



European Veterinary Congress of
Behavioural Medicine and Animal Welfare

ANTHROPOMORPHISM, WHERE CAN IT TAKE US?

7th – 9th October 2021 (online)

Proceedings of the 3rd Annual Meeting of the European Veterinary Congress of
Behavioural Medicine and Animal Welfare (EVCBMAW).





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Hosted by the Flemish Veterinary Working Group Ethology (VDWE)

In association with:

- 6th Annual Meeting of the Animal Welfare Science, Ethics and Law Veterinary Association
- 10th Annual Meeting of the European College of Animal Welfare and Behavioural Medicine
- 26th Annual Meeting of the European Society of Veterinary Clinical Ethology



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ARHOMANI
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We help you and your dog to be happy together!



Dear delegates, welcome to you all...

It is a great pleasure to welcome you to this virtual Third Annual Meeting of the European Veterinary Congress of Behavioural Medicine and Animal Welfare (EVCBMAW) 2021.

The COVID pandemic forced us to postpone the congress of 2020 in Ghent. Since the situation was still too uncertain at the beginning of 2021, the local organizing committee conferred with the boards of AWSELVA, ESVCE and ECAWBM, and we all decided to organize a virtual conference. This is and will be a big challenge for all of us. We were so thrilled to invite you to Ghent, as we have so many nice memories from the ESVCE congress we held there in 2006. But we have accepted the challenge of organizing the congress in collaboration with Laval Virtual. An entire virtual congress venue awaits you and it will still give us the opportunity to meet people and to socialize.

My first personal words of thanks will go to my team, the National Committee: the VDWE board who is always ready to help out. I especially want to thank Magda Westhovens who is my sister in this adventure. A very big thank you to Christel Moons who did a huge job as Chief Academic Secretary and Editor. She was also the one who proposed the theme of this congress. She is joining me in this message of welcome. Thanks also to the other members of the VDWE board and group: Ilse Rediers, Pascale Trimpeneers, Catherine Teugels and Myriam De Prins for their much valued help organizing this congress.

As we all know, anthropomorphism has been shunned for a long time in academia and in the practice of veterinary behavioural medicine. To some extent, this is with very good reason. However, as new insights into the affective and cognitive world of animals have become known over the past few decades, revisiting the topic is long overdue and so we wish in this congress to examine the state of the art of the field. To this end, we have invited two eminent keynote speakers, Prof. Steven Laureys and Prof. Frans de Waal, both experts in their field. Prof. Laureys will explore with us the concept of sentience and what is needed to attribute sentience to various animal groups, while Prof. de Waal will take us on a journey exploring different animal emotions.

A special word of thanks goes out to the other members of the Academic Committee: Rian Lensen and Anneleen Watteyn, who were the Indispensable And Dynamic Duo coordinating the administration and communication for abstract review, revision, and editing. We also gratefully acknowledge the work of the stream editors: Machteld Van Dierendonck and Cathy Dwyer for AWSEL and Helen Zulch and Sagi Denenberg for BM. They diligently worked through the abstracts and reviewer decisions and helped revise language where needed. And in turn, their work would not have been possible without

the help of countless reviewers. Of course, we also thank the presenters, who have submitted so many abstracts, really cooperated during the review process and revision round, and committed to presenting their work in a virtual conference world (spending countless hours dressing up their avatar, no doubt!). We are very happy to see that many presenters have accepted the invitation to explore the subject of anthropomorphism alongside our keynote speakers. In anticipation of their work, we also thank the session chairs for contributing by moderating the sessions during this meeting.

Last but not least, we owe a big thank you to all our sponsors, who helped ensure that we could hold this year's virtual conference.

And now we thank you, the delegates, who clearly had faith in the potential success of our online conference. We hope to have provided an interesting programme, that is full of opportunities to learn, exchange experiences, and network. But long days at the computer can be hard. Therefore, we have tried to schedule sufficient time in between sessions so you can combine poster viewing, visiting the exhibitor stands (including attending commercial presentations), and chatting to colleagues with giving your eyes some rest from the computer screen and your body some exercise.

Enjoy the congress, have fun in the virtual world (perhaps see you at the beach or the soccer field or at the animal-friendly fireworks!). We are looking forward to meeting you all for the 4th Annual Meeting of the EVCBMAW in Palma de Mallorca, Sept 28th through Oct 1st 2022.

Christine Halsberghe
President of the National Committee

Christel Moons
Chief Academic Secretary and Editor



The members of AWSELVA are very happy to be associated with this excellent conference and would like to thank the organising committee for all their hard work in putting this together during such difficult times. It is sad that we can't meet face to face and we look forward to a time when we are all able to do that safely.

In these challenging times it is a real delight to see how supportive our networks have been and how we can continue to develop and expand our specialities. Our College sub-specialities in particular share a common base and we hope that now that the initial examination for the AWSEL diploma has taken place, full recognition will be given to the whole College.

The conference is full of interest and the platform offers us the opportunity to engage as fully as possible. We hope that all our members will make use of this facility and join with our partner organisations in supporting this exciting opportunity.

To our colleagues in Ghent we would like to say how much we appreciate your hard work in delivering this conference and how sad we are not to be sharing this with you in your country.

It has been such a difficult year for you all with the uncertainty of what kind of meeting was possible. We thank you for your amazing efforts on our behalf in delivering a conference of such quality

On behalf of AWSELVA I would like to welcome you all to this year's conference and look forward to days of interest and opportunity

Paul Roger
AWSELVA president

Dear Delegates,
On behalf of the European College of Animal Welfare and Behavioural Medicine it is a great pleasure to welcome you to the 3rd Annual Meeting of the European Veterinary Congress of Behavioural Medicine and Animal Welfare (EVCBMAW).

This is a joint event between the European College of Animal Welfare and Behavioural Medicine, the European Society of Veterinary Clinical Ethology (ESVCE), the Animal Welfare Science, Ethics and Law Veterinary Association (AWSELVA) and the The Flemish Veterinary Working Group on Ethology (VDWE).

Every year the ECAWBM grows and advances the field of Behavioural Medicine , Animal Welfare Science , Ethics and Law and both subspecialities see an increase in the number of people involved in the life of the College.

Due to the continued situation with COVID-19, unfortunately this 2021 conference will be an online event. But thanks to the amazing work of the Ghent Local Organizing Committee the event is still possible and includes interesting presentations and the opportunity for scientific discussions.

The Conference entitled « *Anthropomorphism : Where can it take us?* » is very promising with interesting invited lectures and many submitted presentations : which are the result of the research and work carried out by our colleagues in Europe and in the rest of the world. Every year this work provides new knowledge and information about the fields supported by our College.

Learning about the behaviour and welfare of animals enables us to better to understand and also improve the world and the society in which we live !

I would like to express our gratitude for the great work of the National Committee, the International Committee, the Academic Committee , and all the reviewers as they have enabled this meeting to take place.

I would also like to offer a huge vote of thanks to all our sponsors for supporting the online conference and making this meeting possible.

I look forward to meeting you during this online event ! And enjoy this 2021 annual congress !

Alessandro Cozzi
ECAWBM President



Dear delegates, dear friends,

As the new president of ESVCE, on behalf of the whole ESVCE board, I would like to welcome you all to the third annual meeting of the European Veterinary Congress of Behavioural Medicine and Animal Welfare. This is also the 26th annual meeting of the ESVCE!

It's a great pleasure to hold this congress together with AWSELVA and ECAWBM. This gives us, as always, the opportunity to share information, developments and research in our fields and creates an excellent and exciting opportunity for of the two specialist fields to interact.

I'm especially happy that two of our members who are recipients of the RDM grant will be presenting their work during this congress.

Thanks to Paul Roger, Alessandro Cozzi, Anouck Haverbeke and Goncalo da Graça Pereira, all members of the general committee that supervises the organisation of the annual congresses. This year Tomas Camps joined this group, and he and his colleagues will be in charge of organizing our 4th congress. Good luck to you Tomas.

The whole ESVCE board wishes you an interesting congress. This will be in a way an adventure. Even if we are missing out on the real live social contact, we at least still have the opportunity to meet and to chat in a virtual world.

Let's meet live in Palma de Mallorca next year.

Christine Halsberghe
President of ESVCE

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**Thursday 7th October 2021 (*)****ANIMAL WELFARE SCIENCE, ETHICS AND LAW**

08:45 – 09:00 Welcome

Session 109:00 – 09:30 Debate presentation: New management strategies of the major cat allergen (Feld1) for allergic cat owners: what about ethics and welfare of cats?*Cécile Bienboire-Frosini*

09:30 – 09:45 Frequency and stressfulness of ethically challenging situations encountered by veterinary team members since the COVID-19 Pandemic.

*Anne Quain*09:45 – 10:15 Debate presentation: Feminism, speciesism and empirical approaches in veterinary ethics.*Vanessa Ashall*

10:15 – 10:30 Analysis of TRACES of cattle transported from France toward Puglia region, do they comply with Reg. EC 1/2005?

*Barbara Padalino***Break + Commercial Exhibition****Poster session (10:45 – 11:15) – Animal Welfare Science, Ethics and Law****Session 2**

11:15 – 11:45 Rearing pigs with intact tails: how to do.

Stefan Gunnarson

11:45 – 12:00 The art of (describing) doing nothing: Inactivity in fattening cattle.

Sara Hintze

12:00 – 12:30 Welfare assessment protocol for dromedary camels.

*Barbara Padalino***Lunch break + Commercial Exhibition****Poster session (13:00 – 13:45) – Animal Welfare Science, Ethics and Law****Session 3**

14:15 – 14:30 Development of the teaching of Animal Welfare Science, Ethics and Law in European veterinary faculties.

Nancy De Briyne

14:30 – 14:45 Using case videos to teach farm animal welfare – exploring the anicare approach.

Manuel Magalhães-Sant'Ana

14:45 – 15:00 Assessment of the efficiency of practical low stress handling teachings to veterinary students to reduce the stress of cats.

Caroline Gilbert

15:00 – 15:15 Dog behaviour in crowded public places and dog owner motivation for bringing them: a pilot study.

Ciel Narinx

15:15 – 15:30 Effects of age on mice vomeronasal organ morphology and physiology.

*Violaine Mechin***Break + Commercial Exhibition****Poster session (15:45 – 16:15) – Animal Welfare Science, Ethics and Law****Session 4**

16:15 – 16:30 Behavioural profile differences between cats engaged in Animal Assisted Interventions (AAls) and non-AAI cats using a Flemish translation of the Feline Behavioral Assessment & Research Questionnaire (Fe-BARQ).

Joni Delanoeije

16:30 – 16:45 Do dogs cope with animal-assisted therapy sessions, and how? A pilot study.

Cécile Bienboire-Frosini

16:45 – 17:00 Staff and student attitudes towards employee-owned visiting cats and dogs on campus.

Joni Delanoeije

17:00 – 17:15 Could the success of guide dogs be influenced by the bond they developed with their puppy raisers?

Fanny Menuge

Friday 8th October 2021 (*)

ANIMAL WELFARE SCIENCE, ETHICS AND LAW

BEHAVIOURAL MEDICINE

ANIMAL WELFARE SCIENCE, ETHICS AND LAW (parallel sessions)

BEHAVIOURAL MEDICINE (parallel sessions)

09:15 – 09:30 Welcome

09:15 – 09:30 Welcome

Session 5

Session 7

09:30 – 10:00 Debate presentation: Anthropomorphism – risks and benefits in veterinary care.9:30 – 10:00 Debate presentation: Human-dog relationship: Could anthropomorphism have taken us too far?*Elina Åsbjer**Emmanuelle Titeux*

10:00 – 10:30 How would you feel with an untreated in-growing toe-nail? Using anthropomorphism in court.

10:00 – 10:30 Changes in the behaviour of pet dogs after the death of a conspecific: is this grief?

*Sophia Hepple**Stefania Uccheddu*

Break + Commercial Exhibition

Break + Commercial Exhibition

Poster session (10:45 – 11:15) – Behavioural Medicine & Animal Welfare Science, Ethics and Law

Poster session (10:45 – 11:15) – Behavioural Medicine & Animal Welfare Science, Ethics and Law

Session 6

Session 8

11:15 – 11:30 Anthropomorphism and overtreatment in small animals: a qualitative study of the experience and perspectives of practitioners in France, ethical analysis, and practical recommendations.

11:15 – 11:45 Dogs adjust 'looking back' behaviour in an unsolvable task paradigm based on who has rendered the reward inaccessible.

*Denise Remy**Stefanie Riemer*

11:30 – 11:45 Taxonomic group influences the human-reptile bond – anthropomorphism in a survey of reptile keepers in Portugal.

11:45 – 12:00 Quantitative behavioural analysis and qualitative classification of attachment styles in domestic dogs: are dogs with a secure and an insecure-avoidant attachment different?

*Alexandre Azevedo**Giacomo Riggio*11:45– 12:15 Debate presentation: The less loved chicken and the public interest test – Can anthropomorphism and speciesism influence decision-making on proportional enforcement?

12:00 – 12:15 Satisfaction with the cat and satisfaction affecting behavioural complaints among Italian cat-owners.

*Sophia Hepple**Simona Normando*

Break + Commercial Exhibition

Poster session (13:00 – 13:30) – Behavioural Medicine & Animal Welfare Science, Ethics and Law. AGM ECAWBM (13:30 – 14:30)

Invited speaker session

15:00 – 16:30 The neurology of consciousness in humans and other animals and what it means for sentience.

Steven Laureys

16:30 – 17:00 Q&A Steven Laureys

17:00 – 17:15 Short break

17:15 – 18:00 Mama's last hug: how to talk about emotions in animals?

Frans de Waal

18:00 – 18:30 Q&A Frans de Waal

18:30 – 18:45 Short break

18:45 – 19:45 Social event (presidents' speeches & fireworks)

Saturday 9th October 2021 (*)**BEHAVIOURAL MEDICINE**

08:45 – 09:00 Welcome

Session 9

09:00 – 09:15 Exposure to controlled challenges increases stress resilience in dog puppies.

Lisa Stolzlechner

09:15 – 09:30 Preliminary study evaluating the effects of functional biting activity sessions on the level of urinary serotonin in problematic dogs.

Daniela Alberghina

09:30 – 09:45 A review of the link between neurology and behaviour in veterinary medicine.

Eleonora Amadei

09:45 – 10:00 A preliminary study on behavioural aspects in dogs with idiopathic epilepsy.

Eleonora Amadei

10:00 – 10:30 The role of personality, pet-owner relationship, and COVID-19 on human quality of life.

*Patrizia Piotti***Break + Commercial Exhibition****Poster session (10:45 – 11:15) – Behavioural Medicine****Session 10**

11:15 – 11:45 Phenotyping addictive-like behaviour towards toys in dogs and association with impulsivity.

Alja Mazzini

11:45 – 12:00 The influence of training on the identification of behaviour of dogs by veterinary professionals.

Joana Pereira

12:00 – 12:15 Operant and Pavlovian approaches to relaxation training in dogs and their (high) reported effectiveness in behaviour modification.

*Stefanie Riemer***Lunch break + Commercial Exhibition****Poster session (13:15 – 13:45) – Behavioural Medicine****Session 11**

13:45 – 14:15 Tasipimidine, a novel orally active alpha-2 adrenoceptor agonist, alleviates signs of anxiety shown during veterinary examination – a pilot study.

Karen Overall

14:15 – 14:30 Beneficial effect of behavioural training of veterinary centre staff and trazodone administration on behavioural signs of stress in hospitalized dogs.

João Pedro da Silva Monteiro

14:30 – 14:45 Investigation into the stress responses of horses undergoing veterinary procedures in an equine hospital.

*Gemma Pearson***Break + Commercial Exhibition****Poster session (15:00 – 15:30) – Behavioural Medicine****Session 12**

15:30 – 16:00 Pregabalin alleviates feline anxiety and fear during transport and veterinary visits – a clinical field study.

Terttu Lamminen

16:00 – 16:15 The effect of olfactory stimulation on the heart rate of rabbits during transport.

