ($F_{(1,39)} = 10.93, p = .002$). In addition, the experiment group had lower salivary cortisol levels compared to controls, especially 5 minutes after the introduction of the stressor ($F_{(2,28)} = 3.52, p < .05$). Together, our study suggests that both a person's perception of their stress as well as cortisol levels can be attenuated by the presence of a therapy dog. This empirical study adds to the growing literature that human-animal interactions can have multiple beneficial effects on humans.

Beetz, A., Uvnäs-Moberg, K., Julius, H., & Kotrschal, K. (2012). Psychosocial and psychophysiological effects of human-animal interactions: The possible role of oxytocin. *Frontiers In Psychology, 3*, pp 1-15.

POSTER 28

Title: Clicking Calm Behaviors: A Service Learning Project with Students Working with Shelter Dogs

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Each year in the United States, millions of animals are taken to animal shelters or animal welfare organizations. During their stay at even a modern, well-run animal shelter, previous research has reported behavioral and health problems associated with stress (Hennessey et al., 1997; Tuber et al., 1999; Dybdall, Strasser & Katz, 2007). Psychology students with training in research methodology are in a position to gain both research and teaching experience through service-learning projects involving animal shelters. In the following study, we present the incorporation of a service-learning project with an animal shelter in a traditional college psychology course and a partnership with a local high school with “at risk” youths. The purpose of the project was to train students to use positive reinforcement techniques to shape desirable behaviors in shelter dogs which subsequently may increase the chances of a successful adoption. Students were trained to collect baseline behavioral data on kennel dogs that might reflect stress or anxiety (i.e. barking, whining, pacing). The students were then trained to use a “clicker” to mark calm behaviors in the dog (or the absence of undesirable behaviors). Here we report data collected from the students from 2010-2012 involving the change of behavior in the dogs following this activity. Dogs showed a decrease in the frequency of problem behaviors following training sessions with the students. In addition, we also examined if working with the dogs changed student attitudes towards animals after working with the shelter dogs. We administered the Pet Attitude Scale (Munsell et al., 2004) to students before and after their experience at the animal shelter. We saw a 10 point increase in scores in high school students but a stable score in the college students which might reflect a “ceiling” effect given their scores were high to start.

Dybdall, K., Strasser, R., & Katz, T. (2007). Behavioral differences between owner surrender and stray domestic cats after entering an animal shelter. *Applied Animal Behaviour Science*, 104(1), 85-94.

Hennessey, M. B., Davis, H. N., Williams, M. T., Mellott, C., & Douglas, C. W. (1997). Plasma cortisol levels of dogs at a county animal shelter. *Physiology & Behavior*, 62(3), 485-490.

Munsell, K. L., Canfield, M., Templer, D. I., Tangan, K., & Arikawa, H. (2004). Modification of the pet attitude scale. *Society and Animals*, 12(2), 137-142.

Tuber, D. S., Miller, D. D., Caris, K. A., Halter, R., Linden, F., & Hennessey, M. B. (1999). Dogs in animal shelters: Problems, suggestions, and needed expertise. *Psychological Science*, 10(5), 379-386.

POSTER 29**Title:** Animal-Assisted Intervention: Impact on Children's Stress Hormones Levels & Reading Scores**Authors:** Rosemary Strasser, Lisa Kelly-Vance, Stephanie Dredge, & Kelly Juilfs**Affiliation:** Psychology Department, University of Nebraska at Omaha, USA**Email correspondence:** rstrasser@unomaha.edu

Animal-assisted intervention (AAI) has been reported to have positive effects in many therapy situations with children (Prothmann et al., 2006) including children with emotional disorders (Anderson & Olson, 2006). AAI has also been reported to have beneficial effects in children in a classroom settings such as lower blood pressure when reading aloud with a dog present (Freidmann et al., 1983) or children with learning disabilities being more alert and responsive to instructors (Limond et al., 1997). The suggested benefit of AAI is also believed to extend to improvements in children's emotional and social well-being. Specifically, the assumptions of AAI programs are that the animals are viewed as non-judgmental by the students thereby providing both social and emotional support (Friesen, 2010). To date, however, there has been little empirical evidence regarding the effectiveness of AAI as an intervention strategy for children's who may experience stress or anxiety during reading. In the following study, 40 children from grades 1-7 from a culturally diverse elementary school participated in a summer school reading program in 2011 and 2012. Salivary cortisol levels were measured in the children after reading aloud either with the therapy dog present (condition A) or without a therapy dog present (condition B) using an A-B-A-B research design across a 2-3 week period. Reading skills were also evaluated pre- and post-test with one minute timed reading passages (Curriculum-Based Measures Reading). Preliminary results from 2011 indicate a trend for students with dogs in the home to also have lower cortisol levels when reading with therapy dogs. Further, reading skills improved in all children after their participation in the program ($F(1) = 6.25, p < .02$). Additional data will be presented that might help elucidate under what conditions having a therapy dog present might act as a useful intervention in a student reading program.

