



# Disambiguating the “guilty look”: Salient prompts to a familiar dog behaviour

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## ABSTRACT

Anthropomorphisms are regularly used by owners in describing their dogs. Of interest is whether attributions of understanding and emotions to dogs are sound, or are unwarranted applications of human psychological terms to non-humans. One attribution commonly made to dogs is that the “guilty look” shows that dogs feel guilt at doing a disallowed action. In the current study, this anthropomorphism is empirically tested. The behaviours of 14 domestic dogs (*Canis familiaris*) were videotaped over a series of trials and analyzed for elements that correspond to an owner-identified “guilty look.” Trials varied the opportunity for dogs to disobey an owner’s command not to eat a desirable treat while the owner was out of the room, and varied the owners’ knowledge of what their dogs did in their absence. The results revealed no difference in behaviours associated with the guilty look. By contrast, more such behaviours were seen in trials when owners scolded their dogs. The effect of scolding was more pronounced when the dogs were obedient, not disobedient. These results indicate that a better description of the so-called guilty look is that it is a response to owner cues, rather than that it shows an appreciation of a misdeed.

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## 1. Introduction

Recent research on the social cognition of the domestic dog has established the dog’s skill at interpreting communicative and attention cues of humans—at learning to read humans by observing their behaviour (Call et al., 2003; Hare and Tomasello, 1999; Miklósi et al., 2004; Schwab and Huber, 2006; Virányi et al., 2006). By contrast, human interpretations of dog behaviour rely heavily on anthropomorphisms. Anthropomorphisms are claims which are generally unsupported by scientific research. Commonly, animal behaviour is compared to human behaviour, and where there is superficial matching, the attribution (of understanding, emotion, or knowledge) that is made to the human is extended to the animal.

While vilified, anthropomorphisms can be starting points to considering animal behaviour (Horowitz and Bekoff, 2007). By more closely attending to the causes of the seen behaviour of the animal, one can in effect empirically test the anthropomorphic claim. The result would be the confirmation of the attribution, or an explanation that better suits the behavioural act seen.

In the current study, the anthropomorphism investigated is that the so-called “guilty look” shows that dogs feel guilt or understand that they have disobeyed. In other words, owners have identified a behavioural display which they think is prompted by the dogs’ realization of the violation of an implicit code of behaviour.

This attribution is potentially problematic, in part because there is currently no clear consensus among scientists about the appropriateness of attributing any emotional understanding or experience to animals, despite Darwin’s (1872/1979) confident assessment that the behavioural displays of non-human animals mapped to emotions (Hauser, 2000). While some researchers find evidence for the attribution of so-called primary emotions—such as happiness and fear—to animals (Ekman, 1992; Panksepp, 1998), there has been no empirical investigation of the existence of secondary emotions—such as jealousy, pride, and guilt—in animals (Morris et al., 2008). This dearth of research may be because of the nature of these secondary emotions—to wit, they are thought to require a degree of self-awareness, self-consciousness, or a cognitive complexity not proven to exist in any non-human animal (Drewett, 1983).

And yet ethologists, animal husbandrists, pet owners, and others who regularly observe or interact with animals frequently use emotional terms to describe or explain the animals’ behaviours. Morris et al. (2008) found in a survey of 307 dog owners that the great majority believed that their dogs felt sadness, joy, surprise, and fear, among other emotions; of the secondary emotions, three-quarters (74%) said that their dog experienced guilt. Similarly, a guilty look is clearly recognized by owners and non-owners alike. Among human observers, it is a small step from identification of a dog’s guilty look to the humans’ attribution of a dog’s “understanding of guilt.” No less an observer of animal behaviour than Lorenz (1954) spoke freely of the dog’s “bad conscience” on doing a misdeed. Of the guilty look, he stated that we can “assume with certainty that it hides a guilty conscience” (p. 183). Research asking owners what they believed their dogs “know” found “disallowance”

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as the most frequent response (Pongracz et al., 2001)—i.e., that dogs have knowledge of an implicit code of allowable and not allowed acts. The code of behaviour is at times not just implicit, but explicit: in Sanders (1993), owners alleged that their dogs understood the rules of the household.