Anouck Haverbeke

**POSTER PRESENTATIONS****Animal Welfare Science, Ethics and Law**

Name	Title of poster presentation
Laura Contalbrigo	"Activity wheel" for mice used in biomedical research: assessment of health and welfare status through anatomical and functional parameters.
Laura Contalbrigo	Ethical issues related to the selection and training of shelter dogs for involvement in Animal Assisted Interventions.
Claire Corridan	The welfare of staff dogs in veterinary practice- balancing the needs of practice, owner & dogs.
John Cranley	New consultation on animal welfare including birds during transport for fattening and slaughter in the UK.
Agnès Fabre	Official procedures concerning detection and taking charge of ill-treated animals.
Moira Gerlach	Pet ownership out of control – a review of animal hoarding cases in Germany.
Caroline Gilbert	Impact of the presence of a cat on the sympathetic response of individuals exposed to a mild stress factor: a pilot study on a group of veterinary students.
Stefan Gunnarsson	Pretesting of a housing system for breeding layers.
Anouck Haverbeke	Animal - Assisted Interventions for persons with dementia in Residential Care Centres.
Zsofia Kelemen	Influence of housing and environmental conditions on equine activity time budgets.
Rachel Malkani	Development of the Animal Welfare Assessment Grid for Dogs.
Antonia Patt	The effect of dietary fibre on behaviour, performance and cecal microbiome composition of laying hens.
Franck Péron	Can we apply the 1,000 days concept to our pets?
Denise Remy	Online survey on information gathering and attitudes – including anthropomorphism – of owners who recently acquired a new pet in France.
Yasemin Salgirli Demirbas	Investigation of the Knowledge of Animal Health and Care Professional Groups on Cattle Behaviour.
Elli Valtonen	Inspection findings and threshold for requests for police investigation in Finland animal welfare control.
Melanie Wergin	Efficacy of Nx4 to reduce exercise-induced plasma cortisol and gastrin levels in Norwegian sled dogs in an acute stress setting: a prospective, randomized, double blinded, placebo-controlled cohort study.

POSTER PRESENTATIONS**Behavioural Medicine**

Name	Title of poster presentation
Laura Contalbrigo	A preliminary study into the effect of shelter features on dog behavioural traits using the Nominal Group Technique (NGT) method.
Laura Contalbrigo	Italian dog-owner complaints about undesired dog behaviour: preliminary data from an online survey.
Claire Corridan	Can use of a stress reduction ethos influence job satisfaction & resilience in companion animal veterinary practitioners: a preliminary study.
Caroline Gilbert	Development and validation of a rabbit pain scale, the "dolorabbit" scale.
Mira Korpivaara	Tasipimidine, a novel orally dosed alpha-2 adrenoceptor agonist, alleviates canine acute anxiety and fear associated with noise – a pilot study.
Mira Korpivaara	Tasipimidine, a novel orally dosed alpha-2 adrenoceptor agonist, alleviates canine acute anxiety and fear associated with travel – a pilot study.
Mira Korpivaara	Tasipimidine, a novel orally dosed alpha-2 adrenoceptor agonist, alleviates separation anxiety in dogs - a 5-week study.
Alja Mazzini	Association of owners' training style with obedience and behaviour problems in dogs.
Manuela Michelazzi	Effectiveness of a nutraceutical Rifoson on fear-related behaviour in dogs.
Susana Muñiz de Miguel	Behavioural disorder in a dog with congenital agenesis of the vomeronasal organ and the septum pellucidum.
Simona Normando	Behavioural problems in ornamental birds – a pilot survey.
Ebru Yalcin	Effects of environmental enrichment on compulsive tail chasing in dogs treated with clomipramine.

DAY 1

Thursday 7th October 2021

**Animal Welfare Science,
Ethics and Law**



NEW MANAGEMENT STRATEGIES OF THE MAJOR CAT ALLERGEN (FELD1) FOR ALLERGIC CAT OWNERS: WHAT ABOUT ETHICS AND WELFARE OF CATS?

Cécile Bienboire-Frosini¹, Alessandro Cozzi¹, Rajesh Durairaj¹, Patrick Pageat¹.

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The authors declare no conflict of interest.

New management strategies recently arose for the major cat allergen, the protein Feld1, aimed at lowering the level of immunoreactive Feld1 to alleviate the symptoms of allergic cat owners: (i) supplementing pet food with anti-Feld1 antibodies from egg yolks to block Feld1 in saliva and diminish it on hair (Satyaraj *et al.*, 2019); (ii) immunization of cats against Feld1 with a conjugate vaccine (recombinant Feld1 coupled to a virus-like particle) to lower Feld1 secretion and the allergic symptoms in patients (Thoms *et al.*, 2020); (iii) deletion of Feld1 genes from feline cells using CRIPSR-Cas9 to ultimately generate Feld1-free cats (Brackett *et al.*, 2020).

However, Feld1 biological function is still investigated. Herre *et al.* (2013) suggested a role as an immunomodulator, while other research supported a role in intra-specific chemical communication (Durairaj *et al.*, 2018; Bienboire-Frosini *et al.*, 2020) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. The mammalian secretoglobin (SCGB). Anyhow, a physiological function of Feld1 is demonstrated, undoubtedly important for cat biology. That highlights the need to consider the possible consequences of any action aiming to neutralize or reduce Feld1 production.

This presentation provides a state of the art on these findings and contrasts these new cat-orientated approaches to manage Feld1 production and its related symptoms in allergic patients with the latest evidence on Feld1 physiological function and its importance for cat biology. Such methods may challenge cat welfare: is it worth it, considering the other risk of cat abandonment by allergic owners? How to ethically consider these animal-oriented approaches to solve human health issues?

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FREQUENCY AND STRESSFULNESS OF ETHICALLY CHALLENGING SITUATIONS ENCOUNTERED BY VETERINARY TEAM MEMBERS SINCE THE COVID-19 PANDEMIC

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The authors declare no conflict of interest in regard to this presentation. Note: this study was approved by the University of Sydney Human Research Ethics Committee (project 2020/291).

Ethically challenging situations (ECS) are common in veterinary settings and can lead to moral stress (Batchelor and McKeegan, 2012, Crane et al., 2015, Kipperman et al., 2018, Moses et al., 2018). There is no published information about how a global pandemic affects the frequency and types of ECS encountered by veterinary team members.

We developed and distributed an online, mixed methods survey to determine the frequency, stressfulness and types of ECS experienced by veterinarians, animal health technicians and veterinary nurses since the advent of the global COVID-19 pandemic. The survey was open from 13 May to 14 July 2020.

Responses from 540 veterinary team members from 22 countries were analysed. The mean frequency of ECS encountered increased from several times per month to several times per week (Spearman Rank Correlation 0.619, P value <0.0001).

The most common ECS related to clients with limited finances (64.4%), conflict between personal wellbeing and professional role (64.3%), and conflict between the interests of clients and the interests of their animals (59.6%).

The most stressful ECS related to conflicts between the interests of clients and the interests of their animals (50.2%), "other" (42.9%), and conflicts between veterinary employers and employees (42.5%).

Thematic analysis of free-text responses revealed biosecurity, client financial limitations, animal welfare, working conditions, and client relations as prominent themes.

These findings will help us develop and refine strategies and resources to help veterinary teams navigate ethical challenges. This may in turn reduce moral stress experienced by veterinary professionals.

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FEMINISM, SPECIESISM AND EMPIRICAL APPROACHES IN VETERINARY ETHICS

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The author declares no conflict of interest

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This paper outlines the critiques of feminist care approaches within veterinary ethics literature and suggests that contemporary work in feminist care ethics arising outside of the veterinary field may usefully develop our understanding of such an approach. It invites delegates to consider how veterinary ethics might benefit from feminist care approaches.

Feminist care ethics have been little used in analyses of veterinary practice, although there is a long history of prominent feminist scholarship in other disciplines including psychology (Gilligan 1982) and bioethics (Tong 1997). Accepted critiques of such an approach to veterinary ethics include suggestions that it is vague, confusing and underdeveloped and that there is no consensus on what it means to 'care' (Mullan and Fawcett 2017).

I respond to these critiques through drawing on the more developed feminist care approaches visible in both medical humanities and animal ethics literature. I highlight the empirical attention which has been paid to relevant concepts including dependency and vulnerability (Latimer and Puig de la Bellacasa 2013), an inclusive and empathetic focus on non-human animals (Donovan and Adams 2007; Gruen 2015) and progress towards more detailed understandings of 'care' as a practical, emotional and political concept (Tronto 2013).

With the goal of exploring how veterinary ethics might benefit from feminist care approaches I will ask delegates to join me in considering:

1. Whether understanding what it means to 'care' highlights the need for a more empirical approach within veterinary ethics?
2. Whether an imperative to 'care' might challenge rather than condone moral speciesism?

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ANALYSIS OF TRACES OF CATTLE TRANSPORTED FROM FRANCE TOWARD PUGLIA REGION, DO THEY COMPLY WITH REG. EC 1/2005?

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The movement of livestock in Europe is monitored using the Trade Control and Expert System (TRACES) which is a web-based veterinarian certification tool. TRACES summarizes all information related to journeys (e.g., type and number of animal transported, journey plan). This study aimed to evaluate the critical points of TRACES and the most frequent types of non-compliance.

Transport certifications (TC) of cattle (n= 322) departing from France and arriving or transiting across Puglia (Italy) in 2019 and 2020 were downloaded from TRACES. Descriptive statistics, chi-square goodness of fit test and univariable logistic regression were performed.

There was a significant reduction in 2020 (P<0.001) in number of journeys and animals, probably due to the COVID pandemic, but the distribution between Puglia and Greece did not vary. The majority of the bovine (89.4%) were medium-sized cattle, transported for fattening with a median body-weight of 396 kg. However, almost half of the TC did not correctly report the total expected loaded weight or the available space. For these, it was impossible to calculate and double-check whether the minimal space allowance was respected. Long journeys must include a compulsory rest after the first 14 hours. However, 20.9% of the examined and declared stops did not comply with this. Finally, comparing the expected declared journey duration with a calculated one, we found that only 30% of the journey durations were congruent. The irregularities were associated with consignors and transporters (P<0.05).

TC should be double-checked with more caution before being approved to safeguard animal welfare during transportation.

REARING PIGS WITH INTACT TAILS: HOW TO DO

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Tail biting is a common problem within modern pig production and is often an indicator of a suboptimal housing environment (Wallgren et al. 2019c). Tail biting causes pain and can result in infection, leading to reduced pig growth and reduced farm profits. In order to prevent tail biting, pigs are often tail docked, without pain relief, within the first week of life. EU Council Directive 2008/120/EC prohibits routine tail docking, but the practice is still widely used in many Member States. Sweden has a long tradition in rearing undocked pigs and yet tail biting is a minor problem within Swedish pig production (Wallgren et al., 2016; 2019c).

This presentation summarises and synthesises experimental findings and practical expertise in production of undocked pigs in Sweden (Wallgren et al., 2019a, b; 2020; Wallgren and Gunnarsson, 2021), and describes solutions to facilitate transition to producing pigs with intact tails within intensive pig production in the EU. The requirements within Swedish animal welfare regulation for lower stocking density, provision of sufficient feeding space, no fully slatted flooring, specified maximum levels of noxious gases and regular provision of adequate amounts of litter material, sufficient to enable pigs to perform exploratory behaviour, are crucial for the success of Swedish pig producers in rearing pigs with intact tails (Wallgren et al, 2019c). To prevent tail biting and reduce the need for tail docking in the future, we strongly recommend that current EU legislation be revised to more clearly match the biological needs of pigs.



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THE ART OF (DESCRIBING) DOING NOTHING: INACTIVITY IN FATTENING CATTLE

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Previous research indicates that inactive behaviour in non-human animals housed in barren environments reflects boredom (Meagher and Mason, 2012) or depression-like states (Fureix et al, 2016). However, knowledge of what inactivity looks like is limited and methods to describe and analyse inactive behaviour are thus needed.

We developed an Inactivity Ethogram with information on the postures of different body parts (standing/lying, head, ears, eyes, tail) for fattening cattle. The ethogram was applied to Austrian Fleckvieh heifers kept in intensive, semi-intensive and pasture-based husbandry systems. Three farms per husbandry system were visited twice. During each visit, 16 focal animals were continuously observed for 15 minutes each (288 heifers in total). Moreover, all groups were video recorded to determine inactivity at group level. Because of the explorative nature of our study, we refrained from statistical hypothesis testing. Co-occurring postures of different body parts were analysed using the machine learning algorithm "cspade".

With increasing intensity of the husbandry system, more animals were inactive and the time the focal animals were inactive increased. Frequently co-occurring postures were similar between husbandry systems, but with subtle differences. The most frequently observed combination on farms with intensive and semi-intensive systems was lying with head up, ears backwards and eyes open whereas on pasture it was standing with head up, ears forwards and eyes open.



The detailed Inactivity Ethogram and the machine learning algorithm “cspade” are promising tools for future research towards a better understanding of different forms of inactivity and their association with affective states.

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WELFARE ASSESSMENT PROTOCOL FOR DROMEDARY CAMELS

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This study aimed to propose and apply a welfare assessment protocol for dromedary camels reared in intensive farms. Models to calculate overall welfare indices and to classify camel pens were developed, and welfare issues identified.

The assessment protocol and the scoring system were conceived by adapting the principles of Welfare Quality® (Welfare Quality®, 2009) and AWIN (AWIN, 2015) projects to the species-specific characteristics and rearing environment of dromedary camels. The protocol was applied in 76 pens (camels=528) at a market in Qatar. Pens were classified on welfare classes according to the rule system proposed for dairy cattle (Welfare Quality®, 2009). Finally, associations between the collected animal- and management-based measures were investigated using EFSA approach (EFSA, 2012) by Generalized Linear Models.

Our assessment protocol included a combination of animal, resource and management-based measures. Measures were classified according to the main welfare principles and collected at three levels of assessment: Caretaker, Herd, and Animal (Padalino and Menchetti, 2021). Collected measures were scored using a 0–2 scale, and scores were aggregated through a four-step process to obtain overall assessment indices. Based on these overall indices, most of the pens were classified as “unsatisfactory” (61.8%) and none as “excellent”(Menchetti et al., 2021). Statistical models (P<0.05) indicated space allowance, shaded space, cleanliness of bedding, and water management as the major welfare hazards for camels kept in intensive systems.

This is the first welfare assessment protocol able to identify camel welfare issues but the involvement of many scientists and stakeholders is needed for its validation.



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DEVELOPMENT OF THE TEACHING OF ANIMAL WELFARE SCIENCE, ETHICS AND LAW IN EUROPEAN VETERINARY FACULTIES

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Nowadays, animal welfare (AW) is seen as a 'common good' and there is a societal expectation that veterinarians should be the leading advocates for the welfare of all animals (OIE 2012). Veterinarians are expected to promote and ensure the welfare of animals under their care by using their scientific knowledge and skills in ethical reasoning and advocacy (Beaver 2005). In this regard, veterinary education must provide veterinarians with the necessary competences in Animal Welfare Science, Ethics and Law (AWSEL) (Lord et al. 2017).

In 2013, the Federation of Veterinarians of Europe (FVE) and the European Association of Establishments for Veterinary Education (EAEVE) adopted the Day-1 competences on AWSEL for veterinary undergraduate education (FVE & EAEVE 2013). Before adopting these Day-1 competences, a survey had been conducted in 2012 to map the teaching of AWSEL in European Veterinary Education Establishments (VEE). In 2019, a follow-up survey was done to assess how the teaching of AWSEL had progressed in the last seven years.

A total of 78 responses were received, representing 57 faculties from 25 European countries. Results show that the teaching of AWSEL has increased across the board. Most European VEEs covered or even exceeded the Day-1 competences for AW Science (68%; N=39), AW Ethics (61%; N=35) and AW Law (72%, N=42). Respondents found that the 2013 Day-1 competences were still valid today, although suggestions for improvement were made. This presentation reports on our findings and provides further reflection on the development of AWSEL education in Europe.



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USING CASE VIDEOS TO TEACH FARM ANIMAL WELFARE – EXPLORING THE ANICARE APPROACH

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This presentation is part of the ERASMUS+ research project *ANICARE: Teaching Animal Welfare as a Farming Opportunity* (Ref. 2017-1-FR01-KA202-037287).

ANICARE is a European project aiming to create a pedagogical toolkit for teaching farm animal welfare (FAW). Founded on farmers' views of FAW, it combines didactic learning with a socio-constructivist case-based approach to the issues. ANICARE focuses on ruminants (dairy cows, dairy goats and meat sheep) and involves five European countries: Belgium, Finland, France, Portugal and Spain.

In January 2020, a Workshop on FAW was held in Portugal to introduce the ANICARE pedagogical approach to a mixed audience of 60 farmers, animal keepers, zootechnicians, veterinarians, researchers and students. Participants were split into five focus groups according to their farming interests, and invited to discuss videos of different husbandry practices such as bedding, feeding, disbudding, castration and lambing (cf. <https://erasmus-anicare.eu/>). The sessions were audio recorded for thematic analysis and prior informed consent had been obtained.

Self-reflection videos from farmers were used to trigger debate and explore participants' views of FAW. This was followed by expert videos to bring a science-based approach to the topic and eventually promote a behaviour change. The workshop ended with a wrap-up session, where facilitators shared their views with the participants, thus encapsulating the main conclusions from each group.

Qualitative thematic analysis revealed that participants applied self-reflection and critical thinking, but did not necessarily change their views on FAW. Results from a post-intervention survey show that participants scored the learning experience as positive or very positive. In this presentation, results from the ANICARE workshop and the role of video-based constructivist approaches to FAW teaching will be explored.



