The Difference of Dogs Before and After Human-Interaction

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Abstract. The exploration of dog consciousness has become even more important since dogs cannot communicate thoughts and feelings through language as humans can. Research has shown that dogs have self-awareness and problem-solving skills, exhibit complex cognitive skills such as imitation, empathy, and memory, and are even aware of their body size. Interactions with humans have increased dogs' consciousness with cognitive abilities related to social interactions. Whether dogs have a similar consciousness to humans is currently unconfirmed, which is important for understanding animal cognition and consciousness. Wild dogs remain wild in their interactions with humans, and improved breeds of wild dogs have been purposely bred to be more docile to humans. The temperament, size, physical strength, and breed of wild dogs have changed in their interactions with humans, and the improved breeds have benefited more humans. This study also analyzed the origins of dogs and showed that dogs originated from wolves, which was accomplished through selective breeding by humans. With human intervention, the wolf's personality and physical characteristics changed dramatically. They share 99% of the DNA of their ancestors but bear little resemblance to each other in terms of behavior.

Keywords: Human-interaction, dogs, wolfs, consciousness, self-awareness.

1. Introduction

Nowadays, more and more people begin to breed dogs as their pets, according to the data from Agricultural Information Encyclopedia in May 2023, there were more than 80 million people breeding dogs in China [1]. In 1980, a study found that people's emotional or mental stress can be relieved by playing with dogs and petting them. A Japanese study in 2009 found that gazing into a dog's eyes increased oxytocin levels. Other studies have found that this can reduce the chance of depression. A British study of 700 people showed that 60 percent think having a dog makes a person seem more attractive and 85 percent think people seem more approachable when they are with a dog. It is recognized that dogs have a positive impact on our physical and psychological health [2], as well as on our society. By the way, we cannot ignore the relationship between humans and dogs. Dogs create changes in human life. What are some of the changes that people make to dogs? We will be discussing the differences between dogs before and after human interaction in this article. In this area, until now, there has not been much research on the effects of dog-human interaction on dogs. In the CNKI database, many papers discuss the interaction between humans and pets, not specifically about dogs. Furthermore, those studies tend to view pets as objects rather than subjects. In the studies, humans are regarded as the subjects of the interaction, which is close to seeing humans as the center. While abroad, in 2011, there was an article named “Short-term interaction between dogs and their owners: effects of oxytocin, cortisol, insulin and heart rate exploratory study”, which concludes that short-term sensory interaction between dogs and their owners influences hormonal levels and heart rate. The focus of that study is not on dogs' changes in consciousness and character [3]. The previous research by scientists did not reveal much about the effects of interaction between dogs and humans on dogs' consciousness. We decided to discuss this topic and explore the differences between dogs before and after human interactions [4].

2. Research and Analysis

2.1. The Change of Dog's Consciousness

Consciousness refers to the state or ability of a person or animal to be aware of themselves and their surroundings. It incorporates subjective experiences and the capacity to perceive and understand the world. Also, various mental processes are involved, such as perception, emotion, thinking, and memory. It is a continuous and dynamic state that can change over time. Unfortunately, the relationship between consciousness and brain activity is still not fully comprehended. Some theories proposed that consciousness emerges from the complexity of brain functioning, while others entertained the possibility of consciousness having an existence beyond the physical brain [5, 6]

Determining whether dogs possess consciousness is challenging since they cannot communicate their thoughts and feelings in the same way as humans do. Therefore, we must rely on experiments and observations to speculate on the presence of consciousness in dogs.

Scientists have conducted a series of experiments to study dog consciousness, including the well-known "mirror test." This test evaluated whether animals are self-aware by observing their reaction to their reflection in a mirror. Typically, dogs did not pass the test because they did not recognize themselves in the mirror. As a result, scientists conducted alternative research to explore dog consciousness, such as observing their behavior and problem-solving abilities [5].

One notable experiment, called the "Body as Obstacle," provided evidence of dogs' physical consciousness. In this experiment, dogs were tested to determine their understanding of their position in space and their body movements. They were placed on a mat with a toy that was sometimes attached to the mat, making it impossible for them to hand the toy to their owner. In order to pass the test, dogs had to leave the mat, release the toy's restriction, hand the toy along with the mat, and then hand it to the owner. Through this experiment, researchers concluded that dogs possessed bodily awareness and understood the consequences of their actions. Although they might not have passed the mirror test for self-awareness, this experiment suggested a step towards self-consciousness—dogs had also demonstrated other complex cognitive abilities, such as imitation, empathy, and basic elements of self-awareness, which like remembering specific events or recognizing their scent [5, 6].