In other words, the anthropomorphism includes the suggestion that dogs not only *look guiltily*, but that this indicates that dogs *feel guilty* or *realize their misdeed* if they have done something wrong, inappropriate, warned against, or otherwise violative of an established code of behaviour. Owners take behavioural evidence, or the outward appearance of the animal, to be conveying information about the animal's understanding or experience.

The high rate of these attributions to dogs, lacking non-anecdotal support, is cause for investigating the claim that the guilty look shows that dogs feel guilt. If this mapping of the dog's behaviour to its emotional awareness and experience were found to be accurate, it would have considerable bearing on the dog–human relationship. Additionally, that owners interpret dogs as understanding and expressing guilt (even without empirical support) affects their interaction with and expectations for their dogs (Lindsay, 2000). Some dog trainers and writers on dogs rely on the claim of the dog's understanding of guilt, or a moral code, in directing clients and readers to communicate their expectations to their dogs—which could be frustrating or detrimental to both dog and owner if the claim is unsupported (Hearne, 1986; Kortlandt, 1965; Masson, 1997; Minar, 2008).

### 1.1. Behaviours associated with the guilty look

The current research aims to examine the behaviours and context of the so-called guilty look. The research does not examine whether dogs feel guilt. Instead, the question pursued is what context precedes what is called the guilty look. An owner's sense of his dog's guilt comes from observation of the dog's behaviour at or after (or in the vicinity of evidence of) an act for which the dog is responsible, and which has been disallowed or is discouraged. Thus, the context and appearance of this behaviour can be investigated empirically.

Ethologists, animal behaviourists, and other scientists have noted recognizable behavioural indices of guilt. The guilty man, Darwin claimed, avoids looking at his accuser; his eyes are “turned askant” or “waver from side to side” (1872/1979). A dog ostensibly guilty of a transgression “plead(s) forgiveness by frantically offering his paw” (Lorenz, 1954, p. 199); “slinks back in a submissive way. . .” (Whitely, 2006, p. 110); puts on a “Tai Chi slink” (Cheney and Seyfarth, 2007, p. 157); with “ears in her neck and tail between her legs” (De Waal, 1997, p. 106); and cowers, with head and tail low (McConnell, 2006). Using prior descriptions, owners were asked to identify the elements they recognized as being part of the guilty look. From this, nine behaviours associated with the guilty look (hereinafter referred to as Associated Behaviours, ABs) were identified.

Quite unlike the design of many experiments which seek to avoid the social effect of having the owner present, in this experiment we were interested in the dogs' response to those very social cues. In particular, the anthropomorphism investigated is predicated on the creation of a code or rule that is perceived to be violated. Given that any such code would come from the familiar humans in a dog's life, this study looked at the dogs' behaviour around familiar humans—their owners—rather than around unfamiliar persons. Similarly, a context which is familiar has been judged to be the most likely to prompt typical behaviours (Schwab and Huber, 2006; Topál et al., 1997). The trials were thus conducted in the living room of the various owner's homes, to mirror daily living conditions (Schwab and Huber, 2006), and involved the dog owners in the proscription of a specific behaviour.

The procedure of the present study creates a context superficially similar to a self-regulation paradigm (see Davis, 1989, e.g.): an owner's instruction to his dog not to eat a desirable treat, and the owner's subsequent inattention by leaving the room, providing an opportunity for obedience to or violation of the command. Numerous studies have shown that dogs take the owner's absence from the room as indication of the lowest level of attention by the owner (Call et al., 2003; Schwab and Huber, 2006). The present experimental design deviates from self-regulation designs in that the main test is not of restraint or of latency to disobey. (Although on one control trial latency data were gathered.) Instead, the variable of interest is the subjects' social response to their owners, since the expression of the guilty look, as interpreted by owners, is contingent on some social understanding.