ASSESSMENT OF THE EFFICIENCY OF PRACTICAL LOW STRESS HANDLING TEACHINGS TO VETERINARY STUDENTS TO REDUCE THE STRESS OF CATS

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The veterinarian is the main actor to improve pet welfare during veterinary consultations, which is an important source of stress (Döring et al. 2009). "Pet friendly" practices are becoming more and more widespread in clinics (Yin 2009a, 2009b). A new training course with 7 practical exercises was set up in 2019 in a veterinary school, allowing 28 students to practice low stress handling methods on cats (towel wrap techniques).

In order to assess the educational value of these practical teachings, two groups of third-year students, one having carried out the exercises and the other not, were compared (Chi-2, Fischer, Mann-Whitney tests), during a simplified cat clinical examination (controlled examination of 3.7 min with one cat in a standardized room) and using questionnaires, to analyse 1) student knowledge and 2) cat signs of stress and aggression (ear positions, mydriasis, vocalisations, lip-licking; video analyses).

Except for the workstation "handle a cat on its back for an ultrasound exam", no significant difference was found between the two groups of students. Therefore, it appears that students who carried out the exercises did not succeed to put in practice the teachings received. When comparing the cat's reactions, more signs of relaxation, less signs of stress and aggression were observed for students who put into practice the low stress techniques (independently of whether they followed the teachings).

The practical exercises seem valid to improve the welfare of cats and reduce the risk of aggression, but pedagogic work is still needed to increase the students' compliance with these practices.

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DOG BEHAVIOUR IN CROWDED PUBLIC PLACES AND DOG OWNER MOTIVATION FOR BRINGING THEM: A PILOT STUDY

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Many dog owners bring their dog to crowded, sometimes noisy, public events. In these situations, dogs can have difficulties adapting, resulting in prolonged stress (Carrieri-Rocha et al., 2020). This pilot study aimed to document the behaviour of dogs at such events, the motivation of owners to bring their dogs and their ability to recognise dog stress signals.

Data were collected from 42 randomly selected dogs, using short behavioural observations and stress scores were assigned (0-5 Likert scale). Interviews were subsequently conducted with 37 respective dog owners (13 male, 24 female).

Three dogs did not show any stress signals during observations. For other dogs, common stress signals were ears pinned back (23/42 dogs), panting (20/42), tail between the legs and pulling on the leash (both 15/42). Main reasons for bringing the dog were "It's a habit." (10/37 owners) and "The dog likes it." (8/37). Common spontaneously mentioned stress signals were "tail between the legs" (22/37 owners), "ears pinned back" and "excessive barking" (both 13/37). 21 owners scored their dog's stress lower than the observer, 9 the same and 7 more.

This preliminary study suggests that public events can be stressful for dogs. Owners do not always assess the experience from the dog's point of view correctly, although they are capable of recognising more obvious stress signs, similar to findings of Mariti et al. (2012). Educating dog owners about dog behaviour and the response of dogs to public events remains important. Further research on a larger scale should confirm these results.

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EFFECTS OF AGE ON MICE VOMERONASAL ORGAN MORPHOLOGY AND PHYSIOLOGY

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The vomeronasal organ (VNO) plays a key role in intraspecific communication, since it detects pheromones. Among them, several molecules were proven to have effects on aggressive behaviours (Novotny 2003), potentially influencing animal welfare.

Experimental VNO changes were proven to influence maternal, sexual and social behaviours (Wysocky 1991; Booth 2010; Chamero 2011). Spontaneous lesions like vomeronasalitis were also linked to increased intra-specific aggression in cats and farm pigs (Asproni 2016, 2018). To date, the VNO's aging and its effects on animal behaviour and welfare have been never described. The aim of this study was to explore these changes with a histological and immunohistochemical approach.

This project was realised on a murine model, since aggression is a common behavioural issue in aging laboratory mice. We examined VNOs from mice of three ages: 3 (n=11), 10 (n=10) and 24 months (n=20). Our analyses showed significative changes due to aging, such as the increase of cellular degeneration (*Multinomial Model*; $p < 0.0001$), the decrease of a neuronal marker intensity (*GLMM*; $p = 0.0436$) and a change of VNO nervous molecular configuration (*GLMM*; $p < 0.0001$). Since these modifications are known to induce behavioural changes (Chamero 2011), we are now investigating the aging influence on mice semiochemical detection and behaviour.

These results revealed the importance of the aging effects on the VNO morphology and physiology. Due to the crucial role of the VNO in intraspecific communication and social behaviour, our study opens new perspectives regarding the impact of aging on the behaviour and welfare of laboratory mice and domestic animals.

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BEHAVIOURAL PROFILE DIFFERENCES BETWEEN CATS ENGAGED IN ANIMAL ASSISTED INTERVENTIONS (AAIS) AND NON-AAI CATS USING A FLEMISH TRANSLATION OF THE FELINE BEHAVIORAL ASSESSMENT & RESEARCH QUESTIONNAIRE (FE-BARQ)

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The inclusion of cats in animal-assisted interventions (AAIs; i.e. structured interventions that include animals in human services for the purpose of human therapeutic gains; IAHAIO, 2018) is increasing. This is surprising given that feline needs (e.g., stable territory) appear contradictory to AAIs (e.g., repeated territory relocation). This study aimed to map the behavioural profile of cats engaged in AAIs and non-AAI cats to detect potential differences between the two groups. Such a difference could point to AAI cats coping differently with potential stressors, which has implications for their welfare

Using a Flemish translation of the Fe-BARQ (Duffy et al, 2017), cross-sectional survey data on 474 cats were collected. Questions included involvement in AAIs as defined by IAHAIO (2018) and various behavioural indices. The questionnaire was translated to Flemish and back-translated to English to check for discrepancies.

In total, 12 cats engaged in one of the five AAI categories (IAHAIO, 2018) compared with 462 cats not fitting either category. Mann-Whitney U-tests (2-tailed) indicated that, compared to non-AAI cats (non-matched), AAI cats differed in sociability with people (U=1561.50, p<0.05;

Mdn_{AAI-cats}=2.93, Mdn_{non AAI-cats}=1.86), attention-seeking (U=1825.50, p<0.05; Mdn_{AAI-cats}=3.50, Mdn_{nonAAI-cats}=3.00), sociability with cats (U=280.50, p<0.05; Mdn_{AAI-cats}=2.00, Mdn_{nonAAI-cats}=0.67), resistance to restraint (U=501.00, p<0.05; Mdn_{AAI-cats}=0.00, Mdn_{nonAAI-cats}=0.67) and predatory behaviour (U=59.50, p<.01; Mdn_{AAI-cats}=4.00, Mdn_{nonAAI-cats}=2.33).

Our study showed that AAI cats significantly differ regarding several behavioural profile aspects compared to non-AAI cats. Hence, our results provide a first indication of convergent validity of a measurement tool suitable to map behavioural traits of cats in Flanders engaged in AAIs.

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DO DOGS COPE WITH ANIMAL-ASSISTED THERAPY SESSIONS, AND HOW? A PILOT STUDY

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Dog-assisted therapies have shown to be beneficial for humans suffering from various health/psychosocial issues (Lundqvist *et al.*, 2017). Anthropomorphism might create the belief that dogs also benefit from the sessions. Then, investigations about therapy dogs experience and emotions during the AAT (Animal-Assisted Therapy) sessions are needed to monitor their welfare state.

This pilot study included seven therapy dogs (different in age, sex, breed, and work experience). For each dog, saliva samples were collected using SalivaBio® Children's Swab before and after the AAT sessions on working days (n=2) and at identical times on resting days (n=2) to measure cortisol concentrations using immunoassays (Salimetrics®). The AAT sessions were video-recorded, and dog behaviour scored using a predefined ethogram by one observer to look for behavioural manifestations of emotions (Beerda *et al.*, 1998; Beaver, 2009). Cortisol concentrations were analysed using a GLMM (SAS® software 9.4). Correlations were done between behavioural measurements and cortisol data.

The comparison of salivary cortisol concentrations measured during working days vs resting days (p=0.51), before and after the AAT session (p=0.25) and the day*hour interaction (p=0.32) showed no significant differences. The salivary cortisol values remained within physiological standards. So, the dogs were neither stressed during the AAT session nor negatively anticipated it. Several behaviours relating to relaxation/appeasement were observed: a negative correlation between post-AAT cortisol levels and the behaviour "ears lowered" was observed (Spearman's rho=-0.79; p=0.034).

This pilot study indicated that dogs could cope with AAT sessions. Interestingly, possible coping behaviours were observed and would deserve further standardised studies.

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STAFF AND STUDENT ATTITUDES TOWARDS EMPLOYEE-OWNED VISITING CATS AND DOGS ON CAMPUS

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We assessed attitudes of higher-education staff and students' (i.e., openness, perceived risks, expected impacts) towards on-campus animal visits. Assessing these attitudes is important as attitudes predict human behaviour directed towards the animals involved (Kraus, 1995), which likely impacts their welfare (Lund et al, 2006).

Cross-sectional, quantitative survey data were completed by 533 employees and 905 students from Flemish higher-education institutions in the summer of 2020. A subsample of 154 respondents reported attitudes towards an existing cat program at their campus and 1284 respondents from other campuses shared their attitudes towards this program based on program descriptions. Respondents were asked to report their current attitudes as well as their attitudes before the COVID outbreak.

Regression analysis showed that the personality trait of neuroticism (John et al, 1991) positively predicted openness towards cats ($\beta=0.25$, $t=6.61$, $p<.01$) and dogs ($\beta=0.16$, $t=4.60$, $p<.01$), irrespective of stress-related symptoms and fears of cats or dogs. Moreover, paired t-tests showed that, whereas expected risks of cats and dogs were perceived higher as compared to before COVID (cat: $t=5.99$, $p<.01$; dog: $t=5.76$, $p<.01$), expected benefits of a cat on mental health ($t=5.97$, $p<.01$), well-being ($t=4.65$, $p<.01$), morale ($t=6.72$, $p<.01$) and social interactions ($t=3.44$, $p<.01$) were also higher.

Our results suggest that campus-visiting animals are most welcomed by people whose personality traits include high levels of neuroticism. Moreover, whereas perceived risk associated with on-campus cats and dogs is higher since COVID, expected benefits on mental health, well-being, morale and social interactions are also higher.

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COULD THE SUCCESS OF GUIDE DOGS BE INFLUENCED BY THE BOND THEY DEVELOPED WITH THEIR PUPPY RAISERS?

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Puppy raisers have a decisive role in the development of guide dogs (Koda, 2001). It is the animal's first interspecific attachment bond, which could constitute an important emotional base for their mental stability, essential for these dogs (Naderi *et al.*, 2001) we have investigated the co-operative behaviour between dogs and their owners. We supposed that co-operative behaviour is an inherited trait in dogs, and is a major contributing factor in the development of successful guide dog performance. According to our view, leading a blind person involves complex behaviour where success depends on the ability of the participants to synchronise their actions. In Study I, we observed both British and Hungarian blind owners taking a half-hour walk in their neighbourhood. In Study II, both guide dogs with their blind and pet dogs with their blind-folded owners had to master an obstacle course. Measuring the frequency of initiations of various actions during leading their owners, dogs did not keep the role of the initiator to themselves. However, both dogs and humans were found to initiate more often in some types of actions, for example, guide dogs initialised avoidance or stepping up more often than their owners. Further, the role of the initiator was kept only for short durations, longer sequences of initialising were rare. Despite many differences among groups studied, we observed some qualitative Similarities in the co-operative behaviour of dogs. We assume that during domestication, dogs have been selected for the ability to change to-and-fro the role of the initiator that seems to be fundamental in this type of co-operation. In the case of leading the blind, information should not only be provided but also accepted by both parties in the course of the joint actions, therefore, the leadership (the role of the initiator. The purpose of this study was to evaluate the influence of this bond on their success, i.e., if the dogs were graduated or not as guide dogs.

Sixteen potential guide dogs and their puppy raisers participated in the study. The revised version of the Ainsworth Strange Situation Test (SST-R) was used to assess the attachment type of the dog toward its puppy raiser, i.e., secure or insecure. The Pet Attachment Questionnaire was also completed by puppy raisers, giving an avoidant score and an anxious score. Finally, the success or failure of each dog was noted. Parameters were analysed using logistical regressions.

The observed trend suggested that the higher the puppy raiser avoidant score was, the more likely the dog was to succeed (DF = 1; $X^2 = 3.23$; $p = 0.07$). Also, descriptive data revealed that 50% of the insecure dogs failed compared to 25% of the dogs classified as secure.

The strong imbalance between groups (4 insecure vs 12 secure; 5 failure vs 11 success) added to the small sample size did not allow to conclude at a statistical level. Nevertheless, descriptive data suggested that attachment could be a relevant indicator, but additional studies are needed to verify the link between attachment and success of guide dogs.

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DAY 2

Friday 8th October 2021

**Joint session Animal Welfare
Science, Ethics and Law &
Behavioural Medicine**



ANTHROPOMORPHISM – RISKS AND BENEFITS IN VETERINARY CARE

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Anthropomorphism, and the possibilities to make analogies between humans and animals, can help us to better understand animal sentience, emotions and experiences of other beings (Dawkins, 2006, Proctor, 2012, Urquiza-Haas & Kotrschal, 2015) which can be important when it comes to understand and assess pain and suffering in animals. But can anthropomorphism also take us too far when it comes to veterinary care and treatment of animals (Rhorer Bley, 2018)? It is a fine line between using anthropomorphism and analogies and the risk of being too subjective when it comes to understand and assess animals in one's care (Bradshaw & Casey, 2007, Wensley, 2008). Having a too anthropomorphic view can hence lead to over-treatment (Rollin, 2006). When letting animals undergo very advanced surgery, chemo therapy or using technical means like wheelchairs, we are walking on that line, and loss of objectivity may lead to increased and/or prolonged suffering, when euthanizing the animal would have been a better alternative from an animal welfare point of view. How far to go when treating animals must therefore be constantly discussed.

The goal of the debate is to highlight the consequences of anthropomorphism in veterinary practice in regard to animal welfare. Questions to be addressed are: In general, is an anthropomorphic view in veterinary practice positive or negative from an animal welfare point of view? A consequence of anthropomorphism is medical treatment similar to treatment of humans, but where do we draw the line - or do we draw a line at all?

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HOW WOULD YOU FEEL WITH AN UNTREATED IN-GROWING TOE-NAIL? USING ANTHROPOMORPHISM IN COURT

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There is no conflict of interest in relation to this subject area, which is sourced from UK cases subject to the English and Scottish judicial systems. I am currently employed by UK Government as a veterinary adviser for animal welfare.

A common challenge in animal welfare court cases, is being able to explain, what are often complicated technical physiological and pathological processes, in a manner that can be understood simply, by people with no scientific background whatsoever. However, these explanations can be conveyed in a mechanistic way which can detract from explaining the animal(s)' feelings' associated with a specific event or pathology. It can become even trickier when we are trying to differentiate whether an animal's welfare has just been compromised and its needs have not been met, or whether animal suffering has occurred.

Anthropomorphism as a concept for use in the court may be considered an anathema; we are conveying how an animal feels in human comparative terms when we are supposed to be discussing facts of the case and proffering an expert opinion on this. Conversely, anthropomorphism may often be used to defend an action, or lack of action, by a defendant; courts may even exercise unconscious bias in "thinking like a human". The expert witness has a key role in explaining why animal behaviour may be different between species, and even within species, for animals at different physiological stages of life.

Any anthropomorphic explanations or comparisons must be related to the animal subject(s) being discussed, including their normal behaviour as an individual or as a group in response to a welfare challenge. This presentation will look at some real-life welfare examples where anthropomorphism has been used in both defence and prosecution scenarios.

ANTHROPOMORPHISM AND OVERTREATMENT IN SMALL ANIMALS: A QUALITATIVE STUDY OF THE EXPERIENCE AND PERSPECTIVES OF PRACTITIONERS IN FRANCE, ETHICAL ANALYSIS, AND PRACTICAL RECOMMENDATIONS

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Non-funded research, without conflict of interest, was conducted by a professor and final-year student at Lyon Veterinary College, ending in December 2018. It was reviewed and approved by the local Ethics Committee.

One thorny ethical issue veterinarians face is determining the limit between reasonable treatment and overtreatment of animals. Anthropomorphism of owners is one possible source of the problem. However, this issue does not seem to have been investigated to date. This paper reports the perspectives and experiences of small animal veterinarians regarding overtreatment and the possible link with owners' anthropomorphism towards their pets.

Sixteen practitioners were interviewed in person, with semi-structured, in-depth interviews carried out and transcribed verbatim; the authors investigated how practitioners define overtreatment, whether they had faced such cases, the ethical questions that were raised, the stakeholders involved and their respective influence, whether and how anthropomorphism is involved and how such situations were handled; thematic analysis was carried out (Vallerian, 2018).