Additionally, studies have shown that dogs can recognize their body size and exhibit problem-solving skills, which could indicate some level of consciousness. For example, when dogs were faced with an opening in a wall that was too small, they exhibited delayed reactions and did not attempt to pass through the small opening. In summary, the response of dogs suggested an awareness of their body size [5, 6].

Based on experiments like these, it could be concluded that dogs possessed a certain level of consciousness.

Along with the interactions with humans, dogs' consciousness was expanded, and cognitive abilities were developed. Both of them were related to socializing within human society. Firstly, dogs learn to understand human commands by observing and listening to us. The research of animal behaviorists and cognitive scientists Brian Hare and Vanessa Woods has shown that dogs can comprehend human intentions through both verbal and non-verbal cues. They established connections between different things, including their bodies and human commands. Dogs could also learn new behaviors by observing and imitating human actions [5]. Secondly, dogs could further develop emotional cognition through their interactions with humans. They interpret human emotional states and respond by observing human facial expressions, voices, and movements accordingly. This ability was utilized when training therapy dogs to provide comfort to individuals with depression. Dogs also express their own emotions and feelings in various ways to communicate with humans, such as wagging their tails and licking [5, 6]. Thirdly, dogs developed an understanding of human social structures and learned to establish more complex social relationships with other dogs and humans during their coexistence with humans. A study conducted on dogs' behavioral and neural responses to human faces used functional magnetic resonance imaging (FMRI) on police dogs. The results revealed that certain areas in a dog's brain associated with reward, familiarity, and emotional

processing were activated when viewing familiar and emotionally significant human faces. This suggested that dogs were able to differentiate between different human individuals and exhibit distinct behaviors and emotions towards them [5, 6].

However, due to the limitations in studying animal consciousness, we still couldn't confirm whether dogs have any developed consciousness similar to humans or truly know dogs' thoughts and feelings. The evidence can only suggest the possible existence of rudimentary changes in dogs' consciousness. In the future, it's necessary to conduct further observations and experiments to enhance and refine our understanding [5, 6].

2.2. The Effects of Human-interaction on Wild Dogs

Before human interaction, dating back from 12,000 to 3,500 years ago, dingoes which are a type of wild dog were untamed. They were called "a group of hungry, skinny wolves" because they had sharp teeth and claws. Although their body size was small, they always foraged and fought in groups. Their hunting habits were agile because they had managed to survive in the wild. This was similar to dholes, which is another type of wild dog. Many beasts in the forest such as buffaloes, leopards and bears, all feared dholes. According to The Deer and Tiger, which was a book written by Dr. Schaller, an American zoologist, it recorded a combat of a large group of dholes with a single Bengal tiger. Although 12 dholes died during the fight, they finally won with large quantities and ate the tiger. Without human interaction, wild dogs were already ferocious and smart enough [7].

During the interaction with Australian natives, dingoes integrated into the life, culture and religion of the natives. People trained dingoes to help them protect communities and they used the dog furs to warm themselves in winter. Although wild dogs did bring some benefits to natives, they had drawbacks in some respects. Australian natives trained the wild dogs to help them hunt small prey, but they merely succeeded because dingoes had poor compliance, they often frightened the prey. People have tried to tame dingoes, but they all failed to alter dingoes' wild nature. This was because dingoes were independent and smart. They were adapted to free, vast areas instead of backyards. Moreover, the population boom of dingoes in the 19th century brought huge losses to the local breeding industry and the economy. Thus, the conflicts between ranchers and dingoes began. People killed dingoes with traps and poisons. Some ranchers even offered heavy bonuses in exchange for every dog skin. Hundreds of thousands of dingoes were hunted every year. As a result, human activities caused irrevocable impacts on dingo populations [8].