Over four trials, two elements were varied: obedience and owner response. In each trial, the subject either disobeyed and ate the treat or obeyed and did not eat the treat. Disobedience of the owners was guaranteed by the treat being offered to the dog surreptitiously by the experimenter after the owner left the room, and obedience was ensured by the treat's immediate removal. (As elaborated in Section 4, care was taken to ensure that offering the dog the food did not undermine the owner's instruction.) Also in each trial, the owner was informed that the dog had eaten the treat, or that the dog had not eaten the treat. In the former case, the owner was instructed to respond by scolding the dog; in the latter the owner greeted the dog in a friendly manner.

All trials were videotaped, and each trial was later reviewed and scored for the number of ABs seen within 10 s of the owner's return to the room. The design enables distinction between two hypotheses. The first hypothesis is the inference of the aforementioned owners who attribute an understanding of disobedience or a feeling of guilt to their dogs after the dogs have performed a guilt-inspiring act: that disobedience causes an increase in ABs. Thus, the experimental context allows the dog to disobey an explicit instruction. The second hypothesis is that the behaviours of the guilty look are instead prompted by the scolding, chastisement, or mere appearance of an owner who believes that an instruction has been disobeyed: that scolding causes an increase in ABs whether the dog has obeyed or disobeyed. Thus, the experimental context also involves an owner acting under the misimpression that the dog has disobeyed. It was predicted that dogs' behaviour will match a model which suggests that behaviours associated with the guilty look are performed in response to human behaviour, or to the salience of disallowed objects, but not to a model which suggests that dogs more often show such behaviours when in fact having performed a particular “wrong” action.

## 2. Methods

### 2.1. Subjects

Dog owners were recruited by publicly displayed flyers, from local dog parks, and through postings on-line. Subjects were not restricted to particular breeds of dogs, although breed types, along with age and gender, were noted. Of the subjects recruited, only those who satisfied two sets of criteria were used. First, given the social and developmental prerequisites of the emergence of secondary emotions, only dogs over 6 months old who had lived with their current owners for at least 3 months were included in the experimental trials. The latter criterion acted to allow the possibility of a developed relationship between owner and dog. Second, only dogs who were the sole canid pet in the household were used, in order to eliminate the possibility of between-dog interaction during the trials. Later, the subject group was further narrowed to those dogs who, in a pre-experimental test, followed the owner's request

**Table 1**

Four critical trials as a function of the combination of two variables: level of obedience (eat and no eat) and owner behaviour (greet and scold).

Conditions	Owner greets dog (is told the dog obeyed)	Owner scolds dog (is told the dog disobeyed)
Dog eats treat (is surreptitiously given treat)	Eat–greet	Eat–scold
Dog does not eat treat (treat is removed)	No eat–greet	No eat–scold

to *sit* and *stay* for 10 s, and to refrain from eating a treat (on the owner's instruction) for 10 s. Dogs who could not pass these tests were eliminated from the experiment.

Fourteen domestic dogs, six male and eight female, participated in the experiment. The mean age of the group was 2 years, 6 months (range: 8.5 months–9 years), and they had lived with their current owner for a mean of 27.7 months. Six dogs were mongrels, and eight were purebreds (Brussels griffon, dachshund (2), Tibetan terrier, cockapoo, shi-tzu, wheaten terrier, Labrador retriever). Nine dogs had participated in obedience training (from 1 to 16 classes) and all lived in single-dog households, three of which included other pets. The owner participant was the, or one of the, most familiar persons to the dog. All of the respondents claimed that an owner was at home with the dog for six or more hours a day. To questions of their dogs' obedience, 93% (13/14) of owners said their dogs obey "often"; 100% of owners used "scolding" to punish disobedience; and 21% (3/14) additionally used forced-downs, spanking, grabbing by the scruff, or "time outs." Owners were given a bag of dog biscuits as appreciation for their dogs' participation.