Results highlight a broad consensus amongst small animal practitioners; overtreatment exists in veterinary medicine, rarely of benefit to the animal. Anthropomorphism is often a factor, although owners are unaware. Veterinarians are often informed of the difficulties experienced by owners in reaching rational end of life decisions, subsequently regretting the undue suffering of the animal witnessed. Practitioners thereby have a role to play in



informing, accompanying and supporting concerned owners, while diligently trying to avoid unnecessary animal suffering.

Owners should be informed about animal welfare and quality of life (QoL) to help prevent undue anthropomorphism. A straightforward tool for QoL assessment is suggested and will be presented in detail as a means to prevent undue anthropomorphism and overtreatment.

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TAXONOMIC GROUP INFLUENCES THE HUMAN-REPTILE BOND – ANTHROPOMORPHISM IN A SURVEY OF REPTILE KEEPERS IN PORTUGAL

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The human-animal bond underlies human motivation to seek animal companions and the benefits deriving from that relationship, and influences the care humans provide for their pets. Many people view their animal companions as valued family members, and both positive and negative effects of anthropomorphism on animal welfare have been reported (Serpell, 2005; Bradshaw and Casey, 2007; Butterfield *et al.*, 2012).

Human attitudes about pets differ according to animal characteristics (e.g. “cuteness” or neoteny), which might be particularly influential in exotic pets, where the absence of fur, limbs or (apparent) facial expressions might reduce the likelihood of being seen as family members. In this study, we used an online survey to assess the human-animal bond of reptile owners in Portugal (n=190) and explored the differences between taxonomic groups (turtles, lizards and snakes, $\alpha=0.05$). We hypothesized that snakes would be less frequently considered family members due to their anatomical and behavioural features.

Reptile taxonomic group was associated with the bond-type ($\chi^2=7.14$, $df=2$, $p=0.03$). Overall, family member was the most common bond type in reptiles (64%), followed by pet (27%), friend (8%) and burden (1%). A family-member bond was reported by 78% of respondents keeping lizards, 64% of those keeping turtles and 49% of those keeping snakes. Both bond type and reptile group influenced owner-perceived welfare. Keepers experiencing a family-member type bond were 3.10 ($p=0.01$, 95CI=1.31-7.36) times more likely to assess their pet’s welfare as good or very good compared to others. Results suggest that anthropomorphic traits influence the human reptile-bond and reptile welfare.



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THE LESS LOVED CHICKEN AND THE PUBLIC INTEREST TEST – CAN ANTHROPOMORPHISM AND SPECIESISM INFLUENCE DECISION-MAKING ON PROPORTIONAL ENFORCEMENT?

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There is no conflict of interest in relation to this subject area, which is sourced from UK cases subject to the English and Scottish judicial systems. I am currently employed by UK Government as a veterinary adviser for animal welfare.

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There has been a paradigm shift, from prosecuting acts of wanton cruelty (19th century) through to setting minimum standards (20th century) to where we are now, promoting a duty of care to sentient animals under our care. But do we actively reflect this change across species when it comes to enforcement?

Since 2017, over one billion meat chickens and 40 million laying hens are reared, transported and slaughtered every year, in the UK (DEFRA, 2021). In Great Britain, during 2019 to 2020, local authorities reported five successfully prosecuted specimen charges of “failure to provide a duty of care” involving poultry; there were no cases of unnecessary suffering. This constituted approximately 4% of all successful animal welfare charges. In contrast, cattle and sheep constituted two-thirds of duty of care and approximately half of all unnecessary suffering charges.

It could be inferred that poultry welfare is excellent compared to other species sectors, or that detecting welfare offences in cattle and sheep is easier than poultry. However, the “public interest test” is a key element in decision-making on taking forward prosecutions after the “evidential” test has been met. Is it possible that anthropocentric speciesism is occurring, such that, from an anthropomorphic inference perspective, it is much easier to imagine a cow or sheep suffering than a chicken? Does the perceived ability to form an empathetic bond with a dairy cow mean the less loved chicken, “the feathered dinosaur”, gets a raw deal when it comes to considering whether it has suffered or not ?

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HUMAN-DOG RELATIONSHIP: COULD ANTHROPOMORPHISM HAVE TAKEN US TOO FAR?

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The relationship between humans and animals is a topic that has been tackled by numerous scientific publications (Google Scholar: 4 540 000 results; key words: human, animal, relationship). However, the literature is not consistent in its descriptions and from welfare science to small animal behavioural medicine, many terms are used when describing this subject: interaction, relationship, bond all of which are often used without clear definition (Hosey, 2014).

While some scientists describe the human-dog relationship as a sum of interactions (Hemsworth, 2003; Boivin, 1992), others suggest similarity with the relationship between a child and his mother (Ainsworth, 1964; Prato-Previde, 2003, also see Topal 1998). The human-dog relationship is therefore either described using animal-centered concepts (Schilder, 2014) or human-centered concepts from psychology, the latter sometimes giving rise to anthropomorphism (De Waal, 2011). Some of these theories have been challenged (Bradshaw, 2009; Rehn, 2014; Ogata, 2014) and scientific publications concerning the young/mother bond in precocial or altricial species (Poindron, 2012) may provide answers. In this context, veterinarians should, like other scientists, apply the principle of parsimony.

By reviewing pre-existing concepts, we can try to formulate a more satisfactory description of the human-animal relationship, as it pertains to dogs. We aim to answer a few questions: is child-mother attachment a useful concept or a bad habit to describe the dog-human relationship? Are measuring the value of the dog-owner relationship and assessing the fulfillment of the dog's needs, attainable goals?

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CHANGES IN THE BEHAVIOUR OF PET DOGS AFTER THE DEATH OF A CONSPECIFIC: IS THIS GRIEF?

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Behavioural reactions towards dead conspecifics have rarely been observed in wild canids (Boyd et al., 1993; Appleby et al., 2013) and pet dogs (Walker et al., 2016).

We recruited, by means of online platforms, 426 owners who had at least two dogs, and where one dog had died. We used the Mourning Dog Questionnaire (Uccheddu *et al.*, 2019) to analyse owner reported grief-related canine responses.

If the bond between two dogs was perceived as “friendship”, the surviving dog was reported to play less ($r = 0.214$; $p < 0.001$), sleep more ($r = 0.137$; $p = 0.004$) and look for more attention ($r = 0.152$; $p = 0.002$) after the conspecific’s loss. Additionally, if the cohabiting dogs had shared food, this was positively associated with a surviving dog’s reduced playing ($r = 0.126$; $p = 0.05$), eating ($r = 0.174$; $p = 0.05$) and overall level of activity ($r = 0.136$; $p = 0.05$) after loss.

When the dyad had a relationship described as parental, the surviving dog played ($r = 0.163$; $p = 0.001$) and ate less ($r = 0.188$; $p < 0.001$), and was perceived as more fearful ($r = 0.166$; $p = 0.001$). No changes in surviving dog behaviour were noted when the perception of the two animals’ social bonding was less close (agonistic or of mutual tolerance).

The quality of the relationship between dogs appears to impact a surviving dog’s response to the loss of a conspecific in a way analogous to the human mourning process.

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DOGS ADJUST 'LOOKING BACK' BEHAVIOUR IN AN UNSOLVABLE TASK PARADIGM BASED ON WHO HAS RENDERED THE REWARD INACCESSIBLE

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Domestic dogs are renowned for their propensity to gaze back at humans when confronted with an unsolvable problem (reviewed in Mendes *et al.*, 2021). However, the communicative function of this behaviour has been questioned (Lazzaroni *et al.*, 2020).

We tested 59 dogs in two tests of 3 min in which, firstly, a toy was rendered unavailable in a box and, secondly, a food puzzle with food was enclosed in the box, while the respective other reward was freely available. For half the dogs, the experimenter (E) was responsible for placing the reward into the box, whereas for the other half, this was the owner's (O) role.

The ratio of looking at the O versus the E differed significantly between the groups in the 'toy in box' subtest (Wilcoxon rank sum test, $W=674$, $p<0.001$) and the 'food in box' subtest ($W=649$, $p=0.001$). Dogs gazed longer at the responsible person, which was more pronounced when the owner was responsible ('toy in box': median looking time: $O=11.4$ s, $E=2.68$ s; 'food in box': $O=19.6$ s, $E=0.6$ s) than when the experimenter was responsible ('toy in box': $O=13.1$ s, $E=17.33$ s; 'food in box': $O=5.9$ s, $E=8.2$ s).

The results demonstrate that dogs differentiate between two people present during an unsolvable task based on (1) the people's responsibility in rendering the reward inaccessible and (2) the social bond or reinforcement history with the persons. The fact that dogs preferentially gazed at the person who had enclosed their reward implies a communicative function of the behaviour and some understanding of the people's roles.

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QUANTITATIVE BEHAVIOURAL ANALYSIS AND QUALITATIVE CLASSIFICATION OF ATTACHMENT STYLES IN DOMESTIC DOGS: ARE DOGS WITH A SECURE AND AN INSECURE-AVOIDANT ATTACHMENT DIFFERENT?

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Previous studies suggest that dogs display the same attachment styles as those observed in children towards their caregivers: secure, insecure-avoidant, insecure-ambivalent, disorganized (Solomon et al., 2019). However, such classification for dogs has never been corroborated by the simultaneous analysis of quantitative behavioural measures recorded during the Strange Situation Procedure (SSP) (Schöberl et al., 2016).

Two samples of dog-owner dyads (N=67) underwent two versions of the SSP. Dog attachment to the owner was assessed with a novel adaptation of the attachment pattern classification used for children (Ainsworth et al., 2015; Main and Solomon, 1986). Dog behavioural data were collected using continuous sampling and, in the second protocol, with an additional scoring system for greeting and social play behaviour. In both protocols, behaviour of secure (N=50) and avoidant (N=12) dog was compared using the Mann-Whitney test, while differences within each group across episodes were analysed using the Wilcoxon paired sample test. Ambivalent (N=3) and disorganized (N=0) dogs were excluded from analysis due to the low number of subjects presenting these attachment patterns. Two dogs remained unclassified.

Results show that secure and avoidant dogs present SSP behavioural patterns that are consistent with those observed in children. As occurs in the latter, differences in key attachment behaviours, such as proximity/contact seeking towards the caregiver, between secure and avoidant dogs, were more evident in the final episodes of the test (protocol 1: $p=0.027$, protocol 2: $p=0.007$). Compared with secure dogs, avoidant dogs did

not show an increase in proximity/contact seeking behaviour with the caregiver in any of the procedures.

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SATISFACTION WITH THE CAT AND SATISFACTION AFFECTING BEHAVIOURAL COMPLAINTS AMONG ITALIAN CAT-OWNERS

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Some behavioural problems can negatively affect the cat-owner relationship (Serpell, 1996). The main aim of the present study was to investigate satisfaction and satisfaction affecting problem behaviours in a convenience sample of Italian cat owners.

A dedicated online survey was advertised using social media and a virtual snowball sampling method was applied. A section of the questionnaire collected information about satisfaction with the cat (i.e., how much the respondent would recommend cat ownership to friends on the basis of his/her experience with the cat on which the data were collected) and on origin, health and owners' complaints about the cat's behaviour, another collected information on cat and owner demographics. Logistic regressions were used in analysing results.

Six thousand and ninety-six usable responses were collected. Some cat and owner demographics predicted both the presence of behavioural complaints and the assignment of the maximum score in satisfaction. The presence of undesired elimination, aggression (both intra and inter-species), fear, hyperactivity and eating disorders decreased satisfaction (all $p < 0.001$), whereas the presence of health problems did not. The cat being perceived as being very affectionate increased declared satisfaction ($p < 0.001$). The most often reported behavioural complaint was undesired elimination (4.7%), which was predicted by number of cats in the household ($p < 0.05$), cat's age, anxiety level, and health problems (all $p < 0.001$) as well as the cat's colour ($p < 0.01$).

Italian cat owners' complaints mainly concerned undesired elimination, fear, hyperactivity, aggressive behaviour and eating disorders. These undesired behaviours affect the satisfaction owners find in their relationship with their cat.

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THE NEUROLOGY OF CONSCIOUSNESS IN HUMANS AND OTHER ANIMALS AND WHAT IT MEANS FOR SENTIENCE.

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In science, anthropomorphism (i.e. the attribution of human-like sentience to animals) is considered the worst of ethological sins and highly deprecated as indicating a lack of objectivity. To endow non-human animals with conscious thoughts, perceptions and emotions, has long been (and still is for some) a scientific taboo. Many biomedical and behavioral scientists seemingly refuse to acknowledge any essential similarity in sentience (i.e., the capacity for conscious feelings and sensations) in humans and other animals. Understanding consciousness remains one of the greatest mysteries for science to solve. At present, nobody can explain how matter (our trillions of neural connections) becomes sentience. Philosophers might argue that the subjective aspect of the mind will never be sufficiently accounted for by the objective methods of reductionistic science. I here prefer a more pragmatic approach and remain naively optimistic that technological advances might ultimately lead to a reduction of our ignorance regarding the neural (or non-neural) substrates of consciousness. As a neurologist confronted to severely brain damaged patients who no longer can communicate their possible thoughts or feelings, I believe our field has suffered from anthropocentrism (i.e., interpreting consciousness solely in terms of human experiences – often from the perspective of the healthy white male) and binary simplistic thinking (i.e., reducing the wide variety and multidimensional complexity of possible contents of conscious awareness into simple absence or presence of consciousness). From a neurological perspective, consciousness has two main components: the level of consciousness or wakefulness, vigilance or arousal (assessed by observing spontaneous or stimulus-induced eye-opening) and the content of consciousness or awareness (assessed by observing “non-reflex” behavior or response to command). As clinicians, we are limited to make inferences based on observed behavior when trying to measure consciousness at the bedside in non-communicative coma-survivors (i.e., disentangling automatic, reflex or conditioned responses from oriented, voluntary, intentional, or ‘willed’ motor activity). Similar challenges are encountered in the study of animal mentality and animal behavior (i.e., ethology).

We will here briefly review some neurological facts on consciousness and impaired consciousness. While theorists have pondered upon the mind-brain conundrum for millennia, scientists have only recently been able to explore the connection analytically through neurological measurements and perturbations of the brain’s activity. This ability stems from recent advances in technology and especially from emerging functional neuroimaging and electrophysiology studies. The mapping of conscious perception and cognition in health (e.g., conscious waking, sleep, dreaming, hypnosis, meditation, trance, sleepwalking and anesthesia) and in disease (e.g., brain death, coma, near-death, “vegetative” unresponsive wakefulness, minimally conscious state, locked-in syndrome, seizures, hallucinations etc) is providing exiting new insights into the functional neuroanatomy of human consciousness. Our perception of the outside world (sensory awareness; what we see, hear, etc.) and our awareness of an inner world (self-awareness; the little “voice” inside that “speaks” to ourselves, permits to plan the future and think about the past) seemingly depend on two separate “awareness” networks involving widespread thalamo-cortical networks.

I will conclude by discussing the ethical consequences of these scientific advances which offer the medical community unique ways to improve the clinical management, pain control and quality of life in patients with disorders of consciousness but also force us to think about the neurological capacity for consciousness in non-human animals and their societal and legal consequences in terms of animal rights and wellbeing. It is important for the scientific community to increase its research efforts trying to test more experientially inferential questions about emotional private experiences. Recent neurological and neuroethological studies show increasing and converging evidence for consciousness as a fundamental biological adaptation, which we have historically underestimated in coma-survivors, babies, demented elderly and non-human animals.

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MAMA'S LAST HUG: HOW TO TALK ABOUT EMOTIONS IN ANIMALS?

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Emotions suffuse much of the language employed by students of animal behaviour -- from "social bonding" to "alarm calls" -- yet are still regularly avoided as explicit topic in scientific discourse. We get accused of "anthropomorphism" if we refer to them, whereas not doing so, I will argue, poses the even greater problem of "anthropodenial," i.e. the denial of a fundamental evolutionary continuity between us and other animals.

Given the increasing interest of human psychology in the emotions, and the neuroscience of animal emotions such as fear and attachment, the taboo that has hampered animal research in this area is outdated. It is crucial to separate emotions from feelings, which are subjective experiences that accompany the emotions. Whereas science has no access to animal feelings, animal emotions are as observable and measurable (face, voice, physiology, neural activity) as human emotions. They are mental and bodily states that potentiate behaviour appropriate to mostly social situations. I will discuss early ideas about animal emotions and draw upon research on empathy and the perception of emotions in primates to make the point that the study of animal emotions is a necessary complement to the study of behaviour. Emotions are best viewed as the organizers of adaptive responses to environmental stimuli.

