

Devising a Paradigm for the Assessment of Guilt across Species

Trisha S. Malhotra

Abstract—While there exist frameworks to study the induction, manifestation, duration and general nature of emotions like shame, guilt, embarrassment and pride in humans, the same cannot be said for other species. This is because such 'complex' emotions have situational inductions and manifestations that supposedly vary due to differences between and within different species' ethology. This paper looks at the socio-adaptive functions of guilt to posit why this emotion might be observed across varying species. Primarily, the experimental paradigm of guilt-assessment in domesticated dogs is critiqued for lack of ethological consideration in its measurement and analysis. It is argued that a paradigm for guilt-assessment should measure the species-specific prosocial approach behavior instead of the immediate feedback of the 'guilty'. Finally, it is asserted that the origin of guilt is subjective and if it must be studied across a plethora of species, its definition must be tailored to fit accordingly.

Keywords—Guilt, assessment, dogs, prosocial approach behavior, empathy, species, ethology.

I. INTRODUCTION

THE emotion 'guilt' is defined as a feeling of having committed a wrong or failed an obligation to another [13]. It is supposed 'complexity' arises from the acknowledgement of the other in relation to oneself. To feel guilty, one requires self-consciousness and the ability to be self-conscious is claimed to be inconsistently spread across species like dogs, elephants and dolphins, ants, magpies, apes, and various others [4], [20], [22], [25]. Hence, researchers have questioned the existence of guilt and other self-conscious emotions in such species if they do not all display an awareness of the self. This article first addresses how guiltiness is adaptive and, therefore, why it might be observed across multiple species.

Guilt is said to originate from empathy and the more empathetic an individual, the more prone to feeling guilty they are [10]. The socio-adaptive functions of feeling guilt are therefore similar to those of being empathetic which are to preserve, protect and reinforce interpersonal relationships [8]. Many animal species—both domesticated [11] and not [23]—are known to exhibit the appropriate helping responses to those in distress which can only arise through an awareness of others' feelings. Therefore, it is reasonable to assert that the same animals might experience guiltiness (possibly for not helping someone in distress) given the right conditions. 'Right conditions' imply those that incite interest of the animal toward the study by considering the needs and motivations of the animal. This will be further explored in the upcoming

critique.

II. GUILT-ASSESSMENT PARADIGM IN DOGS

Paradigms that are supposed to assess 'guilt' in animals do not always account the differences between our goals and the goals of other species. Take, for example, the 'doggy guilty-look' and its subsequent paradigm¹. When dog owners are asked to describe their pet's guilty-look, their answers remain largely similar- the dog averts eye contact, lifts its paw, has downward or drooping ears, has a bent head, etc. [14]. Experimentally, it has been shown that dogs express these 'guilty-look' features towards angry owners even when they have not 'committed a wrong' [17]. Since they display some features of the look whether or not they have been accused truthfully, it has been concluded that dogs probably do not experience guilt [26]. However, the paradigm itself can be critiqued on multiple levels.

III. CRITIQUE

A. Failure to Address Empathetic Displays in Dogs

The Horowitz guilt-assessment paradigm does not account for the fact that domestic dogs are bred to be highly 'empathetic'. Not only are dogs very interested in and motivated to interact with humans [6], but it has also been shown that dogs can perceive affect from human voices and expressions and *synchronize* their own affect accordingly [18]. In this manner, when people are in distress, dogs 'sense' it and lend a helping paw [11]. It may be theorized that, like humans and certain primates, dogs are good at perceiving physiological arousal in people (possibly through odor and tone of voice) and, therefore, rely on it for cues about a person's affective state.

