

Using Dogs' Morphological and Behavioral Characteristics to Predict the Ethical Treatment of  
Other Domesticated Animals

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Abstract:

Humans and other animals have engaged in interspecific interactions for thousands of years and seem to have a marked preference for certain types of animals. This is especially apparent in the relationship between humans and dogs. In Western cultures, dogs are often called “man’s best friend” and treated as such, while cows, which have been in contact with humans for thousands of years as well, are often treated as an expendable source of food. This study will seek to explore possible reasoning behind the disparities in the feelings toward and treatment of different species. By utilizing dogs as a model organism for human-animal relationships, a checklist of qualities based on dog’s morphological and behavioral traits could be used to predict the ethical standards humans have for other species. This study seeks to first describe common morphological and behavioral traits and then test human’s inclination towards those features in order to determine the deciding factors that cause humans to treat different organisms differently.

## Introduction:

Humans have long engaged in close relationships with animals, ranging from mutualistic companionship, which benefits both the human and the animal, to pastoralist predation, which benefits the human but harms the animal. Human companionship with dogs (*Canis lupus familiaris*) began approximately 15,000 years ago, and people began to herd cows (*Bos taurus*) and goats (*Capra aegagrus hircus*) over 11,500 years ago (Wang *et al.*, 2016; University College London, 2012). Throughout this long history, humans and the animals they work with have coevolved in such a way that they have become better suited for one another; animals have been affected by this process even more, as humans have artificially selected for the traits in animals that were most useful to them, even when this was evolutionarily detrimental to the animal (Pierotti and Fogg, 2017). Some animals' structural features changed as a result of both the coevolution and artificial selection; for example, in dogs this led to traits such as a smaller snout, smaller teeth, drooping ears, and thinner heads and faces (Burrows, *et al.*, 2020). Some animal behaviors have changed as well; a prime example of behavioral changes following domestication is that of an ancestral wolf species to the current dog, which has developed different barks just for their interactions with humans, the ability to accurately read people's facial expressions, a hyper-awareness of humans, an increased amount of facial expressions, and higher levels of eye contact with humans (Jensen, *et al.*, 2016; Roberts & McPherson, 2017; Burrows, *et al.*, 2020).

Despite being the agents of domestication for all of the domesticated animals, humans appear to prefer some animals over others and to have very different standards for how each type of animal should be treated. A minority of Western populations are vegetarian, and, therefore, a majority of Western populations eat meat (Paslakis, *et al.*, 2020). However, the vast majority of Western populations refuse to eat "pets," such as dogs and cats. Dogs in particular were

specifically bred to form a connection with humans, and this presents them as uniquely well-suited for human-animal relationship studies (Jensen, et al., 2016). In this research project, I seek to use dogs as a model organism to explore the morphological and behavioral characteristics that incline human beings to preferentially treat certain animals as companions that ought not to be harmed while being more apathetic to the treatment of others.

### Related Work and Motivation:

Many dog-human relationship studies have been conducted in the past and unveiled the aforementioned unique social traits, such as the ability to create more facial expressions and an increased recognition of the meaning of different human facial expressions, that dogs possess and utilize to bond with humans (Burrows *et al.*, 2020; Jensen, 2016). None of these studies have compared these characteristics to other animals in order to discover how that relates to their treatment, though. Likewise, the aforementioned endearing physical characteristics of dogs, such as skinnier faces, have been researched, but this has not been compared to other animals and applied to the reasons why each animal is treated in a particular way (Burrows, *et al.*, 2020). This study seeks to fill in these knowledge gaps by asking two questions. 1. What morphological and behavioral characteristics present in dogs endear humans? 2. Is the presence or absence of these features predictive of how humans treat other animals?

### Methods:

I will begin the first stage of my research by analyzing the common morphological features present in dogs, taking into account breed differences. I will analyze the overall facial structure, eye-to-head ratio, snout length, coat type, coat length, overall body structure, limb-to-body ratio, and head-to-body ratio. I will especially focus on traits that may mirror traits of human babies, such as (disproportionately big) head size, (a relatively tiny) nose and mouth,

(circular) bodies, and (plump) cheeks (Saini, n.d.). After mapping out these features using both previous literature and my own empirical observations, I will collaborate with an artist to create imaginary animals that each possess a single feature from the original dog breeds with that feature. For example, if labrador retrievers were generally found to have floppy ears while german shepherds were generally found to have pointed ears, two versions of an imaginary animal would be created that differed only in the ears, and people would be asked to select which animal they preferred. This allows for the assessment of specific characteristics by removing any confounding variables.

The first stage of my research will center around a survey. I will obtain a random sample of students from Loyola Marymount University in Los Angeles, California. The first portion of my survey will serve as the foundation for the subsequent questions on the survey. I will first provide a picture of various dog breeds, at least one per each of the American Kennel Club's (AKC) seven classification groups and ask the participants to rate each dog on a scale of one to ten with ten being a love for that dog breed, five being apathetic towards it, and one being a strong dislike for the breed (AKC Staff, 2019). This will allow me to determine people's preferences for dog breeds and provide insight on what physical and behavioral characteristics may be the most endearing. The survey will ask participants to select the aforementioned imaginary animal that they prefer in order to isolate each anatomical feature and gauge its relative importance.