DAY 3

Saturday 9th October 2021

Behavioural Medicine



EXPOSURE TO CONTROLLED CHALLENGES INCREASES STRESS RESILIENCE IN DOG PUPPIES

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Given the importance of the socialisation period for behavioural development (Howell et al., 2015), we tested effects of early ‘challenge’ exercises on puppies’ behaviour. Eighty-three puppies from 12 litters were semi-randomly allocated to a treatment group and a control group (half of each litter, balanced for sex). The treatment group received age-appropriate ‘challenges’ on 12 days between the ages of 3 and 5 weeks – including real-life noises, novel objects, and problem-solving tasks. The control group received no training, but the experimenter spent the same amount of time with them, playing with and petting them. At 6-7 weeks, puppies were tested in a behaviour test (adapted from Riemer et al., 2014), which was video-recorded. A blinded coder coded behaviour in Solomon Coder, and inter-rater reliability was good.

A nonlinear Principal Component Analysis yielded four principal components, two of which differed significantly between treatment groups, revealed by linear mixed effects models. Firstly, “Response to Novelty” ($F_{1,70}=8.75, p=0.0042$), meaning that treatment puppies solved the problem-solving task more quickly, and showed more exploration and less seeking of humans and whimpering during the novel object test. Secondly, “Social-Startle” ($F_{1,70}=8.93, p=0.0039$), indicating that treatment puppies startled less and recovered more quickly after a loud noise. Unexpectedly, the control group showed a higher interest in a friendly stranger – possibly as a result of more petting by the experimenter.

To conclude, the presentation of a diversity of exercises, noises and objects seemed to enable the treatment puppies to cope better when confronted with novel/surprising stimuli.

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PRELIMINARY STUDY EVALUATING THE EFFECTS OF FUNCTIONAL BITING ACTIVITY SESSIONS ON THE LEVEL OF URINARY SEROTONIN IN PROBLEMATIC DOGS

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There is a persistent opinion that biting and chewing aid to reduce loneliness, stress, and anxiety in dogs. However, only recently, has there been evidence found to this effect, that is, that biting activity has been related to reduced cortisol levels (Alberghina et al., 2021). Serotonin (5-HT) is suggested to be a modulator during stress, possibly as a reflection of the activity/arousal level of the individual (Chaulacoff et al., 2001). A decrease in 5-HT concentrations may be a signal of chronic stress since sustained stress leads to the diminution of 5-HT turnover (Van Praag, 2005).

The purpose of the present study was to determine whether six functional biting activity sessions of 30 minutes/day with dried products influence 5-HT in urine. Five adult shelter dogs with behavioural disorders were filmed during the experimental procedure. Spontaneous urine samples were collected for 5HT/Creatinine (Cr) ratio 4 hours before and 4 hours after sessions. ANOVAs with a post-hoc Bonferroni test were used to analyse the effect of time on basal and post-procedure 5-HT/Cr values. An influence of treatment was found for post-session 5-HT/Cr values ($F_{5,4}=4,047$ $P=0.01$) that increased during the experimental procedure. A slight decrease of intensity and duration of stress and aggressive/anxiety-related behaviours were found.

Non-invasive monitoring of 5-HT could be a useful tool in assessing modulation of behaviour in problematic dogs following functional biting activity sessions. Further studies are necessary to support the hypothesis that biting activity, independently of the formulation of dried products used, can be useful to increase 5-HT levels.

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A REVIEW OF THE LINK BETWEEN NEUROLOGY AND BEHAVIOUR IN VETERINARY MEDICINE

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This review focuses on understanding the link between behavioural medicine and neurology by analysing different neurological diseases that could display behavioural symptoms and behavioural disorders that could be involved in neurological conditions.

This connection has been increasingly investigated in the last years (Packer, De Risio and Volk, 2017; Watson *et al.*, 2018; Erath *et al.*, 2020; Mills *et al.*, 2020; Rusbridge, 2020), but more research is still needed to further elucidate this link.

Veterinary behavioural medicine and neurology might be connected in four different ways.

i) Several neurological diseases are associated with behavioural signs that can be the first and only symptoms in patients (e.g. Chiari-like malformation and syringomyelia could lead to vocalizations, touch aversion, altered emotional state, sleep disturbance: Cockburn *et al.*, 2018; Rusbridge, McFadyen and Knowler, 2019). ii) A comorbidity between neurological and behavioural disorders could exist (e.g. dogs can exhibit behavioural comorbidities such as a change in fear/anxiety and ADHD-like behaviours, alongside the development of epilepsy: Levitin *et al.*, 2019; Watson *et al.*, 2020). iii) Some conditions can be considered “borderline” between neurology and behavioural medicine (e.g., feline hyperesthesia syndrome: Amengual Batle *et al.*, 2019). iv) Some behavioural conditions may exacerbate neurological diseases and vice-versa (e.g., canine narcolepsy/cataplexy could be triggered by emotional excitement: Gulyani *et al.*, 2002; Tonokura *et al.*, 2007).

In conclusion, a multidisciplinary approach should be encouraged to decrease the possibility of misdiagnosis and unrecognition and, when needed, to provide a multimodal treatment combining neurological medication, psychopharmacological therapy, and behavioural advice.

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A PRELIMINARY STUDY ON BEHAVIOURAL ASPECTS IN DOGS WITH IDIOPATHIC EPILEPSY

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Behavioural changes in dogs with idiopathic epilepsy (IE) have been reported (Shihab, Bowen and Volk, 2011; Levitin *et al.*, 2019; Watson *et al.*, 2020). This preliminary study aims at underpinning these outcomes and analysing the impact of phenobarbital on these changes. Concurrently, we investigated the affective state of epileptic dogs through the judgement bias test (JBT).

Thirty dogs were involved: 15 with IE (2-14 years old, 3 females, 12 males), 10 under treatment with phenobarbital, 5 under no treatment; 15 controls (1-13 years old, 11 females, 4 males). For each dog, the owner completed the C-BARQ. Twenty-seven dogs underwent a training for JBT. Data obtained with C-BARQ and JBT were analysed using the Mann-Whitney U test; the number of dogs passing the training phase was compared through the Chi-Square test ($p < 0.05$).

Dogs with IE showed a strong tendency for higher scores for excitability ($U=70.0$; median: 2.3 versus 1.8; $p=0.077$) and attention-seeking behaviours ($U=66.0$; median: 2.7 versus 2.2; $p=0.053$). Epileptic dogs under phenobarbital had a lower touch sensitivity than epileptic dogs without treatment ($U=9.0$; median: 2.0 versus 0.7; $p=0.048$). Epileptic dogs less likely passed the training phase (58.3% versus 86.7%; $X^2=2.8$; $p=0.093$), but those who passed it completed the JBT similarly to non-epileptic dogs ($U=33.0$; $p=0.618$).

These preliminary results suggest that epileptic dogs show differences in excitability, anxiety and trainability compared to non-epileptic dogs. Be aware of the impact that these

behavioural comorbidities have on epileptic patients could help identifying and treating them, adding an important part to the seizure treatment.

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THE ROLE OF PERSONALITY, PET-OWNER RELATIONSHIP, AND COVID-19 ON HUMAN QUALITY OF LIFE

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Pets mitigated the effect of COVID-19 lockdown on human mental health and quality of life (QOL) (Bowen et al., 2020; Ratschen et al., 2020). This study aims to investigate the role of human and pet's personality, as well as pet-owner relationship, on human QOL during COVID-19.

During the first wave of COVID-19, 267 participants ($N_{\text{dog-owners}}=171$, $N_{\text{cat-owners}}=74$, $N_{\text{non-owners}}=22$) responded to an online survey including validated scales measuring pet (Piotti et al., 2018) and human personality (Corr and Cooper, 2016), pet-human relationship (Johnson et al., 1992), demographic and COVID-19 related questions to assess their role on human QOL (WHOQOL Group, 2004).

Ordinal regression models calculated using human personality data explained most of the differences in physical ($R_p^2=31\%$, $p<0.001$), psychological ($R_p^2=51\%$, $p<0.001$), and social ($R_p^2=27\%$, $p<0.001$) QOL domains. Pet personality did not explain any variation in the QOL domains (all $p>0.05$). Pet ownership was only associated with higher psychological QOL (estimate \pm SE=0.77 \pm 0.01, $p<0.001$). Models demonstrated that pet-owner relationship significantly affected pet owners' psychological ($R^2=16\%$, $p<0.001$) and social ($R_p^2=12\%$, $p<0.001$) QOL. Finally, environmental QOL was minimally explained by the models calculated for human personality ($R_p^2=5\%$, $p=0.004$) and pet-owner relationship ($R_p^2=9\%$, $p=0.001$), while the demographic ($R_p^2=18\%$, $p<0.001$) and COVID-related ($R_p^2=23\%$, $p<0.001$) models explained a larger variance.

The current study contributes data to the often-contradictory results relating to the benefit of pets on human wellbeing. While pet ownership and the pet-owner relationship are important to various aspects of human QOL, human personality explains a larger proportion of the variance in various QOL domains.

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PHENOTYPING ADDICTIVE-LIKE BEHAVIOUR TOWARDS TOYS IN DOGS AND ASSOCIATION WITH IMPULSIVITY

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Some dogs ('ball junkies' in common speech) exhibit extreme reactions to toys, which resemble a behavioural addiction (BA). They will not stop playing on their own, cannot easily be distracted, and may lose interest in other stimuli or social interactions (Käufer, 2014). Addictions differ from other compulsions in that they originate from an initially pleasurable activity (Sussman and Sussman, 2011), as is the case with toy play. It is suggested that high impulsivity plays an important role in addiction development (Rosenberg and Feder, 2014).

We tested 107 play motivated dogs in a behaviour test where BA criteria can be expressed (e.g., losing interest in social interaction or food). BA criteria were assessed by a blinded coder, yielding an 'addictive-like behaviour score' (ALB score) (max. = 600; the cut-off point for ALB = 250). Owners filled in a questionnaire, including 15 questions assessing BA criteria and the Dog Impulsivity Assessment Scale (Wright, 2011).

Twenty-six dogs were classified as 'ball junkies', and the ALB score was significantly correlated with 13 of 15 questions designed to measure addiction criteria. Linear models demonstrated significant positive associations between the ALB score and the overall impulsivity score ($R^2 = 0.14$, $p < 0.001$), Factor 1 (Behavioural regulation, $R^2 = 0.11$, $p < 0.001$), and Factor 3 (Responsiveness; $R^2 = 0.05$, $p < 0.01$).

For the first time, we identified an addictive-like phenotype in dogs, which showed validity across the behaviour test and the play motivation questionnaire. As in humans, addictive-like behaviour in dogs appears to be associated with higher impulsivity in everyday life.

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THE INFLUENCE OF TRAINING ON THE IDENTIFICATION OF BEHAVIOUR OF DOGS BY VETERINARY PROFESSIONALS

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Veterinary professionals should be at the forefront of companion animal behaviour. This entails recognising stress manifestations in dogs.(AVMA/FVE/CVMA, 2020; Golden and Hanlon, 2018; Martin and Martin, 2015)

This study aimed at assessing the impact that a single training session on dog behaviour had on the capacity of veterinary professionals to identify stress behaviours.

A convenience sample of 73 volunteer veterinary professionals (25 veterinarians, 14 nurses, 8 technicians, 26 unspecified) enrolled in a companion animal behaviour training session, illustrated with ethograms, pictures and videos. They were asked to identify and log stress behaviours in a dog facing a confrontational situation (video recorded), before and after the training. A control group of 31 veterinary nursing students also watched the video twice, using the same methodology, but without the behavioural training. Three experienced observers were used as expert assessors to assess both groups' stress behaviour identification frequency changes after training.

Both the control group and veterinary professionals increased the frequency of stress behaviour identification from viewing one to viewing two, however, the results were only statistically significant ($p < 0.01$) for the veterinary professionals.

The difference in the frequency of stress behaviour identification between veterinary professionals and experienced observers decreased significantly after training ($p < 0.01$). The control group showed a smaller and decrease that was not significant ($p = 0.6$).

Training had a positive impact on stress behaviour identification by veterinary professionals. This may lead to improved prevention of behaviour problems, diagnosing and providing first aid on behavioural problems and reducing stress during veterinary visits.

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OPERANT AND PAVLOVIAN APPROACHES TO RELAXATION TRAINING IN DOGS AND THEIR (HIGH) REPORTED EFFECTIVENESS IN BEHAVIOUR MODIFICATION

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Arousal is an inherent component of emotions, and strong emotions coincide with high arousal (Gygax, 2017). Thus, relaxation is incompatible with fear and anxiety (Wilson and Davison, 1971). Dogs can be trained to relax on cue, using either classical or operant conditioning. During classical conditioning, a relaxed state is induced, such as by massaging (e.g. Horwitz and Mills, 2012), or is captured when the dog is already relaxed. This relaxed state is paired with a cue (a blanket, word, music...). In operant relaxation training (e.g. Overall, 2013), the dog is rewarded for relaxed behaviours, and for remaining still for increasing durations and with increasing distractions, often combined with mat training.

We undertook an online survey of dog owners (N=223) who had performed relaxation training with their dogs. Owners were asked to select which protocol(s) they used (which we subsequently classified as classical or operant) and whether they perceived the training to be effective in 11 contexts. There was no effect of training approach (classical/operant) on reported effectiveness (linear model, $\chi^2=0.48$, $p=0.49$). For all contexts, >80% of owners considered relaxation training as 'effective' or 'partially effective'. When analysing 'effective' ratings only, effectiveness was highest for general manners (78%), hyperactivity (69%), aggression towards people (66%), and generally high stress levels (64%) and lowest for noise fears (41%) and leash aggression (45%). While self-selection of participants (22% were dog professionals) likely led to some overestimation of success, the high perceived success rate nonetheless indicates that relaxation training is a versatile tool in dog behaviour modification.

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TASIPIMIDINE, A NOVEL ORALLY ACTIVE ALPHA-2 ADRENOCEPTOR AGONIST, ALLEVIATES SIGNS OF ANXIETY SHOWN DURING VETERINARY EXAMINATION -A PILOT STUDY

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119 privately-owned dogs with a history of being anxious/fearful at veterinary clinics and difficult to handle during examination were enrolled in a randomised, double-blind, placebo-controlled, clinical field study involving two clinic visits.

Tasipimidine oral solution at 10 µg/kg, 30 µg/kg, 60 µg/kg or placebo was administered 45 minutes before the second appointment. The primary efficacy variable was the ability to perform a standardised progressive physical examination. The secondary efficacy variables were repeated behavioural stress level assessments when entering examination room and during physical examination. Variables were assessed by blinded behaviour experts. Signs of sedation, usability of the product and adverse events were recorded.

The ability to perform physical examination was better for dogs that received tasipimidine (pooled) compared to those that received placebo, but was not statistically significant (odds ratio (OR) of 1.296 (90% CI 0.636-2.643)). Significant anxiolytic effects of tasipimidine were seen between baseline and treatment and responder analysis for dogs entering examination room (p=0.04 and p= 0.02 for 30 µg/kg). Statistical significance in favor of tasipimidine was seen in the Stress level assessments for abdominal palpation (p=0.02), paw lifting (p=0.036) and measuring rectal temperature (p=0.04) for 10 µg/kg all favoured tasipimidine over placebo.

Interestingly, 27% (46) of the 172 screened dogs did not qualify because they were no longer difficult to handle when using more gentle handling methods (our standardised progressive exam).

We found that considerate handling makes challenging dogs easier to handle. Tasipimidine provides an anxiolytic effect for more invasive parts of the exam and distinct behaviours.



BENEFICIAL EFFECT OF BEHAVIOURAL TRAINING OF VETERINARY CENTRE STAFF AND TRAZODONE ADMINISTRATION ON BEHAVIOURAL SIGNS OF STRESS IN HOSPITALIZED DOGS

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Animal welfare is of fundamental importance in veterinary clinical practice, which has motivated the development of tools that provide a stress-free environment. This has already shown to allow not only better clinical practice, but also a faster recovery of patients. To assess the welfare of dogs and the presence of psychogenic distress during hospitalization, we decided to evaluate the presence of 17 stress-related behaviours/signs (SB) recorded on video, according to the previously described methodology (Gilbert-Gregory *et al.*, 2016), in veterinary centres (VC) with staff that had specific behavioural training (SBT) or not (NSBT). Particularly stressed dogs received trazodone (2.5-10 mg/kg PO), and its efficacy was assessed by the reduction of SB presented 60 or 120 minutes after the drug administration.

In total, 267 dogs were evaluated. Dogs hospitalized in five VC with NSBT showed an average 4.24 ± 0.39 SB ($n=67$), whereas in the VC with SBT, the average of behaviours was significantly lower: 2.48 ± 0.19 ($n=204$, \pm S.E., $p < 0.01$). The dogs to which trazodone was administered had an average SB of 7.00 ± 0.58 ($n=22$) before drug administration, a value that had decreased 60 minutes later to 2.65 ± 0.60 ($n=20$) and 120 minutes later to 1.50 ± 0.48 ($n=18$).