Anderson, K., & Olson, M. (2006). The value of a dog in a classroom of children with severe emotional disorders. *Anthrozoös, 19*(1), 35-49.

Freidmann, E., Katcher, A.H., Thomas, S.A., Lynch, J.J., & Messent, P.R. (1983). Social interaction and blood pressure: Influence of companion animals. *Journal of Nervous and Mental Diseases, 171*, 461-465.

Friesen, L. (2010). Exploring animal-assisted programs with children in school and therapeutic contexts. *Early Childhood Education Journal, 37*(4), 261-267.

Limond, J., Bradshaw, J., & Cormack, K. (1997). Behavior of children with learning disabilities interacting with a therapy dog. *Anthrozoös, 10*(2-3), 84-89.

Prothmann, A., Bienert, M., & Etrich, C. (2006). Dogs in child psychotherapy: Effects on state of mind. *Anthrozoös, 19*(3), 265-277.

POSTER 30

Title: The role of pet dogs in transmission of SA and MRSA in households with pet dogs

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Pets play an important role in many families and share intimate emotional and physical bonds with their owners. At the same time, there is concern that pet dogs may serve as reservoirs for colonization with pathogens responsible for zoonotic diseases. *Staphylococcus aureus* (SA) and methicillin-resistant *Staphylococcus aureus* (MRSA) are important human pathogens and pet dogs have been implicated as potential human reservoirs in clusters of MRSA infections.

The purpose of this study is to determine the impact of pet ownership on the presence of SA and MRSA in community dwelling individuals. Two hundred and nineteen participants were sampled. The swab samples were cultured to determine type of *Staphylococcus aureus* (SA), methicillin-resistant *Staphylococcus aureus* (MRSA) and *Staphylococcus pseudintermedius*, a common canine pathogen. Data was collected on human-animal interaction using standardized instruments.

There was no difference in total colonization with 22/73 (30%) of non-dog owners were colonized SA or a related organism compared to 58/146 (40%) of dog owners (Chi-square=1.93; 1df, p=NS). However, among those colonized with MRSA (n=3), all were dog owners. In addition, we detected SP in the normal flora of 6/146 (4%) of dog owners and none among non-dog owners.

Our future work will identify and characterize isolates that are not typable using standard general microbiologic techniques in consultation with reference labs. Based on the preliminary analysis of the ongoing research, there was not a significant trend showing association of colonization with SA/MRSA between dog owners and non-dog owners. Our future goals are to characterize the behaviors that lead to higher risk of colonization of *Staphylococcus aureus* and develop sound practices to minimize the risk of colonization. We also plan to use genetic typing to characterize relatedness of the strains recovered from humans and their companion dogs.

POSTER 31**Title:** Parental perceptions of puppy-child interactions**Authors:** Sian Ryan, Helen Zulch, & Hannah F. Wright**Affiliation:** School of Life Sciences, University of Lincoln, UK**Correspondence:** hwright@lincoln.ac.uk

Children are at greater risk from dog bites than adults (Love & Overall, 2001) and bites most frequently occur within the family home. It is therefore important that parents can correctly interpret puppy-child interactions in order to supervise and intervene appropriately. This study describes the evaluation of video clips of puppy-child interactions by parents, and compares their assessments with those from a panel of experts.

Spontaneous interactions between children (n=6) and puppies (n=7) in puppy classes were filmed and edited into segments of varying duration (2-61seconds, mean 9.3 ± 9.72). Clips (n=49) were rated by a separate group of dog-owning parents (n=15) of children (aged <10) and a panel of dog behaviour experts (n=4). Rating was on a three point scale (1= 'negative experience for the puppy', 2 =neutral experience for the puppy', 3 =positive experience for the puppy). Agreement between and within experts and parents was assessed.

The experts agreed on 16 out of 49 clips (33%). The parents agreed on 0 out of 49 clips (0%). The parents were in agreement with only one of the 16 expert agreed clips (Fisher's Exact Test $df=1$, $p=0.008$).