## 2.2. Procedure

Dog owners completed a questionnaire about the biographical details of the dog, elements of the owner's relationship with the dog, as well as behaviours they associated with the guilty look in their dogs.

After undergoing the pre-experimental test, those dogs who showed zero or minimal response to their owners' requests were excluded from the study. In this pre-test we also established the owner's method of disallowing a behaviour (for instance, pointing at an object to be left alone and loudly stating *no!*) and determined that the dog was reactive to it. This command varied slightly from owner to owner, but each dyad used the same command in all trials. One owner who refused to scold her dog was also excluded from the study.

The experiment was conducted in the owners' homes (apartments, in every case). A living room or similar area was used that had an approximately five-by-five-foot area free of obstructions for the dog–human interaction, and that allowed the owner to exit promptly to another room. We began by introducing the dog to an experimenter with a video camera which was set up on a tripod overlooking the experimental space and recorded the dog's behaviour for the entire procedure. The experimenter also stayed in the room throughout, only interacting with the dog as specified below. At this time the dog or owner established which of several dog biscuits was most appealing: the choice varied between subjects, but each subject received the same treat throughout the trials.

Owners were told that the experiment was a test of "obedience at a distance," and that they would be informed of their dog's behaviour while absent from the room. Owners were specifically instructed, on return to the testing room, to *greet* the dog in trials where the dog had obeyed, and to *scold* the dog if the dog had disobeyed. The owners were asked to behave normally to greet or scold their dogs so that, although scolding behaviour varied somewhat by owner, it was appropriate to each owner–dog dyad.

To begin each trial, the owner was instructed to get the attention of his or her dog, and to ask the dog to sit and stay before them. The owner then showed the dog a single treat, explicitly forbade it with

a *no!* or similar instruction, and placed the treat on the floor in the dog's view but out of reach (which distance varied slightly by the dog). Once the dog was reliably obeying, the owner left the room for another room, closing the door so there was no visual access of the owner by the dog or vice versa. After the owner left the room, the experimenter came forward and took the treat or offered the dog the treat by hand. The owner was called back into the room in 20 s, and was given a report on his dog's behaviour. This report was varied as per trial design, and was not always a true report of the dog's behaviour. In two trials the owner was misinformed about the dog's behaviour (the dog ate the treat and the owner was told he did not; the dog did not eat the treat and the owner was told he did) and in two trials the owner was correctly informed of the dog's behaviour (the dog ate the treat and the owner was told that he had; the dog did not eat the treat and the owner was told that he had not).

Each human–dog dyad participated in nine trials: four experimental trials, two control trials, and three mock trials that served as intermissions between experimental trials. The four critical trials varied along two measures: whether the dog ate the treat, and whether the dog was scolded or greeted (Table 1). To test the hypothesis that ABs increase after doing a disallowed act, the trials varied the dog's opportunity to eat the treat. To test the hypothesis that ABs are a response to owner chastising behaviour, the owner's knowledge of the dog's obedience was varied. The sequence of the critical trials was randomized for each subject.

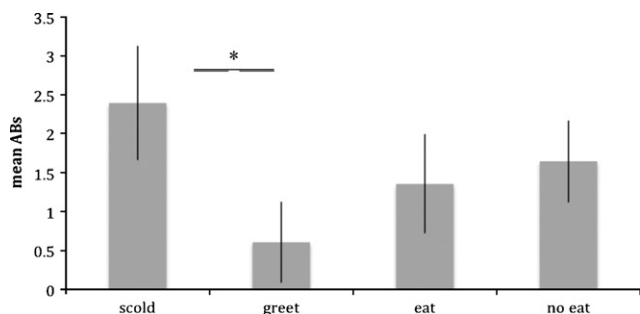
Control trials were performed at the beginning and end of each experimental session. In the controls the dog was exposed to the treat with the owner present, allowed to eat the treat, and greeted by the owner. These trials established that the dogs were not responding to the presence of the treat or the presence of the owner per se. Latency to disobey with owner present was also calculated in the final control. If the dog did not disobey in 1 min he was released and allowed to eat the treat.