These preliminary results suggest that in VC with SBT, hospitalized dogs have less SB than in VC with NSBT, revealing the relevance of specific staff training. However, in circumstances

where behavioural management is not sufficient and SB may jeopardize the welfare of the dog and veterinary staff, the administration of trazodone can be beneficial.

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INVESTIGATION INTO THE STRESS RESPONSES OF HORSES UNDERGOING VETERINARY PROCEDURES IN AN EQUINE HOSPITAL

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Equine veterinarians frequently encounter and are injured by horses during veterinary care (Pearson et al., 2020). The aim of this study was to investigate how horses perceived veterinary care and document their behavioural responses.

A convenience sample of 57 cases presenting for non-urgent veterinary care (events) were included. Data collection included heart rate variability parameters (Holter ECG) and a behavioural scoring system (encompassing both the type of response and the level of arousal). Horses were scored as 'stressed' for the percentage of time they were recorded with elevated arousal and either a freeze, flight or fight response. Associations between variables (e.g. breed) and both physiological and behavioural indicators of 'stress' were evaluated using linear models.

Across all events horses were scored as 'stressed' 49.2% of the time. Horse age (younger [p=0.002]) and invasive events (compared to non-invasive) were significantly associated with higher behavioural indicator 'stress' scores. Mean HR difference from baseline reduced with increasing age (p=0.011) and was significantly elevated for the events: "enter examination room", "weigh bridge" and "horse walks past" (P<0.05). Risk factors for the events "nerve block" and "IV injection" were identified and will be presented.

This is the first study to document the range of equine behavioural responses (% of freeze, flight or fight) to veterinary care. Overall, there was marked variation within and between individuals. A better understanding of how horses respond to veterinary care and risk factors for stress will inform the development of low stress handling during veterinary care.

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PREGABALIN ALLEVIATES FELINE ANXIETY AND FEAR DURING TRANSPORT AND VETERINARY VISITS – A CLINICAL FIELD STUDY

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We evaluated the clinical efficacy and safety of a novel feline specific formulation of pregabalin 50 mg/ml oral solution in cats with anxiety and fear associated with travel and veterinary visits.

In this randomised, double-blind, placebo-controlled, parallel group study, 209 client-owned cats with a history of anxiety and fear associated with travelling and veterinary visits received either a single dose of pregabalin oral solution of 5 mg/kg or placebo approximately 90 minutes before placing the cat into the carrier. All cats were transported for at least 20 minutes to a veterinary clinic.

The treatment effect during transport was evaluated by the owner and by a blinded behavioural expert using video to assess duration and frequency of all signs exhibited. Treatment effect during clinical examination was evaluated by the investigator. Usability of the product was assessed by the owner.

Treatment effect during transport (OR 3.8 [95% CI 1.8-8.1], $p < 0.01$) and during clinical examination (3.4 [1.8-6.4], $p < 0.01$) significantly favored pregabalin. The external observer assessment confirmed the owner's assessment. Clinical safety was good, with few cats showing signs of mild and transient incoordination (4.6%) and tiredness (2.8%). No serious adverse events were reported. The majority (79%) of the cat owners assessed administration of the new pregabalin oral solution formulation as very easy or easy.

In conclusion, the feline specific pregabalin oral solution at the dose 5 mg/kg is effective for alleviation of acute anxiety and fear associated with transport and veterinary visit in cats. Clinical safety and usability of the product were good.



THE EFFECT OF OLFACTORY STIMULATION ON THE HEART RATE OF RABBITS DURING TRANSPORT

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Transportation can be very stressful for rabbits (Trocino et al., 2018; Voslarova et al., 2018). The aim of this study was to explore the effect of scents of Essential Oils (EOs) on heart rate (HR) in rabbits during transport.

Thirty-five shelter rabbits were individually transported three times (1 week interval) by car in a transport box for 5 minutes. Each rabbit was subjected to three treatments: control (no EOs), treatment 1 (30 drops of *Lavandula angustifolia* EOs) and treatment 2 (30 drops of a blend of *Cupressus sempervirens*, *Cananga odorata*, *Lavandula angustifolia*, *Citrus aurantium*, *Litsea citrata* EOs, each EO present at 20%) in a randomised controlled crossover study design. HR was measured immediately before and after transport with a stethoscope. Because an individual's coping strategy likely affects its stress response, each rabbit was categorized as active or passive coper based on a separate experiment. Data were analysed using a linear mixed model with treatment and coping strategy as fixed effects and rabbit ID as random effect. Coping strategy had no effect on the change in HR (before vs after transport; $F(2;68)=4.87$, $p=0.366$), but treatment did ($F(1;33)=0.84$; $p=0.011$). The average HR increased for the control treatment (mean=1.29, SD=32.30), but decreased for the treatment with the blend of EOs (mean=-24.33, SD=41.77; post hoc Tukey test $p=0.007$).

Results of this study indicate that the use of this blend of EOs induces a decrease in HR. Olfactory stimulation with EOs may be useful to help rabbits to recover homeostasis after a stressful event.

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POSTER ABSTRACTS

**ANIMAL WELFARE SCIENCE,
ETHICS and LAW**



“ACTIVITY WHEEL” FOR MICE USED IN BIOMEDICAL RESEARCH: ASSESSMENT OF HEALTH AND WELFARE STATUS THROUGH ANATOMICAL AND FUNCTIONAL PARAMETERS

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The use of an “activity wheel” as environmental enrichment in rodent cages has been studied since the '80s (Dewsbury, 1980; Sherwin, 1998). Nowadays, one of the most approved theories argues that “wheel running” is a self-reinforcing behaviour (Rhodes *et al.*, 2003). “Activity wheel” seems a valuable tool to improve housing conditions and welfare of rodents. The main aim of this study was to investigate possible negative effects of the voluntary use of a wheel in the home-cage environment on the musculoskeletal system of male C57BL/6NCrI mice.

We used a cross-sectional, randomized study design using 32 C57BL/6NCrI males aged 3 weeks, with a treatment (access to wheel; n=16) and a control group (n=16). . Animals were identified and randomized in 8 polysulfone IVC GM500 cages. After one acclimatization week without wheel, the wheel was introduced in four cages. “Wheel running” was recorded continuously and data about mice weight, growth curve, and feed consumption collected every two weeks. When mice were 12 and 20 weeks old, we performed nuclear magnetic resonance (NMR) and spectroscopy choosing two mice in each cage randomly. 24 hours before the NMR, faecal pellets from two mice/cage were collected for quantitative analysis of glucocorticoid catabolites. Both descriptive and inferential statistical analysis (T-Student test) were performed with MedCalc® 17.6.

Mice performed 4.8 km per day on average. No significant differences were found between the two groups for all parameters we investigated. “Wheel running” seems to have no negative impact on their musculoskeletal system.

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ETHICAL ISSUES RELATED TO THE SELECTION AND TRAINING OF SHELTER DOGS FOR INVOLVEMENT IN ANIMAL ASSISTED INTERVENTIONS

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According to the European Society of Dog and Animal Welfare (ESDAW) the number of abandoned and homeless dogs and cats in Europe may be over 100 million animals (<http://www.esdaw.eu/stray-animals-by-country.html>). The selection and training of dogs from shelters for their involvement in animal assisted interventions (AAI) is a valuable strategy to improve re-homing rates. However, many issues about this topic are still unresolved. We outline a bioethical analysis structured in concentric circles. We sketch a broader conceptual framework concerning the human-animal relation, by referring to the Land Ethic (Leopold, 1949) and the original concept of Bioethics by Van Potter (Van Potter, 1988). Next, the more specific context of the relationship between humans and dogs is considered: we take into account animal interests and our moral obligations, referring especially to relational theories (Gruen L, 2015; Donovan & Adams, 2007).

An ethic of care and responsibility emerged as an appropriate framework in which to consider the treatment of the "others" represented by animals, especially those living close to humans and dependent on them. As for AAI, we have seen that not only animal interests need to be considered, but also human interests, social and economic issues. All the aspects considered here could be included in an ethical matrix.

Our analysis considers all ethical issues at stake by balancing the perspectives of all the interest groups (shelter dogs, AAI dogs, professionals working in shelters and in AAI, patients/clients, the society) as preliminary debate to build an effective ethical matrix.

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THE WELFARE OF STAFF DOGS IN VETERINARY PRACTICE- BALANCING THE NEEDS OF PRACTICE, OWNER & DOGS

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The veterinary profession aims to educate the public and promote good standards of animal welfare, so it would be reasonable to expect expert care for staff owned dogs in clinical environments. This study investigated current support for staff dogs within UK veterinary practices.

An online questionnaire was distributed, via social media, to veterinary professionals. Participants were asked: whether staff dogs were permitted within the practice and where they would be accommodated; perceived advantages and disadvantages for practice, dog owner (Foreman *et al*, 2017), veterinary patients, and the dogs themselves (DEFRA, 2006), of being permitted in the practice whilst their owner’s work (Cohen & Davis, 2012); whether they currently implement versus should ideally implement each of 15 practice policies on staff dogs at work. The survey remained open for 8 weeks.

The resultant data, from 478 respondents, were analysed using SPSS version 26 (IBM). The McNemar Change test was used to compare the reported current versus perceived “ideal” practice policies which support dog ownership for their practice staff with $p < 0.003$ (Bonferroni correction). Significant differences were identified for 11 of the 15 policies tested, for example: discounted veterinary care; subsidised access to pet health clubs; designated accommodation for staff dogs outside of ward areas; and break and shift options for dog owners to better facilitate care of their dogs.

These results provide evidence for veterinary employers on measures promoting both dog welfare and employee wellbeing. This information can be utilised to develop clear, consistent, and fair practice policy documents for provision of care for staff dogs.

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NEW CONSULTATION ON ANIMAL WELFARE INCLUDING BIRDS DURING TRANSPORT FOR FATTENING AND SLAUGHTER IN THE UK.

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UK Government Consultation (December 2020 through February 2021) findings, on EC Council Regulation 1/2005 failings to secure better welfare of animals during transport, are awaited.. There is concern about the adequacy of current travel protection nationally and internationally, of animal transport to slaughter (1).

The improvement in animal welfare, which may result from preventing the export of live animals for slaughter is obvious. Reduction of distances and duration of transport to local slaughterhouses, both have animal welfare benefits. The proposed temperature limit, beyond which birds specifically cannot be moved to abattoirs, is commendable. The benefits of mechanical ventilation to assist trailer movement to ventilate pigs, cattle, sheep or birds is essential. Concerns remain about limited or absent access to water, particularly during warm weather journeys and following prolonged travel and during lairage (2). Thirsty animals represent a failed freedom, whereas a further freedom failure is indicated in birds by evidence of muscular cramp plus restricted head room for ever taller birds, seen when stiff birds stretch their necks and struggle to move once the plastic transport drawers are opened. The re-design of animal transport trailers to include all envisaged animal welfare improvements, must be the priority.

Other slaughter welfare failures, which have yet to be solved, are non-stunned slaughter, use of aversive CO₂ in broilers and pigs, the use of sub-lethal electro-narcosis etc, should be uncovered in UK Mandatory CCTV (3). Finally, all animals may benefit from CCTV surveillance during farm loading and transport.

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OFFICIAL PROCEDURES CONCERNING DETECTION AND TAKING CHARGE OF ILL-TREATED ANIMALS

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In France, an official system has been set up recently to detect and take charge of ill-treated animals (Fabre & Languille, 2014). Operational Cells against ill-treatment have been active for six years. At the same time, French food safety governance was modified to distinguish between registered and mandated veterinarians. Both are veterinarians working in private clinics but having a sort of “delegation of the government” (Cornu-Klein, 2012; Bulletin Officiel du Ministère de l'Agriculture, 2012)).

This presentation shows the composition of these Cells, which social services are part of, aimed at detecting and forestalling ill-treatment of animals (Bulletin officiel du Ministère de l'Agriculture, 2017). The work of registered and mandated veterinarians by order of official veterinarian inspectors of the French Department of Agriculture is explained.

The role and the duty of the veterinarian was recognized in 2009 with the article L 203-6 of the Rural Code and the Order of 2011. Animal welfare is an official part of Veterinary Public Health. Registered veterinarians (i.e., most of them) must warn official authorities in case of potential harm to people or animals, identified in places where they work and within their mission (Journal Officiel de la République Française, 2011). This duty legally allows practitioners to breach professional confidentiality. The difference between ill-

treatment and cruelty is discussed regarding doctrine and the Penal Code. The implication of legal proceedings and justice is discussed as regards to the overburden of magistrates or considering the cost-benefit balance of prosecuting farmers.

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PET OWNERSHIP OUT OF CONTROL – A REVIEW OF ANIMAL HOARDING CASES IN GERMANY

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Animal hoarding is a worldwide phenomenon affecting animal welfare, human welfare and public health. So far, broad research in the various areas relating to animal hoarding is lacking. Few data are published about the situation in Europe.

To gather an overview of the status in Germany, Deutscher Tierschutzbund e.V. has collected reports of documented animal hoarding cases since 2012. The data originated from associated animal shelters or media reports and were interpreted by descriptive data analysis. From 2012 to 2020, 369 cases were documented with more than 26.000 individual animals affected. Most cases were apparent in 2018 and 2020 (59 cases, respectively). Compared to 2012, this means an increase of cases of 63 %. Mean number of animals was 72 individuals per case (median 43). Cats were the animal species hoarded most (50 % of cases). A high estimated number of unreported cases is presumed. Therefore, it is not verifiable, if the rise of documented cases is due to an actual increase of cases. Nevertheless, on the basis of the data it can be concluded that animal hoarding is a serious animal welfare problem in Germany.

Every animal hoarding case is a big challenge for individuals involved and for responsible institutions like animal shelters, veterinary, legal and health departments. To prevent animal and human suffering effectively and in the long-term, more multidisciplinary cooperation of these institutions is needed to prevent and improve the management of animal hoarding cases.

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IMPACT OF THE PRESENCE OF A CAT ON THE SYMPATHETIC RESPONSE OF INDIVIDUALS EXPOSED TO A MILD STRESS FACTOR: A PILOT STUDY ON A GROUP OF VETERINARY STUDENTS

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Cats are more and more present in our homes. Although the benefits of pets on our health and well-being are recognised for some illness, infants, or elderly people (Baun et al. 1984, Barker, 1999), few studies focused on cats' impact on our reactions to stressors. We aimed at testing the presence of a cat on reducing the sympathetic response of students exposed to a mild stress situation.

Sixty-six students from a veterinary medicine school filled in the "Pet Attitude Scale" (PAS, Templer & Arikawa, 2011) and were split in two groups for a five-minute reading task: one group with the presence of a cat, the other group without a cat. The cardiovascular parameters monitored 5 minutes before, during and after the reading task with a medical blood pressure monitor fitted on the wrist, were compared between the two groups (Mann-Whitney tests). A decrease in heart rate (mean of 5.6% and up to 10%, $p < 0.001$) and in mean arterial pressure (mean of 5% and up to 12%, $p < 0.001$) were observed for students in the presence of the cat. An association between the presence of the cat on the physiological parameters and the PAS score was established ($p < 0.001$), regardless the gender of the students, students ranking higher showed a greater diminution in heart rate and mean arterial pressure (8.8% and 8.1% respectively).

This study suggests a benefit of the presence of a cat during a mild stress-inducing situation, lowering the immediate students' sympathetic stress response. Additional work will be needed to explore these potential benefits.

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INVESTIGATION OF THE KNOWLEDGE OF ANIMAL HEALTH AND CARE PROFESSIONAL GROUPS ON CATTLE BEHAVIOUR

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Nowadays, animal welfare is considered to be largely related to human behaviour and attitude towards animals (Lori and Allen, 2017). Thus, people's knowledge on the behaviours of the species they are in contact with is a significant factor affecting animal welfare.

This research aimed to evaluate the knowledge of animal health and care professional groups on needs and behaviours of cattle. Participants from different occupational groups such as farm veterinarians, veterinary medicine students, veterinary health technicians, animal caretakers, and farm owners participated in this study. An online survey including 30 questions was addressed to them. In total, 199 participants responded to the survey.

Results showed that majority of the people from different groups can define the balance points, blind spots and individual safety zones of cattle. The Five Freedom concept was defined by only 50% of the veterinary surgeons working with cattle. Although the majority of veterinary surgeons (79.1%) can interpret the stress related body, vocal and facial expressions of cattle, less than half of the participating students and farm owners could understand stressful body languages and vocalizations in cattle.

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PRETESTING OF A HOUSING SYSTEM FOR BREEDING LAYERS

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Pretesting of new animal housing systems in Sweden includes an animal welfare evaluation. In 2013, a Swedish hatching company requested permission from the competent authority (CA) to use a system with large furnished cages for breeding birds of layer strains, with ~70 birds per cage (as opposed to the current 16 birds per cage). Pretesting of the system was conducted on three batches, ~24,500 birds each of breeding hens and males of Lohmann Selected Leghorn and Lohmann Brown (LB). Data records included clinical scoring of 50 birds in each batch at 34-38 weeks, 55 weeks and 71-74 weeks of age, respectively, as well as, data from official welfare monitoring.