The lack of agreement between experts highlights the complexity of assessing interactions between children and puppies, and the difficulties in using video clips for such studies. However, when experts did agree, parents' ratings were not in agreement with them. In several cases parents rated an interaction as positive where the experts rated them as negative. This study also highlights the need for further education of parents in relation to interactions between children and dogs so that the risk of dog bites can be reduced.

Overall K., & Love M., 2001 Dog bites to humans: demography, epidemiology, injury and risk. *Journal of the American Veterinary Medical Association* 218:1923–1934.

POSTER 32

Title: Companion animal welfare in disasters: An assessment of nine state emergency plans

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Failure to evacuate pets in an emergency has negative implications for public health, the economy, emotional wellbeing of pet owners, and physical health of animals. These effects may be at least partially mitigated by a robust plan to accommodate pets. This comprehensive review produced a list of recommendations for emergency managers as they create future versions of their plans.

Emergency planning literature (Alexander, 2005; Edmonds & Cutter, 2008; Irvine, 2009; Leonard & Scammon, 2007; Perry & Lindell, 2003; University of California, Davis, 2009; Waugh & Streib, 2006) was reviewed to create a list of characteristics of a useful emergency plan. Qualitative data analysis was conducted on the companion animal emergency annex in nine states in different regions of the United States. Coding and comparison with the list of emergency planning model attributes determined the extent to which plans addressed the needs of companion animals. The review found that, though mandated by law, companion animal emergency planning varies quite widely among states, with some producing mature, complex plans and others producing very rudimentary plans. All states studied demonstrated compliance with at least some elements of successful emergency plans.

In addition, states were compared utilizing variables such as population, pet friendliness, and emergency preparedness funding in order to explain differences in plan composition. Despite slight correlations, comparison among the most prepared and least prepared states suggests that these factors actually have little to do with a state's overall readiness in relation to companion animals. Though most of the elements that comprise an ideal emergency plan were present in the majority of the plans, some gaps in planning became evident and could become problematic during an emergency situation. A set of recommendations was compiled in order to provide emergency planning officials with suggestions for improvement in future rendering of plans.

Alexander, D. (2005). Towards the development of a standard in emergency planning. *Disaster Prevention and Management*, 14(2), 158-175.

Edmonds, A. S., & Cutter, S. L. (2008). Planning for pet evacuations during disasters. *Journal of Homeland Security and Emergency Management*, 5(1), 1-18.

Irvine, L. (2009). *Filling the ark: Animal welfare in disasters*. Philadelphia, PA: Temple University Press.

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Perry, R. W., & Lindell, M. K. (2003). Preparedness for emergency response: Guidelines for the emergency planning process. *Disasters*, 27(4), 336-350.

University of California, Davis (1999). DANR guide to disaster preparedness. Accessed from <http://www.vetmed.ucdavis.edu/vetext/DANR/DANRGuide2.pdf>

Waugh, W. L., & Streib, G. (2006). Collaboration and leadership for effective emergency management. *Public Administration Review*, 66(Suppl. 1), 131-140.

POSTER 33

Title: Child and Adolescent Functioning Outcomes After Six Months of Trauma-Focused Equine Assisted Psychotherapy

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Trauma, such as severe neglect or abuse, incurred during critical developmental periods such as childhood and adolescence may create negative and pervasive effects in behavior and emotion. Previous scholarship has demonstrated that animals can provide therapeutic benefits for trauma victims, both as companions and in various psychotherapies. Recent research suggests that the addition of equines to the psychotherapy process may help increase functioning across a number of life areas for those who have experienced repeated traumatic stress. An example of this is Trauma-Focused Equine-Assisted Psychotherapy (TF-EAP), which focuses on using horses to help clients consistently regulate their own physiology and psychology.

The current study examines the effects of six months of sessions of TF-EAP on 15 children and adolescents ($n = 15$) that had experienced severe abuse and/or neglect. Child and Adolescent Functional Assessment Scale (CAFAS) scores were collected by the clinical director at a TF-EAP facility in the Southern United States. Analysis was performed for the youths (mean age = 11.1 years) at the start of TF-EAP sessions and again after 6 months of treatment. The CAFAS scores capture 8 domains of youth functioning, with subscales including school, home, community, behavior towards others, moods/emotions, self-harmful behavior, substance use, and thinking. Results from the Related-Samples Wilcoxon Signed Ranks Test found significant differences ($p < .05$) from initial assessment to follow up in the overall total score including five out of the seven subscales analyzed, including school behavior, home behavior, behavior towards others, community behavior, and moods/emotions. This research contributes to the emerging literature supporting the use of horses as an enhanced therapeutic medium, particularly for children and adolescents who have experienced complex or developmental trauma.