In the experimental paradigm under consideration, one possible explanation is that dogs empathetically sense their owner's 'anger' towards them. While they do not have the concept called "anger" like humans do, they definitely perceive the owner's outward expression as driven by a negative effect. Dogs then immediately take on a submissive role to show their cooperation which is depicted through what most people believe is their 'guilty-look'. Whether this look is guilt or not has not been experimentally verified. However, 'affectively sensing threat followed by submissiveness' as an explanation over 'guilt' does explain why dogs express the

¹In summary, either the dog is made to eat the 'forbidden cookie' by the experimenter or the experimenter eats the cookie. When the owner returns to find missing cookie, in two or four conditions they express 'anger' at the dog. The dependent variable becomes whether or not the dog will display aspects of its 'guilty-look'.

same look even when they are falsely accused. One could posit that this paradigm is a better test for the existence of empathy in dogs than it is for the non-existence of guilt.

B. Dogs as Dependent on Owners

Dogs are also bred to be highly dependent on their owners. Unlike their highly independent close cousin –wolves– dogs rely on their owner for food, safety, affection and entertainment. When their owner shouts at them, even if they have not committed a ‘crime’, dogs might have no alternative but to ‘look guilty’ (take on a submissive role) since it is in their best interest to cooperate.

It has been experimentally validated that dogs experience more negative affect (anxiousness) on being petted by unfamiliar people in comparison to familiars [19]. Hence, as moderated by their anxiety levels, being unreasonably shouted at by the experimenter would probably not elicit the submissive ‘guilty-look’ but, rather, aggressiveness from the dogs in Horowitz’s study. This is because they do not depend on strangers for any basic needs and, therefore, do not have a pre-existing bond with the stranger. The current paradigm assumes that dogs would behave like humans do when they are falsely and, therefore, by human standards, ‘wrongfully’ accused.

C. “Guilty-Look” as an Insufficient Dependent Variable

Finally, relying on a dog’s immediate response towards their owner’s anger is problematic. Only evaluating expressions is a poor means of determining ones emotions as it often is not significantly representative of one’s emotional state. In fact, facial expressions of the basic emotions were not discovered by observing faces. Barrett (2017) writes, “Scientists stipulated those facial poses, inspired by Darwin’s book –The Expression of Emotion in Man and Animals- and asked actors to portray them. And now these faces are simply assumed to be universal expressions of emotion” [2].

Emotional states can be partially gauged through neural activity, facial expressions and body language, the manner of situational induction, past learning, memory, general disposition, current physiological state and various other factors. However, there is no one determining criteria. This supports the ‘constructionist’ idea of emotions which affirms that each emotion lacks any facial, bodily or neural ‘fingerprint’ [2]. Worth considering is the idea that human beings project a culturally-acquired stereotypic image of a ‘guilty’ onto dogs. When people believe the dog has ‘wronged’ by their standards, they think of what they have learned in their environment as the culturally promoted expression of guilt and look for it in the dog’s demeanor. For example, the dog averting its eyes is interpreted as part of the subjective experience of the dog’s guilt, since it has been observed in our species that dishonest individuals find it difficult to make eye contact. When the dog tucks its tail and looks ‘smaller’, its behavior is implicitly perceived as shame, guilt or regret because people who experience either of these states take on a ‘humbling’ body-language. However, whether these characteristics of the guilty-look are representative for

guilt in dogs (or even in humans) and are not simply products of a cultural understanding of guilt has not been verified.

Another important note in the case of the dog-guilt paradigm, anecdotal evidence by the owner is heavily influenced by her/his appraisals of their pet’s emotional states within a perceived context. Owners, therefore, report that their dog is expressing the guilty-look when nothing has actually happened, but they are made to believe their dog did something it was not supposed to do [21]. As a counter to this, a functionalist approach to the study of guilt must be employed. Using such an approach, not only can one avoid this pet-owner bias but also expand observation beyond mere impressions of the guilty-look.

III. A FUNCTIONALIST APPROACH-BASED PARADIGM

The functionalist approach advocates that an emotion’s adaptive ability is determined by how the individual *behaves* to alter the situation that induced that emotion [1]. Such behaviors follow the emotional experience. However, they are not necessarily immediate. Functionally speaking, guilt becomes “prosocial” since it leads to self-corrective behaviors geared towards strengthening social relationships [3], [16]. This characteristic self-correction is not observed through facial responses but how the guilty acts towards the injured party. Hence, a better dependent variable that characterizes the experience of guilt is the approach or avoidance behavior of the wrongdoer toward the injured party.