Interspersed between the trials were three mock trials in which the dog and owner or experimenter interacted without the stress of the continual commands: during one mock trial, for instance, the owners established attention with their dog and then pointed and gazed in either direction. This served to refresh both the dog and owner participants in the trials and was performed at the same points throughout the trials. Analysis of these trials is not included herein.

## 2.3. Data analysis

The video recording began with the first control trial and continued nonstop until the end of the final trial. The dog's behaviour was analyzed for number of ABs in the 10 s after the owner's return to the room. Analysis of latency to take the food in the final trial was also determined. Dogs differ in rates of expressive behaviours, and no dog was expected to show every AB in any given trial. Indeed, some of the behaviours would be difficult to perform concurrently. However, for each individual dog, the magnitude of its guilty look, using whichever characteristic components typical of that dog, would be expected to change in different settings. Thus, each dog's performance was compared across settings, rather than solely comparing behaviour between subjects.

Nine behaviours associated with the guilty look (ABs) were identified from owner questionnaire: avoiding eye contact, lying down



**Fig. 1.** Mean number of guilty-look behaviours (ABs) seen in trials as considered by each variable: owner behaviour (scold and greet) and obedience (eat and no eat). Ninety-five percent confidence intervals are shown. \* $p < .001$ .

and rolling to the side or onto the back, dropping the tail, wagging low and quickly, holding one's ears down or head down, moving away from the owner, raising a paw, and licking. The listed behaviours represent the owners' intuitive appraisals of what their dogs do when guilty and overlap with the aforementioned previous scientific descriptions. For analysis, the level of the guilty look was considered on an ordinal scale, treating the number of ABs as an indication of the intensity of the reaction.

The author coded all bouts. Factorial repeated-measures ANOVAs were performed to compare the rate of ABs across trials. In analyses on subsets of the subject group, the Kolmogorov–Smirnov test was used to determine if the data were normally distributed, and Wilcoxon rank-sum and signed-rank tests were performed to compare non-normal data between and within groups, respectively. An independent coder, naive to the trial conditions, separately coded four bouts (30%). Pearson's correlations revealed good agreement in number of ABs seen in each trial (4 trials/bout):  $r_p = .77$ ;  $p < .001$ .

### 3. Results

There was no significant main effect of the dog's obedience on the number of ABs,  $F(1, 13) = 1.59$ ,  $p = .23$ ,  $r = .33$ . This indicates that the rate of ABs was similar whether the dog ate the treat or did not eat the treat: whether the dog was "guilty" or "not guilty" of violating the owner's command.

There was a significant main effect of the response of the owner on ABs,  $F(1, 13) = 29.22$ ,  $p < .001$ ,  $r = .83$ , indicating a large effect. Scolding the dog led to significantly more ABs than greeting the dog, whether the dog had obeyed the owner's command or was guilty of violating the command. Fig. 1 shows the mean number of ABs in the main effect conditions: across scold, greet, eat (disobey), and no eat (obey) trials (mean ABs: scold = 2.4; greet = 0.6; eat = 1.4; no eat = 1.6).

There was a significant interaction effect between the obedience trials and the owner's response,  $F(1, 13) = 5.69$ ,  $p = .03$ ,  $r = .55$ . In particular, scolding led to higher rates of ABs when the dog had not eaten the treat than when the dog had eaten the treat.

When further dividing the subjects into groups based on their participation in prior obedience classes, the mean number of ABs can be compared between the groups. The data were not normally distributed, so a Wilcoxon rank-sum test was used. In the scold trials, the obedience-class group displayed significantly more ABs than the non-obedience-class group ( $W_s = 67.5$ ,  $z = -4.93$ ,  $p < .05$ ).