In all three batches, birds had serious health and animal welfare issues, including high mortality, in particular among LB males. Mortality in the batches was more than double (9.6–11.0%) the average mortality (3.8%) reported for birds in conventional furnished cages (CFC). Compared with CFC birds, prevalence of keel bone bursitis was also high in the batches (incidence up to 16%) and there was extensive feather damage, in particular in hens (incidence up to 98% feather loss on some body parts). In addition, daily supervision was considered difficult to carry out safely in the system. Following our recommendation to the CA not to approve the system for the Swedish market, the CA decided to ban the system, a decision that was later confirmed by an appeals court.



ANIMAL-ASSISTED INTERVENTIONS FOR PERSONS WITH DEMENTIA IN RESIDENTIAL CARE CENTRES

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The number of persons with dementia is growing fast, which in turn, increases the demand for non-pharmacological support, such as Dog-Assisted Interactions (DAI; Stewart et al., 2014; Travers et al., 2013; Zafra-Tanaka et al., 2019). We conducted an online survey in order to investigate the application and perception of DAI for persons with dementia in Residential Care Centres (RCC) in [REMOVED]. Each respondent represented one RCC and its caregivers. The survey consisted of multiple-choice questions with single or multi select answer options.

Out of 290 responding RCC, 201 (69%) applied DAI. Caregivers perceived DAI as beneficial for social interactions (95% of 201), alertness (51.4%) and fine motor skills (48%), and reported DAI decreased agitation (50%) in residents with dementia. RCC with resident dogs (27% out of 201) engaged the dogs almost daily for keeping the residents company. Visiting DAI-teams (73%) were employed mainly monthly or weekly to support residents during activities and therapies. 6% of the respondents no longer applied DAI, predominantly due to a lack of available DAI-volunteers and the financial costs of DAI. 21% of the participating RCC considered DAI but felt hindered by a lack of easily available information and by the organizational overload.

Results of this survey suggest that DAI are perceived as beneficial for persons with dementia in RCC. To increase the success rate of DAI programs in these particular settings, RCC would benefit from transparent and scientifically based information and advice on implementing DAI.

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INFLUENCE OF HOUSING AND ENVIRONMENTAL CONDITIONS ON EQUINE ACTIVITY TIME BUDGETS

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Monitoring of time budgets (feeding, resting, and lying) can provide information on equine health and welfare. This study aimed to measure time budgets of horses living under clearly defined housing and management conditions to analyse the influence of the environment. (Auer et al. 2021, Eerdeken et al. 2020)

An observational study was performed on 104 horses (54 warm bloods, 16 draft horses, 34 horses of other breeds) with a mean age of 20 owned by an equine sanctuary. Horses were kept under 3 different husbandry systems in 5 groups on neighbouring farms, without random assignment of horses to husbandry systems. Horses were each tracked two times for five consecutive days (24h/day) in 3-6 months intervals with a wearable sensor (Hoofstep®) that recorded time budgets for eating, resting and being active. The differences in time budgets between farms, turn-out conditions and time of day were analysed using ANOVA (Graphpad Prism Version 9.1).

The proportion of time spent eating (mean 41.96%, s.d. 29.04%) and being active (mean 10.95%, s.d.1.27%) were similar to those reported in the literature for domestic horses. The proportion of resting (mean 39.1%, s.d. 29.34%) was higher than previously reported for adult domesticated horses (3–27.3%). Mean proportion of eating, resting and activity were significantly different between farms, turn-out conditions and time of the day (p<0.001). Regardless of turn-out conditions, horses exhibited significant differences between day and night; they rest most and eat least between midnight and morning (p<0.001).

Our study demonstrates that differences in management are reflected in equine time budgets.

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DEVELOPMENT OF THE ANIMAL WELFARE ASSESSMENT GRID FOR DOGS

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The Animal Welfare Assessment Grid (AWAG) is a tool used to assess welfare and has been successfully applied and validated in a range of species (Wolfensohn & Honess 2007, Wolfensohn 2020). Part of this research involved adapting the tool for dogs, and we have also developed the tool into a user-friendly online tool for veterinary and animal welfare professionals to objectively score the welfare of dogs.

The AWAG scores were created by reviewing the literature and identifying the factors that influence dog welfare. Concurrently, the AWAG site (dog.awag.org.uk) was developed with a digital consultancy. Veterinary surgeons (n=16) tested the tool on dogs (n=38) they saw during consultations with clients, their own dogs, and used retrospective data to score patients. At the end of the trial, 12 users completed a survey with questions about how they found the factor scores and use of the tool using Likert-scales with 1 being very easy and 5 very difficult.

Fifty-eight percent of veterinarians scored 1 and 2 combined on the clearness of the factor scores; 83% scored 1 and 2 on how they found the ability to get the patient scores, and 67% scored 1 and 2 on the tool's functionality to drill down and see what factors are affecting welfare.

Following trials of the tool, the AWAG site and factor scores been refined to make the tool more intuitive. New data are now being collected to validate the AWAG and tested to assess the welfare impact of a chronic disease.

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THE EFFECT OF DIETARY FIBRE ON BEHAVIOUR, PERFORMANCE AND CECAL MICROBIOME COMPOSITION OF LAYING HENS

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Feather pecking is a multifactorial problem with genetic and environmental risk factors, e.g. nutrition. We investigated the effect of varying contents of dietary fibre on behaviour, plumage condition, performance and cecal microbiome composition of hens with intact beaks of a commercial strain (Lohmann Tradition). Varying dietary fibre contents were 3%, 6% or 9%, with all three having identical amounts of metabolisable energy. In week 21 of life, 12 groups were randomly assigned to one of the three feeds. The number of laid eggs was recorded daily in each group. Behavioural observations assessing feather pecking, plumage scorings and body weight measurements were conducted systematically multiple times throughout the experimental period. After week 65 of life, three hens per group were euthanized and cecal samples for microbiome sequencing were taken. The frequency of observed severe feather pecking decreased with increasing fibre content ($F_{1,10}=23.60$, $p<0.0001$). At all four time points overall plumage score was higher (i.e. better) with an increased fibre content. Over the course of the four evaluations, plumage quality decreased irrespective of fibre content ($F_{3,619}=59.37$, $p<0.0001$). Weight-uniformity was neither affected by fibre content ($F_{1,10}=0.36$, $p=0.56$) nor time (week of life, $F_{3,29}=0.75$, $p=0.65$). Laying performance varied over time, but was not affected by fibre content ($F_{12,118} = 1.43$, $p=0.1$). Diversity of cecal microbiome composition (Simpson effective diversity index) tended to increase with increasing fibre content ($p=0.09$). Results support the assumption that an increasing fibre content reduces prevalence for feather pecking, has positive effects on plumage condition, while seemingly not reducing laying performance.



CAN WE APPLY THE 1,000 DAYS CONCEPT TO OUR PETS?

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In humans, the 1,000-day concept refers to the period from conception to the second birthday. This critical period has been identified as a unique window of opportunity during which the foundations for optimal neurodevelopment, growth and health throughout life are established. At present, we lack the equivalent for our domestic carnivores, but we can gather some insights from the available data.

We know that placental weight has a direct influence on puppy weight (Gallana et al. 2016). Birth weight (Mugnier et al; 2020b) and neonatal growth rate (Leclerc et al. 2017) are predictive of future adult body condition. Several perinatal factors can have a positive or negative impact on the risk of early mortality in puppies such as low birth weight (Mugnier et al; 2019; 2020a) or early postnatal dietary supplementation (Olivier 2014; Le Gal 2016). Behaviourally, it is known that a friendly tomcat (Turner et al. 1986) or early positive postnatal interactions (McCune 1995) have a positive impact on kitten socialisation. In dogs, maternal nursing behaviour has an impact on stress management (Guardini et al. 2016) as well as on behavioural skills (Bray et al. 2017).

Based on the first data available, it seems that breeders, vets and pet owners need to consider all the pre- and postnatal factors that will influence the future health and behaviour of the pets.

Compared to humans, the diversity and specificities of our pets lead us to consider a different time window – different from the 1,000-day concept - covering preconception to late growth.

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ONLINE SURVEY ON INFORMATION GATHERING AND ATTITUDES – INCLUDING ANTHROPOMORPHISM – OF OWNERS WHO RECENTLY ACQUIRED A NEW PET IN FRANCE

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No conflict of interest: the research was carried out without any funding at the Veterinary College of Lyon, France, where the first author is a professor. The research project was reviewed and approved by the local Ethics Committee. The second and third authors were last-year students in 2020. The research project ended in 2020.

According to animal protection associations, around 100,000 animals are abandoned annually in France. To date, no scientific data are available on the subject of why abandonment occurs, although research has been carried out in other countries (Garrison and Weiss, 2015, Alberthsen *et al.*, 2016, Packer *et al.*, 2019, Plitman *et al.*, 2019). In order to implement accurate practical interventions to curtail pet abandonment, this should be a priority of study. The authors investigated ways of information gathering, combined with an anthropomorphic attitude and the potential information providing role of veterinarians for animal owners who recently acquired a new animal.

Pet owners were invited to participate in an anonymous online survey using social media (Facebook, LinkedIn) via Google platform, pre-tested and piloted. Questions were asked to determine: basic demographics, recently acquired animals, whether and how information was sought before adoption, what had been learnt; final questions concerning anthropomorphic attitudes and lack of information; whether delivery of accurate, helpful information could involve veterinarians. Statistical analyses were mainly descriptive, using percentages; chi-square tests were carried out to highlight statistically significant differences.

While most people researched information online, 10% of owners (N = 2,837) had not sought information before adoption, 14% blamed lack of correct information detrimental for the development of a human-animal bond; some reported viewing their pet as a child,

subsequently realising their mistake. 82% reported a preference for being informed by a veterinarian.

Study results were included in the rationale for a law project regarding animal protection in France.

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INSPECTION FINDINGS AND THRESHOLD FOR REQUESTS FOR POLICE INVESTIGATION IN FINNISH ANIMAL WELFARE CONTROL

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Conflict of interest: E. Valtonen works as an official veterinarian in the Environment Services of the City of Helsinki and she was on duty part of the study period. The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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An increasing proportion of animal welfare inspections and measures in Finland concern companion animals. However, only a small proportion of violations of law is ever investigated or prosecuted. Our aims were to describe the findings and measures of official veterinarians and to identify the factors that predict official veterinarians' investigation requests to the police.

Our data consisted of animal welfare complaints and official veterinarians' inspection reports and decisions from 811 cases of animal welfare control in Finnish Capital Region during 2019-2020. We performed logistic regression analyses to uncover predicting factors for the detected non-compliances and cases reported for police investigation.

In 86% (696/811) of the cases the veterinarians performed at least one animal welfare inspection and/or received information from police, or otherwise investigated the cases. The most common non-compliances were basic management (42%, 295/696) and insufficient veterinary care (27%, 185/696). The best predictors for the official veterinarians detecting non-compliances with the animal welfare legislation were complaints of insufficient veterinary care (OR 1.8, CI 1.1-3.0), at least one inspection performed without warning (OR 6.4, CI 4.2-9.8) and a police measure of removing animals from their premises (OR 6.5, CI 3.9-11.0). Complaints of violence (e.g. hitting or kicking) against animals were negatively associated with detecting non-

compliances (OR 0.6, CI 0.4-1.0). However, if violence against animals was detected, it predicted requests for police investigation (OR 11.3, CI 4.0-32.0).

Violence against animals seems to be challenging to detect. Cooperation between officials should be developed to ensure conductance of criminal procedure in cases of violation of animal welfare legislation.

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EFFICACY OF NX4 TO REDUCE EXERCISE-INDUCED PLASMA CORTISOL AND GASTRIN LEVELS IN NORWEGIAN SLED DOGS IN AN ACUTE STRESS SETTING: A PROSPECTIVE, RANDOMIZED, DOUBLE BLINDED, PLACEBO-CONTROLLED COHORT STUDY

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Physiological stress is well documented in sled dogs (Fergestad et al., 2016) resulting in increased plasma cortisol and gastrin level. Sled dogs have a high prevalence of gastritis/gastric ulcers and immunosuppression, affecting their welfare (Davis and Williamson, 2016). The study aimed to show that Neurexan® (Nx4) reduces plasma cortisol and plasma gastrin in high-performance sled dogs.

A pilot study with 17 sled dogs was done to validate the increase of cortisol by performance, followed by a prospective randomized, double blinded placebo-controlled cohort study, including 45 Siberian huskies (19 females, 26 males; age: 4.3 ± 2.2 years). 23 dogs were assigned to the Nx4- and 22 dogs to the placebo-group receiving 2 tablets every 30 min for up to 10 tablets per dog. Plasma cortisol and plasma gastrin were analyzed at 4 time points within 120 min after performance.

The pilot study confirmed an increase in plasma cortisol by a single training session of 25 km within 140 min, respectively 35 km within 180 min (main study). For the main target variable, area under the curve (AUC), plasma cortisol was significantly lower in the Nx4 group compared to placebo (p=0.031). Plasma gastrin was also significantly reduced in the Nx4 group 30 min after performance (p=0.023), resulting in a significantly reduced plasma gastrin AUC compared to the placebo group (p=0.049).

Within the limitation of the study, the results carry implications for the usefulness of Nx4 to reduce stress-induced plasma cortisol and gastrin levels in dogs under exercise-induced stress.

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POSTER ABSTRACTS

BEHAVIOURAL MEDICINE



A PRELIMINARY STUDY INTO THE EFFECT OF SHELTER FEATURES ON DOG BEHAVIOURAL TRAITS USING THE NOMINAL GROUP TECHNIQUE (NGT) METHOD

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Life in a shelter is often a traumatic experience that can affect dog behaviour and welfare (Protopopova, 2016). Few studies have investigated the dogs' behavioural traits that might deteriorate in response to living in a shelter (Polgár, Blackwell and Rooney, 2019) and the features of shelters that might affect this process both positively or negatively (Taylor and Mills, 2007). The aim of this preliminary study was to collect input to inform the design of a survey about dog behavioural traits that might change during life in a shelter and the shelters' features that might affect them. We used the Nominal Group Technique (NGT) tool, a research method based on a structured group process to elicit and prioritize ideas. Participants were five Italian experts. The NGT meeting included four stages: generating ideas, recording them, discussion and prioritization. Votes were recorded and frequencies were calculated.

Twelve behavioural characteristics that might deteriorate in shelter dogs were identified (e.g. "ability to adapt", "emotional stability and learning ability", "response inhibition"). Participants also identified 16 shelter features that might help preserve dog behaviour (e.g. *number of dogs proportional to the number of caretakers and spaces, proper management, presence of specific professionals*) and 18 shelter features that might contribute to dog behavioural impairment (e.g. *overcrowding, confined and poorly distributed spaces, poor management skills of the administration*). NGT was an effective tool to improve group discussion and to collect useful information that informed the design of a survey aimed at the staff members of Italian dog shelters.

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ITALIAN DOG-OWNER COMPLAINTS ABOUT UNDESIREDDOG BEHAVIOUR: PRELIMINARY DATA FROM AN ONLINE SURVEY

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Owner complaints about undesired dog behaviours can affect the dog-owner relationship (van Herwijnen et al., 2018; Pirrone et al., 2015). The use of a survey is effective to investigate owner perceptions and habits in their life with their dog (Dotson & Hyatt, 2008). As a section of a more extensive survey, data presented here aimed to investigate Italian owners' main complaints about their dogs' behaviour.

The complete online survey was advertised using social media with a virtual snowball sampling method. The 20-question section collected information about owners' demographic features, dog origin, health and owners' complaints about his/her behaviour. Descriptive statistical analysis, and Fisher tests, were performed on data collected.

There were 711 respondents of which 23% had a dog-related job. Most dogs were cross-breeds (28.3%) or sighthounds (23.4%). Dogs came from different sources including professional breeders (37.9%), family litters (27.7%) and shelters (16.6%). 21.8% of dogs were declared to show behavioural complaints that the researcher categorize in five clusters: fear, anxiety, aggressive behaviour, fear associated with aggressive behaviour and "other problems". Dogs coming from shelters had a higher prevalence of behavioural complaints compared to dogs coming from other sources ($p < 0.0009$), but there was no significant difference among behavioural problem categories. We conclude that Italian dog owners' complaints concerned mainly fear, anxiety and aggressive behaviour. Among owners of dogs coming from a shelter there is a higher prevalence of complaints about dog behavioural problems compared with owners of dogs coming from other sources.