A. Measuring Prosocial Behavior for Guilt-Assessment

In children and primates, experimentally induced guilt has been linked to an increase in prosocial approach behaviors [5], [7]. Pet owners agree that their pet approaches the one it has hurt immediately or soon after committing a ‘crime’ and is more ‘attentive’ toward the injured party. It is reasonable to think that prosocial behaviors are an embodied means of ‘wanting to make amends.’ This is contrasted with emotions like shame which involves feelings of wanting to hide or escape to “save face” [12]. One could posit that pro-social approach behaviors in all animals are mediated by the amount of unpleasant arousal that “guilty feelings” create (See Fig. 1).

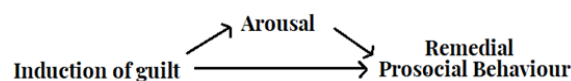


Fig. 1 Conceptual diagram for a plausible paradigm of guilt assessment with “Arousal” mediating the IV: Induction of guilt and the DV: Remedial Prosocial Behavior

Measuring approach-behaviors also makes a paradigm applicable across different species, since it is based on the idea that cooperation is a fundamental evolutionary tool used by each species in its own way. Operationalizing these behaviors takes into account the species ethology– the general context in which the species acts. Hence, approach behaviors can be operationalized in a variety of ways depending on the species in question. These include turning to face the injured party more often, rolling over to reveal one’s belly after

approaching, a low and slow approach toward the injured party, amount of eye contact with the injured party, 'affectionate touch' in primates, etc.

One area of difficulty when assessing prosocial behaviors is that they are claimed to arise from 'self-conscious' emotions but also from empathy. Hence, one cannot draw a causal link between prosocial behaviors and the subjective experience of guilt. 'Pure' empathy without any guilty feeling may also be a driver of prosocial approach behaviors in a given species. Hence, in reference to this paper, the question for research to answer is, "At what point and/or in what situation does an animal's prosocial empathy become an expression of guilt?"

B. Ethology-Specific Induction of Guilt

While various arguments for what should be measured in a paradigm for guilt-assessment are provided, how guilt may be induced across species has not been addressed. This is for the simple reason that the induction of guilt will vary with the ethology of the species. While the experimental measure (dependent variable) may be classed as species-specific prosocial approach behavior, guilt-induction (independent variable) must be calibrated based on the goals, interests, roles, hierarchical systems, beliefs, etc., of another species. For example, for the induction of guilt in housecats, the pre-existing experiment of eating a 'forbidden' food would probably not be very effective as eliciting guilt. This is because, in comparison, cats are not as dependent on their owners as dogs are [24]. It is possible that cats also are not as willing as dogs are to listen to their owner's request. Instead, domesticated young cats are motivated to hunt and present their kill to their caretakers as 'gifts' [15]. This usually angers the caretaker and leads to a 'punishment'. Hence, cats might alter their behavior in response to learning that their 'own' goal-driven behavior leads to an unpleasant negative affect that is expressed aggressively from somebody close to them. An experiment could use this behavior after it has been 'forbidden' to induce guiltiness since it adheres to the definition of guilt as 'having failed an obligation' while also being relevant to the behavior of a typical housecat.

C. Redefining Guilt

Having specified how the induction and measurement of guilt should be carried out, the definition of guilt should also be evaluated if it is to be studied across species. Descriptive self-reports of the experience of guilt are currently not possible between humans and other species and anecdotal evidence claiming the emotions behind their behavior is subject to an anthropomorphic bias. To counteract this, when creating a paradigm for guilt-assessment, is important to do away with the idea of universality of emotions, especially in their function. The underlying idea to adopt that that guilt serves different functions for different species and hence might mean something else for each of them. For instance, some theories assert that guilt arises from realizing that one has disobeyed a pre-existing arrangement of morals with one had with another [9], it follows that the reciprocity of morals becomes the functional defining character of it. However, this

definition is arguably more applicable to pack animals (wolves, goats, elephants, lions) or primates (apes, chimps, bonobos) who live in communities that have pre-existing moral structures than species who are more independent (cats, owls, bears, skunks, leopards). Does that mean that the latter do not feel guilt?