POSTER 34**Title:** Factors affecting owner satisfaction with their companion dog**Authors:** Jacqui Ley¹, Janette Collier² and Pauleen Bennett²**Affiliation:** ¹Animal Behaviour Consultations, Victoria 3805 Australia; ²School of Psychological Science, La Trobe University, Victoria, Australia**Correspondence:** Pauleen.Bennett@latrobe.edu.au

When the bond is strong between owner and dog, the dog is typically valued and cared for like a member of the family. When the bond is weak, the dog is in danger of being euthanized, surrendered or abandoned. Many factors contribute to a strong owner-dog bond; one of these being owner satisfaction with the dog. The aim in this project was to identify factors predicting dog owner satisfaction. The study combined the Monash Dog Owner Relationship Scale, the Monash Canine Personality Questionnaire (Revised), a questionnaire about dog behaviour factors and questions asking owners about their own personality, their preparation for acquiring the dog, their experience with dogs in general, their reason for getting the dog, their dog's behaviour, their beliefs about dogs in general and their satisfaction with the dog. Over 2000 adult Australian dog owners completed the online survey. Principal Components Analysis of the Owner Satisfaction questions identified 3 components that accounted for 62.15% of variance. These were labelled satisfaction with A) private behaviour, B) public behaviour and C) physical appearance. Step-Wise Regression Analysis revealed that satisfaction with private behaviour was predicted by 10 variables, with the three making the largest contribution being the Amicability of the dog, owner self-reported knowledge of dogs and the Perceived Cost of dog ownership. The overall model fit was $\text{Adj } R^2=0.39$, $F(9, 755)= 55.5$, $p<0.001$. Satisfaction with public behaviour was predicted by 13 items with the three making the largest contribution being the friendliness of the dog, its amicability and how well-mannered the dog was considered to be. The overall model fit was $\text{Adj } R^2=0.48$, $F(13,751)= 55.7$, $p<0.001$. Overall that owner satisfaction relies heavily on the dog's perceived friendliness, amicability and manners. These factors should be targeted in interventions designed to reduce dog relinquishment by increasing owner satisfaction and owner-dog bonding.

POSTER 35

Title: Resident and tourist environmental concerns and attitudes toward sea lions in the Galápagos

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We examined environmental concerns and attitudes toward sea lions for residents and tourists on San Cristóbal Island in the Galápagos, using convenience and snowball sampling (N=281). The environmental concern scale comprised 12 items measuring egoistic, altruistic and biospheric concerns (Schultz, 2001). The sea lion attitude scale comprised 39 items measuring dominionistic, ecoscientistic, negativistic, naturalistic, utilitarian, moralistic and humanistic dimensions (Kellert, 1980).

Reliability assessment for environmental concerns revealed good internal consistency: Cronbach's alpha coefficients (CACs) for egoistic, altruistic and biospheric concerns were .85, .78, and .78, respectively. Residents reported greater concern than did tourists in all three areas. Reliability assessment for the attitude dimensions revealed good or moderate internal consistency for 5 scales: humanistic, negativistic, moralistic, naturalistic, and ecoscientistic subscales revealed CACs of .71, .77, .65, .60, and .73, respectively. Utilitarian and dominionistic scales showed poor internal consistency: CACs were .32 and .39, respectively. Residents scored significantly higher than tourists on negativistic and ecoscientistic attitudes, but lower on moralistic attitudes.

Overall, residents and tourists expressed similar environmental concerns and attitudes toward sea lions. However, actually living in the Galápagos with sea lions may induce a somewhat greater concern for the environment and one's continued presence in it, and a more pragmatic attitude toward interactions with sea lions, than does simply visiting.

Kellert, S. 1980. *Knowledge, affection, and basic attitudes towards animals in American society: Phase III*. Washington, DC: US Dept. of the Interior, Fish and Wildlife Service.

Schultz, PW. 2001. The structure of environmental concern: Concern for self, other people and the biosphere. *Journal of Environmental Psychology*, 21, 327-339.