The rate of ABs did not change over the course of the experiment, as measured in the control trials ( $F(1, 13) = 1.00$ ,  $p = .34$ ), so any effects were not due to learning across trials. On the final control trial, in which the owner stayed in the room after issuing the instruction not to eat, every dog refrained from eating the food for

at least 30 s; 86% (12/14) of the dogs refrained from eating the food for over a minute, or until the trial was stopped.

No dog showed more than 5 ABs in one trial. The AB of "paw-raising," though seen in interaction with the owners, was seen only once in the trials.

### 4. Discussion

The tested dogs did not show more behaviours associated with the guilty look when they performed a forbidden act—eating an available treat—than when they did not. This result is inconsistent with the hypothesis that the guilty look is more intense or occurs only when the dog disobeys. Insofar as ABs are interpreted as reflecting the dog's mental state, and given that the dog subjects disobeyed an express command, the dogs' behaviour did not reveal an understanding of that disobedience.

Instead, more ABs were seen in trials when the owner scolded the dog, whether the dog had disobeyed or not. This is consonant with the second hypothesis: that it is scolding behaviour that causes an increase in ABs. Since the owners were misinformed on half of the critical trials as to whether their dog had disobeyed, the owner behaviour (scolding or greeting) was independent of the dog's behaviour (eating or not eating). Thus in this group, ABs, though identified as expressions of guilt by owners, were more often associated not with guilt on the dog's part, but with the perception of guilt on the owner's part.

Furthermore, the effect of scolding was more pronounced when the dog was obedient, and did not eat the treat (because it was removed). Guilty-look behaviours were more likely not when the dog was caught in a misdeed, but when the dog had not gotten the opportunity to disobey.

Previous commentators have suggested that it may be the disallowed or abused object (food on the kitchen table; a chewed shoe) or existence of a wrongdoing (overturned garbage) itself which leads to the guilty look (Cheney and Seyfarth, 2007; De Waal, 1997; Wynne, 2007). Vollmer (1977) found that dogs look guiltily in the vicinity of evidence of a misdeed whether they had made a discovered mess themselves or others had. The present results highlight the priority, instead, of the human's behaviour over the evidence of wrongdoing. With the exception of three dogs who showed one AB when in the presence of the owner or the food, the dogs did not show any ABs on the control trials. Thus their response was due to the elements varied in the experimental episode—the manner of owner interaction—not to the mere presence of the person or food per se.

A plausible critique of the method employed in this research should be considered. It may be that what was described as "disobedient"—the eating a treat given to the dog, after the owner had forbidden it—would not, in fact, be considered by even a well-trained dog as disobedient behaviour. For, one might argue, if a dog is permitted the treat by any human being—even an unknown person—then the treat is no longer "forbidden." The experiment was designed as it was in order to create the most consistency across trials, with the treat reliably eaten or not, in the various conditions. However, we did consider whether being given the treat by a stranger undermined the prohibition imposed by the owners. It was our impression that even trained dogs do distinguish between individuals who made requests or disallowed acts—hence the difficulty of training a dog in a household whose members grant permissions or disallowances differently. To test whether the subjects made this distinction in the experiment, a subset of the subjects were run on one additional trial. The owners forbade the treat as usual, and the video camera was left rolling as long as it took for the dog to take and eat the treat on his own, without being offered it, and before the owner was allowed to return.



These “took food” trials can then be compared to the trials in which the dogs were given the treat by the experimenter. Using the Wilcoxon signed-rank test to compare the rate of ABs in the disobedient and obedient conditions, where the disobedience was either “took food” or “given food,” in neither case is the difference significant at  $p < .05$  ( $z_{\text{TOOK}} = -1.34$ , *n.s.*;  $z_{\text{GIVEN}} = -1.60$ , *n.s.*) (mean ABs: took = 2.0; gave = 1.8). The main result holds: the dogs did not show more behaviours associated with the guilty look when they ate an available treat than when they did not. Without having to make any claim about what the dog’s impression of obedience may be, the current design thus seems sufficient to capture the response of the dogs after eating food that has been forbidden by their owners.