Although dingoes' personalities and habits weren't beneficial to human lives, people noticed the underlying genetic value of improved varieties. They aimed to produce an ideal breed of dog that could maximize their profits or contributions to humans. As early as the 1840s, scientists tried to hybridize dingoes with European breed dogs, and they produced Australian Cattle Dogs. Australian Cattle Dogs were more friendly and temperate than dingoes, at the same time they inherited agility and strong physical strength from dingoes. That means they were more resilient to harsh environments. They were mainly used to guide cattle for long-distance traveling in craggy mountains, which normal domesticated dogs couldn't compare to. All these benefits were brought by humans [8].

After the prosperity brought by improved varieties, issues have emerged subsequently. Both the mass proliferation of hybrid dogs and the overhunting by humans caused the purebred dingoes have go from abundant to endangered species. All these effects on wild dogs whether good or bad were all correlated to human interactions [8].

2.3. The Evolution of Wolfs

Dogs and wolves are both from the same family, the Canis lupus. They share more than 99 percent of their DNA. The main cause for wolves evolving into dogs is humans. A long time ago around 40,000 and 15000 years ago somewhere on the Eurasian continent, wolves started to live with humans. It is estimated that humans wanted to domesticate wolves for reasons like aid in hunting, help guard human interest and clean up settlement debris. Scientists have suggested 2 possible ways wolves have evolved into dogs. The first hypothesis was that humans collected young pups from dens and raised

them as well as bred them for specific traits. The second estimate was that wolves domesticated themselves. It was claimed that wolves were less anxious and aggressive around human camp disposal areas, so they obtained food there but did not harm the humans and neither were harassed by them. Over time, these became domesticated. However, scientists discount the idea of wolves self-domesticating and focus more on the idea of evolution and selective breeding through human interaction. The hypothesis on how humans impacted the evolution of wolves cannot be explained in detail but is an educated guess from many scientists [9, 10].

Although dogs and wolves share 99 percent of their DNA, 1 percent is enough to create significant differences between dogs and wolves. As we know, wolves and dogs have many differences after they have evolved separately, one without human interaction and one with human interaction. For instance, since dogs are domesticated animals, they don't need to worry about hunting for food or finding a place for shelter, so their hunting ability is very weak. However, wolves are in the wild with many other species to compete against. They are designed for hunting, so they have better physical features than dogs like stronger molars as well as a larger and stronger jaw. In terms of behavioral traits, wolves are generally more intelligent and more aware of their environment as opposed to dogs. "Dogs can't survive without humans.", says zoologist Joan Daniels. According to him, they are dogs in the wild, but they are not doing well because they have been domesticated to the point where they can no longer adequately survive. Dogs depend so much on humans that they lose their ability to problem-solve and survive on their own. In one study, wolves and dogs have to work together to solve a puzzle to get a treat. Wolves figured it out quickly while dogs never figured out the problem until they had a human teach them. In addition, scientists have found some key 'friendliness' genes, which were created through selective breeding, in dogs which can distinguish them from wolves. A study published 6 years ago in 2017 concluded that domesticated dogs have genetic similarities with humans. This probably is the result of human interaction. Overall, most of the differences between dogs and wolves were human caused. Through contact with humans, they barely have any similarities in personality to physical features [9, 10].

3. Conclusion

In conclusion, dogs' consciousness, character and usual nature as wolves all changed after human interaction. For their consciousness, we have noticed that it will increase on the original basis, as they will be able to respond to man's commands and expressions. And their character will become meeker than the wild dogs after interacting with humans. Furthermore, the evolution of dogs from wolves has altered their habitual nature. Wolves are social animals, but dogs are seldom living together. Also, compared to dogs, wolves' class consciousness seems to be much stronger. There is a class mentality in the dog world, but human interaction with dogs can change dogs' consciousness of loyalty to their higher class in their species into loyalty to their owners. The tacit understanding between dogs and their owners is high because they live with them for a long time. It is possible for them to detect changes in the owner's mood at any time. Dogs possess a keen sense of smell. They can sense the changes in hormones in humans, thus gaining insight into their emotional state. Dogs can respond quickly to human body language, such as when you are afraid, the muscles must be tight, the angry voice will be louder and faster, and the happy tone is soothing. Combined with hormonal changes in the human body, dogs are becoming more familiar with their owners. Dogs are becoming more conscious of humans after interacting. Overall, based on the research that has been done, we assume that there are differences between dogs in awareness before and after human interaction.

Authors Contribution

All the authors contributed equally, and their names were listed in alphabetical order.

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