POSTER 36

Title: Discomfort due to dog-related problems: Silent victims in the Japanese countryside

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Responsible dog keeping in the community is inevitable, e.g., picking-up feces during the dog walk. However, some keepers allow their dogs to foul in public places and leave the feces, including around farmland. Studies are scarce about such dog-related problems on farmland paths, while there have been some studies in parks and streets. Dog keepers might think that paths in farming areas are good public promenades for dog-walking, but farmers might consider such places as a part of their lots. This study investigated the attitudes of farmers towards dog-related problems.

A semi-structured visit-interview was conducted in the countryside of Gunma Prefecture, Japan. Forty-eight farmers who managed their farmland participated in the survey. In the total samples, 79% of the respondents had experienced dog-related problems, e.g., biting, barking at night, and not picking-up feces, and 25% of those who had experienced these problems answered that there was no solution. In another question, 46% of the respondents answered that they did not mind the dog feces left on their farmland. Regarding the disposal of the feces, half of the respondents buried them on their farmland, and the remaining half did nothing.

It is suggested that dog-related problems might compel the farmers to give up trying to find a solution. There are many silent victims of dog-related problems in the countryside, just like other nuisances in urban areas. To solve such problems on farmland, it might also be necessary to consider social factors, such as financial difficulties and the aging cohort of farmers, and standoffish relationships between residents who come from other places and farmers who have lived in the area for generations, which are problems regarding today's agriculture in Japan.

POSTER 37

Title: The role of human-animal interaction in promoting positive youth development: Findings from the 4-H Study of Positive Youth Development

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A growing literature shows the importance of human-animal interaction (HAI) in enhancing adjustment and development in young people (McCardle et al., 2011). Accordingly, HAI may be a means by which youth can engage in a mutually beneficial, bidirectional relationship with their environment, one that capitalizes on their affection for, and interest in, animals as a pathway to positive youth development (PYD). However, there is little research documenting the role of HAI in promoting PYD. Accordingly, the purpose of this research was to provide initial information about the relationship between HAI and positive development.

Using data from 567 young adults (ages 18 to 26, 70.8% female) from the 4-H Study of PYD, this research assessed patterns of HAI experiences and explored relations between attitudes and cognitions about animals and thriving.

Overall, 72.3% of the sample reported interacting with an animal; 69% of the sample reported having a pet, and 31.4% reported participating in an animal-related activity. Participants reporting higher scores regarding being responsible for their animals' care demonstrated higher levels of positive character attributes ($\beta = .12, p < .05$) and contribution to their communities ($\beta = .19, p < .001$). Structural equation model results indicated that attachment to animals was positively related to indices of PYD (connection to family and community, $\beta = .13, p < .05$; self-perceived competence, $\beta = .14, p < .05$; caring and empathy, $\beta = .13, p < .05$). Emotional commitment to animals was also positively related to PYD (connection to family and community, $\beta = .13, p < .01$; positive character attributes, $\beta = .21, p < .001$; caring and empathy, $\beta = .23, p < .001$; contribution to community, $\beta = .33, p < .001$), and negatively related to depression ($\beta = -.16, p < .01$). These findings have critical implications for future research and application of evidence-based youth programs involving HAI.

McCardle, P., McCune, S., Griffin, J. A., & Maholmes, V. (2011). *How animals affect us: Examining the influence of human-animal interaction on child development and human health*. Washington, DC: American Psychological Association.

POSTER 38

Title: The Seoul of Cats and Dogs: An ethnography of animal welfare in contemporary South Korea

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In 1988, the South Korean government decided to hide every dog meat restaurant in Seoul in order to avoid potential diplomatic incidents during the Olympics. This marked a turning point in South Koreans' attitudes towards the consumption of dogs within their own society, oscillating, from then on, between guilt and national identity. Since then, Korea has been undergoing frantic social transitions and, while cats are still boiled alive and dogs hung to death, animals have also increasingly become parts of Korean households, making them both meat and pets among Korean society. In the last twenty years, non-profit organisations have rescued thousands of animals every year and relentlessly fought the government's inaction towards animal abuse. As a result, in 2011, the government passed new amendments to Korea's animal protection law, asking citizens to reconsider their notions of 'cruelty' and 'responsibility' regarding animals.

This paper takes an in-depth qualitative approach to the contemporary attitudes towards cats and dogs in South Korea. Based on an extensive ethnographic fieldwork conducted inside three shelters in Seoul, this paper suggests that welfare organisations today teach South Korea's younger generations to interact with rescued animals and to make a clearer moral distinction between pets and livestock.