This result may be explained by looking to other ethograms of dog behaviour. The behaviours identified as associated with the guilty look overlap with the set of behaviours thought to indicate fear or submission. Lowering the body, lying down and rolling over to expose one’s underside, tucking the tail between the legs, and pulling the ears back are among the indications of submission (Darwin, 1872/1979). That these dogs’ behaviour was associated with the human, not the disallowed act or object, is consistent with the interpretation that the guilty look is a ritualized (submissive) act stimulated by the learned expectation of punishment, given punishment in similar contexts in the past (Lindsay, 2000; Voith and Borchelt, 1996). What the guilty look may be is a look of fearful anticipation of punishment by the owner.

Insofar as the response may be learned, each dog’s ontogeny is relevant. For instance, Freedman (1958) noted that dogs raised under different conditions show different performance (level of restraint) on a self-regulation task when left alone in a room with a disallowed bowl of meat. Puppies raised “indulgently” (allowed to behave however they liked) approached and consumed the meat sooner than dogs raised with discipline (restrained and trained). The author found that this effect appeared only with breeds that were predisposed to be interested in and responsive to humans. Training style did not have any effect in other breeds (basenjis, Shetland sheepdogs) in latency to eat the disallowed food.

In the present study, breed was not controlled for, but owners’ questionnaire responses reveal some salient distinctions in the biographies of the dog subjects. Nine dogs had been in obedience classes of some length; five dogs had not been trained for obedience in classes (although all but one owner claimed to have taught their dog simple commands themselves). An interesting possibility is that dogs who had been through obedience training would have more fully internalized the importance of obeying commands, and would, therefore, show more submissive behaviours generally in response to any of a number of cues. In fact, those dogs who participated in obedience classes prior to the experimental test showed more ABs in the two scold trials than those dogs not so trained. This result suggests that obedience training, wholly apart from whether it is successful in training dogs, is associated with a more expressive guilty look of a dog confronted with an angry owner. These dogs may have learned to express submission ritually when encountering certain owner behaviours.

This finding also argues for the importance of considering the developmental histories of subjects. Re-visiting the methods of scolding reported used by the owners, the three dogs whose owners scolded them not only with a stern word of displeasure but with more physical means (forced-down, grabbing or hitting) were three of the four dogs with the highest number of ABs seen in the scold trials. Whether there is a more robust correlation than preliminarily addressed here could be pursued further.

It is worth noting that the present results do not indicate that domestic dogs do not experience guilt. All that behavioural research can investigate is the rate and context of specified actions: in this case, the rate of the behaviours variously implicated in the guilty look. What is indicated is that what humans interpret as an expres-

sion of guilt or an understanding of disobedience is the result of a (learned or instinctive) response to the appearance of a cross or scolding human. If there are expressions which indicate some inceptive understanding of a humanlike code of behaviour, they are as yet unidentified.

What, then, explains the owners’ impressions of their dogs’ guilt? Given that discovery of, say, a stolen pot roast or garbage on the floor is often followed instantly by cries of alarm and scolding, it is not surprising that, in retrospect, owners would conflate the sources of dogs’ resulting guilty looks. Merely uttering a dog’s name with a rising, accusatory tone is often enough to elicit preemptive submissive behaviour.

By subjecting the claim of what is behind the guilty look in the domestic dog to scrutiny, we find elements which lead to an explanation that better suits the act seen. The present study should encourage the empirical investigation of other anthropomorphisms. The results indicate that the so-called guilty look is a response to owner scolding; it is not expressed more often when actually guilty.

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