The second stage of my research will consist of live human-animal interaction studies. To prepare for this I would use scientific literature on typical behavioral cues in dogs to understand the indications of emotions such as happiness, fear, and anger in order to create a scale for rating the interactions of humans and animals. Each person would spend 5 minutes with each of seven

dog breeds, one for each of the seven AKC dog groups (AKC Staff, 2019). The degree of interaction as well as the emotions displayed by both the human and the animal would be noted. Once all of the research stages have been completed, I will compile and analyze my data to determine which factors are important in human preferences for dogs. I will then research the morphological and behavioral characteristics of the following animals-- cats, rabbits, hamsters, horses, cows, pigs, and sheep-- and compare them to the features of dogs. Using this data, I will predict human preferences for those animals and their feelings about the ethical treatment of them.

The third stage of my research will measure the success of my predictions because it will directly measure the differences in people's ethical concerns about each of the eight aforementioned animals. I will first obtain a random sample of participants from Loyola Marymount University. I will create a survey that asks people about their feelings on different ways to treat a given animal. I will ask multiple choice questions such as, "Would you allow [insert animal] to sleep in your bed?", "Would you like to pet [insert animal]?", "Would you eat [insert animal]?", "Do you support [insert animal] being used for intensive farm labor?", and "How would you feel if you saw [insert animal] being mistreated?" for each of the animals. This will allow me to gauge people's ethical concerns for each type of animal.

#### Expected Results:

My hypotheses are as follows: 1) dogs' anatomical features that are similar to babies' features will be more endearing to humans, 2) humans prefer that dogs exhibit higher amounts of interest in them and emotional responsiveness to them, 3) animals that have more morphological and behavioral characteristics in common with dogs are also those that are treated the best by humans. Because of cultural differences, the exact results of the study may not apply outside of

the United States, but the results of this study would allow us to better understand the extent to which subconscious processes affect our conscious decisions in regards to ethics. It could lead to the ability to predict the success of conservation efforts or animal ethics movements in the United States and could inspire future investigations into pleiotropy, or a single gene affecting more than one characteristic, between the analyzed structural and behavioral features.

Conclusion:

Despite human beings' long standing relationship with domesticated animals, they appear to treat different kinds of animals in different ways. To learn about the reasons that human beings prefer certain animals, dogs will be used as a model organism, and in order to answer the question, the data from a survey regarding dogs, a live interaction study, and a survey on people's feelings about the treatment of animals will be compiled. Deciphering what factors contribute to these preferences and types of ethical decisions has important implications for work in ethics and conservation. By understanding why people choose to treat some animals better than others, conservationists can better plan where to focus their resources.

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Budget:

Unless otherwise noted, each week is treated as 3 hours of work.

<b>Week of Project</b>	<b>Task</b>	<b>Resource Request</b>	<b>Resource Purpose</b>
Week 1	Analyze dogs' common structural features	\$15/hr stipend (as per LMU's standard research assistant fee)	To compensate for time spent working on the project
Weeks 2-4	<ul style="list-style-type: none"><li>-Work with an artist to create imaginary animals with specifically isolated anatomical features</li><li>-Create questions about people's preferences for different dog breeds</li></ul>	<ul style="list-style-type: none"><li>-\$300</li><li>-\$15/hr stipend</li></ul>	The \$300 will serve to commission a fellow LMU student to create the artwork. \$300 is an estimated amount based on a \$15/hr wage and 20 hours of creating the art. The 20 hours was estimated based on the idea of many very small drawings. The \$15/hr stipend will serve to compensate me for my collaboration with the artist and work on the survey questions.
Week 5-7	<ul style="list-style-type: none"><li>-Research common behavioral cues of humans and dogs</li><li>-Survey LMU students with the questions about dog breed and the isolated morphological features</li></ul>	<ul style="list-style-type: none"><li>-\$15/hr stipend</li><li>-4 \$25 Amazon gift cards</li><li>-Ability to advertise survey in various LMU publications, including Word of Honor and college communications</li></ul>	<ul style="list-style-type: none"><li>-The \$15/hr will compensate me for the time spent on the project</li><li>-The Amazon gift cards will be raffled off to those who participate in the survey in order to entice people to respond</li><li>-The ability to include my survey in university email communications will allow me to receive more responses</li></ul>

Week 8*	Conduct live human-animal interaction study	-\$15/hour stipend -4 \$25 Amazon gift cards -\$1,575	<ul style="list-style-type: none"> <li>-The \$15/hr will compensate me for the time spent on the project</li> <li>-The Amazon gift cards will be raffled off to those who participate in the survey in order to entice people to join the study</li> <li>-The \$1,575 will be used to compensate 6 dog owners to bring in their dogs for the study. Please see the * below for the calculation of estimated hours.</li> </ul>
Weeks 9-12	<ul style="list-style-type: none"> <li>-Compile and analyze the results from the survey and interaction study</li> <li>-Research other animals' common anatomy and behavior</li> <li>-Form predictions about the treatment of other animals</li> </ul>	\$15/hr	-To compensate for the time spent on the project
Week 13-14	Conduct ethical study and compare results with predictions	-\$15/hr -4 \$25 Amazon gift cards	<ul style="list-style-type: none"> <li>-The \$15/hr will compensate me for the time spent on the project</li> <li>-The Amazon gift cards will be raffled off to those who participate in the survey in order to entice people to join the study</li> </ul>
<b>Totals: 14 Weeks</b>	-	\$3,022.50	-

\*This week will likely require 17.5 hours of work completed over two days. This number was calculated because there will be 30 participants in the interaction study, each of which will see 7 different dog breeds individually for 5 minutes each. I will be able to bring in one of my dogs, allowing us to separately compensate only 6 dog owners.