Its scientific implications lie in unveiling South Korean animal welfare's attitudes in terms of wider anthropological issues such as the study of human-animal relationships, ethics, education and xenophobia.

Podberscek, A. L., 2009, 'Good to Pet and Eat: The Keeping and Consuming of Dogs and Cats in South Korea', *Journal of Social Issues*, Vol.65(3), pp.615-632

POSTER 39

Title: *Canines and Childhood Cancer*: Measuring the Effects of Animal-Assisted Therapy for Patients, Families and Therapy Dogs

Authors: Kevin N. Morris, Amy McCullough, Molly Jenkins & Ashleigh Ruehrdanz

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Increasingly, greater attention has been given to the roles that animals can play in supporting human health and well-being, specifically through the use of animal-assisted therapy (AAT). However, while the field of human-animal interaction (HAI) research has expanded enormously in recent years, few rigorous clinical studies have provided quantitative measurements of the efficacy of AAT protocols. Likewise, there remains a lack of sound HAI research on how AAT may affect therapy dogs.

The *Canines and Childhood Cancer Study* seeks to address these research gaps by examining AAT's ability to impact the well-being and distress levels of pediatric oncology patients and their primary caregivers, as well as the therapy dogs who visit them, throughout the treatment process. This multi-site study incorporates a randomized control cohort, relatively large sample size and validated instruments to evaluate the impacts of the addition of AAT to the standard-of-care treatment received by all the patients.

Researchers will share the findings and lessons learned from a pilot trial conducted at three pediatric oncology sites. A sample of 5-15 patients, aged 3-11 years and recently diagnosed with Acute Lymphoblastic Leukemia, were observed over three-four months, their blood pressure and heart rate variability were measured at designated intervals and their videotaped behavior was rated via the Observational Scale of Behavioral Distress. Caregivers completed the State Trait Anxiety Inventory and the Pediatric Inventory for Parents at specific intervals throughout the three-four month period, and had their heart rate variability measured. Therapy dog behavior was observed and rated via videotape utilizing an AAT ethogram and handler self-reports. The dogs' salivary cortisol also was used to examine levels of canine stress during the visitation sessions. Pilot findings will inform a 12-18 month full clinical trial involving approximately 100 patients.

This study is a collaboration between American Humane Association and Zoetis.

POSTER 40

Title: Twenty-five years of Human and Non-Human Animal Demographics: A Content Analysis of Anthrozoös – the Journal of the International Society for Anthrozoology

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This poster presents the results of a content analysis of Anthrozoös articles from inception of the journal in 1987 through the 25th anniversary year of 2011 with specific focus on both human and non-human animal participant demographics. Numerous demographics such as academic affiliation and geographic location of first author, author gender, type of animals studied, age and condition of human participants, location of animal included in articles (farm, zoo, wild, companion, etc.), and the type of study approach employed were the focus of this research. A total of 448 Research and Review articles served as the sample for this study. Of the 448 articles, 82 (18.3%) articles focused exclusively on dogs, 22 (4.9%) on cats, 30 (6.7%) included companion animals as a group, 13 (2.9%) included dolphins, horses were the focus of 15 (3.3%) articles, but humans overwhelmingly were the main participants in the articles with 137 (30.6%) of the 448. Adults (19 years of age and over) were the dominant age of human participants studied in the articles: 177 (39.5%) followed by participant ages 19-30 (22, 4.9%), 61+ years of age (18, 4.0%), children ages 7-18 (17, 3.8%), and children ages 4-12 (14, 3.1%). The majority of non-human animal participants were companion animals to the human study participants (186, 41.5%). Researchers also worked with their own companion animals in the studies (72, 16.1%). Non-human animals from zoos (17, 3.8%), animal shelters (15, 3.3%), and the wild (43, 9.6%) were represented in the sample used for this content analysis. Many of the studies included both male and female human participants (347, 77.5%), although some focused only on female (18, 4.0%) or male 9 (2.0%) participants. Areas for future data exploration, such as the relationships between types of animals and age of participants, will also be discussed with conferences attendees.