One could speculate that while non-pack animals may have few moral commitments, without a community, they do have 'bonds' with the few members they get attached to—members who may or may not be conspecific. Feelings of 'bondedness' imply the possibility of affect-mirroring, emotion contagion or a kind of 'empathy.' Hence, for such animals the 'guilt arises from empathy' theory of origination [16] might be more applicable with synchronized affect being the functionally defining marker of the expression of guilt. Both these definitions may apply to certain species (dogs) and neither to others. However, definitions pave the way for how the experiment will unfold so one must ensure it fits the species.

Arguably, the definition of guilt in the Horowitz (2009) dog experiment failed to incorporate the origin of guilt through empathy and the socio-adaptive function of empathy for dogs. This led to the inaccurate sensationalization of the lack of guilt in dogs [26]. When one understands dogs in terms of the traits we have selected in them—to synchronize affect ('empathize') and behave dependently towards loved ones—submission by the dogs as observed in the experiment is a predictable response.

IV. CONCLUSION

In conclusion, a paradigm for studying guilt in animals has three parts:

- (i) The manner of its induction (IV) which may be altered by using the ethology of the animal such that its goals, needs and interests are considered when crafting a paradigm.
- (ii) The way it is measured (DV) which should look at prosocial approach behaviors which vary for different species and are better measures than immediate feedback responses that are subject to bias.
- (iii) A definition of guilt that fits the species' motivations and needs; not vice versa.

Using these key features, the researcher believes a suitable paradigm of guilt-assessment may be crafted that can be adjusted to fit not only dogs, but all kinds of species.

REFERENCES

- [1] Barrett K. C. (1995). A functionalist approach to shame and guilt. In: Tangney J. P., Fischer K. W., editors. *Self-Conscious Emotions: The Psychology of Shame, Guilt, Embarrassment, and Pride*. Guilford Press; New York, NY, USA. pp. 25–63.
- [2] Barrett, L. F. (2016). *How Emotions Are Made: The New Science of the Mind and Brain*. Boston, New York: Houghton Mifflin Harcourt.
- [3] Baumeister R. F., Stillwell A. M., Heatherton T. F. (1994). Guilt: an interpersonal approach. *Psychol. Bull.* 115, 243–267. doi:10.1037/0033-2909.115.2.243.
- [4] Ben-Ami Bartal, I., Decety, J., & Mason, P. (2011). Empathy and prosocial behavior in rats. *Science*, 334, 1427–1430. <https://doi.org/10.1126/science.1210789>.
- [5] Berti A.E., Garattoni C., Venturini B. (2000). The understanding of sadness, guilt, and shame in 5-, 7-, and 9-year-old children. *Genet. Soc. Gen. Psychol.* 126:293–318.