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CAN USE OF A STRESS REDUCTION ETHOS INFLUENCE JOB SATISFACTION & RESILIENCE IN COMPANION ANIMAL VETERINARY PRACTITIONERS: A PRELIMINARY STUDY

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The positive shift towards low stress handling (LSH) techniques and behaviour/ welfare friendly techniques within veterinary practice must be considered alongside perceptions that implementing them is difficult, time consuming and results in higher risk of injury to veterinary personnel (Lloyd, 2017). If this is true- then do LSH policies for patient care improve or reduce wellbeing of veterinary staff? This study examined the relationship between LSH and emotional wellbeing of veterinary care givers.

An online questionnaire was developed containing questions on respondent demographics; LSH protocol items (compiled from respected welfare friendly practice standard schemes (BVBA, 2020; Fear Free, 2021; International Cat Care, 2021; Rabbit Welfare Fund, 2021)); and job satisfaction (Macdonald and MacIntyre, 1997) & resilience scale (Connor and Davidson, 2003) items from previously validated scales. The survey was available online and promoted via veterinary media and discussion Forums.

Completed surveys from 40 respondents were cleaned/ prepared for analysis using Excel® (Microsoft 2016®), with analyses using SPSS version 24 (IBM). For each of the three themes (LSH approaches, job satisfaction, and resilience), a summative composite scale was created. The internal consistency of the questions comprising each theme were then assessed using Cronbach's alpha.

There was no significant effect of LSH measures on respondent job satisfaction. However, there was a large positive effect ($f^2 = 0.43$) on resilience, with respondent resilience significantly predicting job satisfaction ($F_{1,38} = 17.961$, $p < 0.005$). This positive relationship between LSH protocols and the resilience of veterinary personnel and warrants further study.

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DEVELOPMENT AND VALIDATION OF A RABBIT PAIN SCALE, THE “DOLORABBIT” SCALE

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Pain is a complex, subjective and emotional experience, which can lead to medical complications in patients. Recognizing pain in rabbits is particularly important for veterinarians in their practice (Della Rocca *et al.*, 2015). We aimed to refine the scale developed by Banchi *et al.* (2020), by integrating behavioural parameters (for example posture and appetite).

The “dolorabbit” scale was based on physio-pathological, functional and behavioural parameters, selected from the scientific literature (Banchi *et al.*, 2020; Keating *et al.*, 2012). This scale was composed of three components: a behavioural, a functional and an interactive component. The study was conducted by filming 19 pet rabbits in a clinical environment. The rabbits ranged in age, breed and sex. The development of the scale was based on observations made of the rabbits and interactions with them during films fifteen minutes long.

The experimental validation of the scale was based on intra-rater reliability assessment (evaluated by the comparison of the results obtained by the same person who watched each video twice, concordant correlation coefficient of 0.87) and inter-rater reliability assessment (evaluated by the comparison of the results obtained by two different persons, concordant correlation coefficient of 0.74) and on the correlation between pain intensities obtained with the “dolorabbit” scale and pain intensities expected from a clinical point of view (it was insufficient with a kappa coefficient of 0.13).

In conclusion, after further validation in a larger population, this scale should be a good tool with which to evaluate pain in rabbits by assessing behavioural changes.

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TASIPIMIDINE, A NOVEL ORALLY DOSED ALPHA-2 ADRENOCEPTOR AGONIST, ALLEVIATES CANINE ACUTE ANXIETY AND FEAR ASSOCIATED WITH NOISE – A PILOT STUDY

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The study was sponsored by Orion Corporation Orion Pharma. MK, PP and MH are employees of Orion Corporation.

The objective was to study clinical safety and efficacy of tasipimidine in dogs suffering from noise anxiety.

Forty-three dogs with a history of acute anxiety and fear associated with fireworks noise were enrolled in a randomised, double-blind, placebo-controlled clinical field study conducted at New Year’s Eve. Tasipimidine 10 µg/kg (n=15) or 30 µg/kg (n=14) or placebo (n=14) was administered as needed. Overall treatment effect was assessed by the owner. Signs and extent of dog’s anxiety and fear, dog’s alertness, product usability and adverse events (AE) were also assessed.

In the owner assessment, 93% of the dogs in the 30 µg/kg group showed excellent or good treatment effect, i.e. dogs did not show signs of anxiety and fear or the signs were mild and temporary. The difference compared to the placebo was statistically significant (OR 37.3, 95% CI 3.72–374.5; p = 0.0021). Reduction in the sum of owner-assessed signs of anxiety and fear 1 and 2 hours after the first dose was most pronounced in the 30 µg/kg group. In this group majority of the dogs required only 1 (50.0 %) or 2 (35.7%) doses. Most dogs were scored to be “fully responsive” and able to “stand up and walk normally”. No serious AE were reported. Majority of the owners found the product very easy (58.1%) or easy (34.9%) to use.

In this study, tasipimidine at the dose 30 µg/kg was found to be safe and effective to treat noise anxiety. A larger study is needed to confirm these effects.

TASIPIMIDINE, A NOVEL ORALLY DOSED ALPHA-2 ADRENOCEPTOR AGONIST, ALLEVIATES CANINE ACUTE ANXIETY AND FEAR ASSOCIATED WITH TRAVEL – A PILOT STUDY

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Nineteen clinically healthy privately-owned dogs with a history of anxiety and fear associated with traveling were enrolled in a randomised, double-blind, placebo-controlled, crossover clinical field study including two car rides during the treatment period.

Tasipimidine 30 µg/kg or placebo oral solution was administered in a randomised order one hour before the car ride. Treatment effect on dog’s signs of anxiety and fear was assessed from video recordings by a blinded expert observer. Owner assessment of treatment effect, dog’s alertness and adverse events (AE) were also recorded.

Overall, tasipimidine significantly reduced signs of anxiety and fear based on both their duration (p < 0.0001) and frequency (p = 0.0134). For individual signs, dogs treated with tasipimidine showed significantly less panting (p < 0.0001) and lip/nose licking (p = 0.0003). Similarly, in the owner’s assessment of treatment effect results were in favour of tasipimidine (OR 23.3; 95% CI 4.58–118.2; p = 0.0001).

In the alertness assessment great majority of the dogs were scored fully responsive in both study periods (89.5/94.4% respectively). Most were also able to stand up and move without ataxia in both periods (100/94.7%) respectively. Temporary slight signs of ataxia was the most common AE reported for 3 dogs in the tasipimidine treatment. No serious adverse events were reported.



In conclusion, in both the expert and the owner assessment, tasipimidine at the dose 30 µg/kg was found to be effective in alleviating acute anxiety and fear associated with car travel and treatment effect was not dependent on sedation.

TASIPIMIDINE, A NOVEL ORALLY DOSED ALPHA-2 ADRENOCEPTOR AGONIST, ALLEVIATES SEPARATION ANXIETY IN DOGS - A 5-WEEK STUDY

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To study the clinical safety and efficacy of tasipimidine for the treatment of separation anxiety, 66 dogs with a history of destruction, restlessness/pacing, vocalisation or indoor elimination only when left alone, and who were left at least 3-5 times/week, were enrolled in a randomised, double-blind, placebo-controlled study. Tasipimidine 30 µg/kg (n=32) or placebo (n=34) was administered 1 hour prior to each departure for up to 3 daily departures over 5 weeks.

Treatment effect was determined by owners scoring number/intensity of anxiety behaviours assessed from video recordings taken during absence(s). Alertness and adverse events (AE) were assessed.

In the owner assessment Tasipimidine decreased anxiety/fear scores significantly (odds ratio [OR] 3.74, 95% CI 1.61, 8.65; p = 0.0021). Tasipimidine-treated dogs showed continuously significantly lower weekly mean anxiety scores (estimate -9.47; 95% CI -15.9, -3.08; p = 0.0045). Tasipimidine significantly reduced two of the common signs of separation anxiety in the study: restlessness/pacing (estimate -0.64; 95% CI -0.99, -0.28; p = 0.0007) and vocalisation (estimate -0.48; 95% CI -0.83, -0.13; p = 0.0085)

Decreased alertness was reported for 10/32 dogs in the tasipimidine group. Tasipimidine dose for 6 of these dogs was reduced to 20 µg/kg prior to undertaking any efficacy assessments. The decreased alertness resolved, and their outcome data were included



for the lower dose. The most common AE was emesis, which was reported in 15 dogs (46.9%) in tasipimidine group and 8 dogs (23.5%) in placebo group.

In conclusion, tasipimidine is a helpful treatment option for dogs suffering from separation anxiety.

ASSOCIATION OF OWNERS' TRAINING STYLE WITH OBEDIENCE AND BEHAVIOUR PROBLEMS IN DOGS

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The authors declare no conflict of interest. The funders had no role in the design, analysis or decision to present the current study.

Studies suggest a link between owner training style and behaviour problems in dogs (Hiby *et al.*, 2004; Blackwell *et al.*, 2008). We explored this in more detail, using an online survey (1558 responses).

While the survey's main focus was on dog play behaviour, we here present results regarding owner training style and dog behaviour problems. A factor analysis (FA) over 14 items yielded six factors describing training style (labels in quotation marks). A FA over 19 items yielded seven factors relating to behavioural problems. Dog obedience was rated on a 5-point Likert scale. Training style factors were related to obedience scores and behaviour problem factors, using ordinal and linear models, respectively.

Obedience was positively associated with "play as a reward" ($p < 0.001$) and negatively with "negative reinforcement" ($p < 0.001$). Hyperactivity ($p < 0.001$), resource guarding and noise fears (both $p < 0.01$) were associated with higher use of "positive punishment". "Negative punishment" was associated with separation problems, hyperactivity and chasing objects (all $p < 0.001$). Dogs rewarded with play were more likely to be hyperactive but less affected by noise fears (both $p < 0.001$). Chasing wildlife and herding was positively associated with "food, praise and clicker as a reward" and negatively associated with "social reward" (both $p < 0.01$).

To conclude, dogs rewarded with play were rated as more obedient, those trained with negative punishment as less obedient. High use of positive and negative punishment was associated with several behaviour problems.



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EFFECTIVENESS OF A NUTRACEUTICAL RIFOSON ON FEAR-RELATED BEHAVIOUR IN DOGS

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The study was funded by SLAIS srl.

This double-blinded, crossover case-controlled trial investigated the efficacy of Rifoson, a nutraceutical for short-term use in dogs, containing Valeriane (extract20mg/Kg; Taylor et al., 2016), Passiflora (extract10mg/Kg; Dhawan et al., 2001), and Tryptophan (80mg/Kg; Boch et al., 2009). Inclusion criteria were age (above 12 months) and a veterinary behaviour specialist diagnosis of fear of loud noises, social fear, or separation problems. Sixty dogs were allocated to two groups (N=30 each, Mdn age=5years, range=1-15, balanced for sex). For one week, Group1 received Rifoson, Group2 received a placebo. After a 2-week washout followed a cross-over. Environmental and behavioural management were implemented for both groups. Owners reported their dogs' behaviour on 5-point Likert scale before entering the protocol (baseline), after the Rifoson week, and after the placebo week.

Factor analysis grouped behavioural signs in: attention getting, inhibition, and avoidance. Each category was analysed with ANOVA using dog as random effect, and treatment (Rifoson or placebo) and group (1 or 2) as fixed effects, including their interaction. There were no carryover effects (all $p>0.05$). Behavioural inhibition and avoidance declined from the baseline following Rifoson (Inhibition: ratio= 1.39±SE=0.08, $p<0.001$; Avoidance: ratio=1.31±SE=0.08, $p<0.001$) but not placebo (Inhibition: ratio=1.11±SE= 0.06, $p=0.137$; Avoidance: ratio=1.09±SE=0.06, $p=0.255$). Attention getting declined from the baseline for both Rifoson (ratio=2.63±SE=0.39, $p<0.001$) and placebo (ratio=1.35±SE=0.34, $p<0.001$) but was significantly lower following Rifoson compared to the placebo (ratio= 1.28±SE=0.35, $p<0.001$).

These results indicate that Rifoson, in association with behavioural management, appears effective in alleviating symptoms of moderate fear of noises, social fear, and separation problems in adult dogs.



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BEHAVIOURAL DISORDER IN A DOG WITH CONGENITAL AGENESIS OF THE VOMERONASAL ORGAN AND THE SEPTUM PELLUCIDUM

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A 1-year-old intact male mongrel dog with a cleft nose and lip, presented for aggressive behaviour towards unknown dogs, male and female, despite adequate canine socialization and no previous traumatic experiences. He did not exhibit sexual behaviour towards females in heat. He had previously been treated for aggressive behaviour towards unknown people as a result of fear and environmental fear due to poor socialization to these stimuli.

The removal of the vomeronasal organ (VNO) in mice has demonstrated that it is essential for sexual discrimination of congeners (Kimchi et al., 2007) and is associated with reduced sexual and aggressive behaviour (Clancy et al, 1984). The septum pellucidum (SP) is part of the limbic system participating in consciousness, sleep, learning and emotion formation (Sundarakumar et al., 2015) and its absence is associated with increased aggressive behaviour in animals, antisocial personality disorder, psychopathy (Rainer et al., 2010) and cleft lip in humans (Pilu et al., 1990).

CT and MRI revealed a rostral middle raphe ossification defect affecting the complete rostral osseous nasal septum with the absence of the vomer bone and the palatine-maxillary bone, compatible with cranial dysraphism. The presumptive diagnosis was a congenital anomaly with the absent VNO and SP causing the aggressive behaviour .

This is the first reported case of a dog with congenital absence of the VNO and SP. It shows the importance of both structures in intraspecific communication and social interaction



(Berthoud, 2010). The dog is probably unable to communicate adequately. He also shows inhibition of sexual behaviour and impulsive aggressive behaviour.

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BEHAVIOURAL PROBLEMS IN ORNAMENTAL BIRDS – A PILOT SURVEY.

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Many captive-bred or wild-caught birds are kept as companion birds (CBs), and abnormal behaviour is reported as a concern in these species (van Hoek & Carel, 1998, Gasking & Bergman, 2011). This pilot survey, which is part of an ongoing study, sought to gather information regarding behavioural problems observed in CBs.

An online survey advertised on social media, targeting CB owners/breeders, investigated respondent demographics and their experience of CBs, and CB behavioural problems; the number, if they currently had CBs; and whether any of their CBs exhibited any of 11 predefined behavioural problems.

Out of a total of 94 respondents (52 female, 42 male) (questionnaire part/1, past experience of birds, open questions), 55.3% had not observed behavioural problems in CBs, 44.7% had observed them rarely, and 5.3% had observed them often/continuously. The most frequent problem was feather-picking. Sixty-one respondents gave detailed data on 907 currently owned CBs (questionnaire part/2, currently owned birds, closed questions). These data, obtained using a different questionnaire technique, described different frequencies of the selected behavioural problems, the highest frequency being stereotyped climbing (2.7%) and the lowest, anorexia (0.2%). This difference may also have been due to owners/breeders gaining experience, and/or owning other species. Owners/breeders may not always recognise abnormal behaviour and report it. Owner/breeder data were skewed due to age/gender differences; multiple species were owned.



Owner/breeder education in identifying avian behaviour, may aid in facilitating recognition of behavioural problems in CBs. Further studies investigating behavioural problems exhibited by CBs are warranted.

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EFFECTS OF ENVIRONMENTAL ENRICHMENT ON COMPULSIVE TAIL CHASING IN DOGS TREATED WITH CLOMIPRAMINE

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Clomipramine and environmental enrichment have been successful in the treatment of canine compulsive tail chasing (Hewson 1998, Kim 2008, Tiira 2002, Yalcin 2010). This study aimed to examine effects of environmental enrichment on compulsive tail chasing in dogs treated with clomipramine.

Ten client-owned dogs (1-5 years) exhibiting tail chasing were included in this study. Dogs with concurrent medical diseases were excluded. Dogs were randomly allocated to two groups. Dogs of group 1 were given 2 mg/kg clomipramine hydrochloride orally (n=5), dogs of group 2 received 2 mg/kg clomipramine hydrochloride orally + enrichment (feeding with food ball, 15 minutes game time + 45 minutes walking with owner) (n=5) during 12 weeks. Owners were asked to assign a score on the basis of the following scale for improvement in behaviour: 0=no change, 1=minimal improvement, 2=moderate improvement, 3=marked improvement and 4=substantial improvement. Treatment was assessed in four intervals: weeks 1-3, 4-6, 7-9, and weeks 10-12 (Moon&Fanelli 1996). Data were analyzed by Friedman test for within-group comparison according to weeks and followed by Wilcoxon signed rank test in each group for binary comparison of weeks. Mann Whitney U Test was used to compare score differences between two groups (SPSS).

Male dogs and dogs of German shepherd and Anatolian sheepdog breeds were overrepresented. Scores of clinical parameters significantly different ($p<0.05$) between group 2 than group 1 at 10-12 weeks.

Clomipramine is effective and well-tolerated in controlling signs of compulsive tail chasing and environmental enrichment can be beneficial in terms of shortening treatment time.



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