POSTER 41**Title:** Health impacts and motives for participation in dog agility**Authors:** Rodney Hulstein & Joey Farrell**Affiliation:** School of Kinesiology, Lakehead University, Canada**Correspondence:** rhulstei@lakeheadu.ca

The average Canadian participates in low amounts of physical activity (PA) (Ham et al., 2009). Considering health benefits that participation in regular PA provides (Warburton et al., 2010), determining alternative avenues for exercise is important. Many types of dog sports, ranging in intensity, provide exercise for dog owners and various psychosocial health benefits (Baldwin & Norris, 1999). Agility is a more physically demanding dog sport requiring human/dog teams to complete an obstacle course as fast as possible. The heightened intensity involved in agility warrants exploration into why individuals participate and the impact participation has on overall health and PA levels.

Demographic information and PA behaviour was collected using a questionnaire from six competitive agility participants. PA information focused on frequency, intensity, and duration of agility participation. One-on-one semi-structured interviews were conducted to explore the activity benefits and motives for participation.

Participants were adult females involved in agility for 4-30 years, competing in 1-5 events/year. On average, participants engaged in 3.5 training sessions/week for 45 minutes totalling 158 min/week. Thematic analysis generated themes of physical, mental, and social health benefits. Participants were initially motivated because agility was a useful training tool, and it provided a sense of enjoyment and exercise for both human and dog. Some remained committed for the same reasons, while competitive aspects kept others engaged.

Participation in agility was considered a form of exercise that positively contributed to physical and psychosocial health. Perceived contribution to physical health depended on overall levels of PA. On average, participants met the Canadian PA guidelines, by completing short but frequent bouts of activity, with intensity often varying between moderate and vigorous. Further exploration into the competitive aspects of agility and their effect on motivation is warranted.

POSTER 42**Title:** The Lonely Rhino: Analyzing Anthropomorphism Toward Solitary Animals**Authors:** Selenia Murillo**Affiliation:** Chicago Zoological Society - Brookfield Zoo**Correspondence:** selenia.murillo@gmail.com

Studying anthropomorphism toward solitary animals can help zoos address concerns about animal welfare and determine appropriate educational responses.

A random sample of 200 guests were asked to complete a survey on 1 of 4 black rhinoceros (*Diceros bicornis*) located at Brookfield Zoo's Pachyderm House. The topics on the survey ranged from the rhino's behavior and welfare to the guest's environmental viewpoints and their emotional connection to the animal. Survey responses were examined for awareness of the black rhinoceros' solitary lifestyle, satisfaction with the animal's enclosure, and anthropomorphic descriptors. Correlations were investigated with SPSS software.

Analysis revealed 64% of survey respondents were unaware of the black rhinoceros' solitary lifestyle. When perceived as social, guests were more inclined to agree that the rhino appeared lonely (Spearman's rho, $rs(144) = -0.186$, $P = 0.026$), to disagree with the rhino not needing a companion (Spearman's rho, $rs(145) = -0.345$, $P = 0.000$), and to agree that the rhino seemed stressed with the presence of visitors (Spearman's rho, $rs(145) = .166$, $P = 0.046$). When describing the rhino's mood, 15% of guests used negative anthropomorphic descriptors - i.e. "lonely", "sad", "bored", "depressed". When describing their own emotional response to the animal's behavior, 2% of guests used negative descriptions - i.e. "felt sad for the rhino". The rhino's activity level, exhibit space, and enrichment items also influenced the guest's perception of the animal's welfare.

These findings suggest that educational outreach should be increased to improve guest awareness and satisfaction with solitary animal exhibits. Otherwise, zoos will need to determine how to reconcile visitor preference for multi-animal exhibits with the black rhinoceros' solitary lifestyle.

POSTER 43**Title:** A Novel, Empirical Test of Black Dog Syndrome**Authors:** Heather J. Svoboda, Christy L. Hoffman**Affiliation:** College of Arts & Sciences, Canisius College, USA**Correspondence:** svobodah@my.canisius.edu

Shelter industry professionals and popular media reports frequently contend that adopters spend less time viewing, or even noticing, dogs with black coats. Previous academic studies into this phenomenon, often called Black Dog Syndrome, have focused on analysis of shelter adoption statistics or data collected from human responses to canine images (Lepper, Kass, & Hart, 2002; Woodward, Milliken, & Humy, 2012). This project reviews previous research on Black Dog Syndrome and presents a novel technique used to capture and analyze adopters' interactions with shelter dogs of various coat colors. In this pilot study, ten prospective adopters wore ear-mounted video cameras as they viewed dogs available for adoption at an animal shelter. The recorded videos provided a unique record of human and dog behavior in authentic shelter adoption situations by showing the prospective adopter's relative line of site. Because data were collected via the small camera, interference by members of the research team on interactions between prospective adopters and dogs was minimized. Although less accurate than traditional eye-tracking devices, the ear-mounted cameras were economical, lightweight and easy to use and transport. Detailed analysis of the videos revealed how long participants spent looking at black and non-black dogs; the content of what was said to dogs of different coat colors; differences in dogs' behaviors; and mutual behavioral exchanges between dogs and prospective adopters. Challenges inherent in conducting this research in a naturalistic setting, such as not being able to control coat colors and breeds of dogs present on the adoption floor at any given time, will be discussed, as will extensions of this research to other questions regarding prospective adopter behavior.