- [6] Bräuer, J., Schönefeld, K., & Call, J. (2013). When do dogs help humans? *Applied Animal Behaviour Science*, 148(1-2), 138-149. doi: 10.1016/j.applanim.2013.07.009.
- [7] Bybee J., Merisca R., Velasco R. (1998). The development of reactions of guilt-producing events. In: Bybee J., editor. *Guilt and Children*. Academic Press; San Diego, CA, USA. pp. 185–213.
- [8] Carni S., Petrocchi N., Del Miglio C., Mancini F., Couyoumdjian A. (2013). Intrapsychic and interpersonal guilt: A critical review of the recent literature. *Cogn. Process*; 14:333–346. doi: 10.1007/s10339-013-0570-4.
- [9] Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: A sociofunctional threat-based approach to 'prejudice'. *Journal of Personality and Social Psychology*, 88, 770–789.
- [10] Dempsey, H. (2017). A Comparison of the Social-Adaptive Perspective and Functionalist Perspective on Guilt and Shame. *Behavioral Sciences*, 7(4), 83. doi:10.3390/bs7040083.
- [11] Emily M. Sanford, Emma R. Burt, Julia E. Meyers-Manor. (2018). Timmy's in the well: Empathy and prosocial helping in dogs. *Learning & Behavior*; DOI: 10.3758/s13420-018-0332-3.
- [12] Ferguson T. J., Ives D., Eyre H. L. (1997). All Is Fair in Love, But Not War: The Management of Emotions in Dyadic Relationships; Proceedings of the Biennial Meeting of Society for Research in Child Development; Washington, DC, USA.
- [13] Guilt | Definition of guilt in English by Oxford Dictionaries. (n.d.). Retrieved from <https://en.oxforddictionaries.com/definition/guilt>.
- [14] Hecht, Julie et al. (2012). Behavioral assessment and owner perceptions of behaviours associated with guilt in dogs. *Applied Animal Behaviour Science*, Volume 139, Issue 1, 134 – 142.
- [15] Hodges, W. (2018, January 23). Why Does Your Cat Bring You Gifts? Retrieved from <https://consciouscat.net/2018/01/24/cat-bring-gifts/>.
- [16] Hoffman, M. L. (1982). Development of prosocial motivation: Empathy and guilt. In N. Eisenberg (Ed.), *The Development of Prosocial Behavior* (pp. 281–313). San Diego, CA: Academic Press.
- [17] Horowitz, A. (2009). Disambiguating the "guilty look": Salient prompts to a familiar dog behaviour. *Behavioural Processes*. 81(3), 447-452.
- [18] Huber, A., Barber, A. L. A., Faragó, T., Müller, C. A., & Huber, L. (2017). Investigating emotional contagion in dogs (*Canis familiaris*) to emotional sounds of humans and conspecifics. *Animal Cognition*, 20(4), 703–715. doi:10.1007/s10071-017-1092-8.
- [19] Kuhne, F., Höppler, J. C., & Struwe, R. (2014). Emotions in dogs being petted by a familiar or unfamiliar person: Validating behavioural indicators of emotional states using heart rate variability. *Applied Animal Behaviour Science*, 161, 113-120. <https://doi.org/10.1016/j.applanim.2014.09.020>.
- [20] Marten, K., & Psarakos, S. (1994). Evidence of self-awareness in the bottlenose dolphin (*Tursiops truncatus*). In S. T. Parker, R. W. Mitchell, & M. L. Boccia (Eds.), *Self-awareness in animals and humans: Developmental perspectives* (pp. 361-379). New York, NY, US: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511565526.026>.
- [21] Ostojić, L., Tkalčić, M., & Clayton, N. S. (2015). Are owners' reports of their dogs' 'guilty look' influenced by the dogs' action and evidence of the misdeed? *Behavioural Processes*, 111, 97–100. doi: 10.1016/j.beproc.2014.12.010.
- [22] Plotnik, J. M., de Waal, F. B., & Reiss, D. (2006). Self-recognition in an Asian elephant. *Proceedings of the National Academy of Sciences of the United States of America*, 103(45), 17053-7.
- [23] Plotnik JM, de Waal FBM. (2014). Asian elephants (*Elephas maximus*) reassure others in distress. *PeerJ* 2: e278 <https://doi.org/10.7717/peerj.278>.
- [24] Potter, A., & Mills, D. S. (2015). Domestic Cats (*Felis silvestris*) Do Not Show Signs of Secure Attachment to Their Owners. *PLOS ONE*, 10(9), e0135109. doi: 10.1371/journal.pone.0135109.
- [25] Prior H, Schwarz A, Gu'ntu'ru'n O (2008). Mirror-induced behavior in the magpie (*Pica pica*): Evidence of self-recognition. *PLoS Biol* 6(8): e202. doi:10.1371/journal.pbio.0060202.
- [26] Ward V. (2015). A dog's guilty look is just a myth, experts claim. *The Telegraph*. Retrieved from <https://www.telegraph.co.uk/lifestyle/pets/11822498/A-dogs-guilty-look-is-just-a-myth-experts-claim.html>.