Lepper, M., Kass, P. H., & Hart, L. A. (2002). Prediction of adoption versus euthanasia among dogs and cats in a California animal shelter. *Journal of Applied Animal Welfare Science*, 5(1), 29–42.

doi:10.1207/S15327604JAWS0501_3

Woodward, L., Milliken, J., & Humy, S. (2012). Give a dog a bad name and hang him: evaluating Big, Black Dog Syndrome. *Society and Animals*, 20(3), 236–253. doi:10.1163/15685306-12341236

POSTER 44

Title: The benefits and challenges of living with service dogs with smaller body size

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The U.S. takes a broad view of assistance dogs regarding people's disabilities, the breeds and sizes of dogs, and the training procedures, schedule, and venue. We qualitatively investigated the tasks and outcomes of small service dogs as viewed by their human partners and their families. We defined "smaller service dogs" as those weighing 40 lb. or less.

Sixteen smaller service dogs (median range 12-22 lbs) helped partners with various disabilities, including mobility (n = 8), psychiatric (n = 8), or medical (n = 7) disabilities (6 had multiple disabilities); their handlers (14) or family members (2) participated in this study. The semi-structured interviews were conducted via email and the data summarized using the KJ Method (Ohiwa et al., 1990).

Retrieving items was important for people both with and without mobility disabilities (6/8, 2/8, respectively). Alerting assistance also was important for those with mobility and psychiatric or medical disabilities (2/8). The interviewees felt that smaller service dogs offered advantages in limited spaces, such as apartments or on public transportation, and for people who could easily be injured, or be unable to provide enough exercise for a large dog. Smaller service dogs were functional not only for people with psychiatric or medical disabilities, but also for those requiring some mobility assistance. The participants sometimes experienced unpleasant reactions from others or difficulty with public access; some people mentioned making major efforts to present a professional image for service dogs.

A smaller service dog may be more suitable and feasible for some people than a large dog, suggesting a value of wider application of smaller service dogs.

Ohiwa, H., Kawai K., & Koyama, M. (1990). Idea processor and the KJ Method. Information Processing Society of Japan, 13, 44-48.

POSTER 45

Title: Experiences and attitudes toward smaller-bodied service dogs expressed by staff at Japanese service dog training organizations

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Japan allows service dogs only for people with mobility disabilities, and most service dogs are large-bodied, such as Retrievers. However, smaller-bodied service dogs may afford some advantages in limited spaces. We investigated the attitudes and experiences regarding smaller service dogs from staff at Japanese service dog training organizations. "Smaller service dogs" were those weighing 40 lb. or less.

Six of the nine service dog organizations which had trained at least one service dog in the past 5 years participated in this study (8 trainers and 3 medical professionals). Semi-structured interviews were conducted and data summarized using the KJ Method (Ohiwa et al., 1990).

Some negative attitudes expressed at two facilities were: only large service dogs could satisfy the needs of people with mobility disabilities; even Retrievers weighing 44lbs were not large enough for people with mobility disabilities; and people who are satisfied with tasks performed by smaller dogs should just have a pet dog. Positive or neutral attitudes expressed at four facilities were: smaller dogs as small as a Shetland Sheepdog could perform tasks, such as picking up things, including a cell phone, and one organization had attempted training a Miniature Poodle.

Advantages mentioned for smaller dogs were: fitting in limited spaces; reduced care and expenses; preventing a potential accident caused by a large dog. These staff believed that a dog's size should be chosen based on the needs of the service dog partner. Yet some interviewees were concerned that increasing the number of small service dogs may confuse the public regarding pet dogs and service dogs, and make public access more complicated.

Ohiwa, H., Kawai K., & Koyama, M. (1990). Idea processor and the KJ Method. *Information Processing Society of Japan*, 13, 44-48.

