

Science

Can Animals Feel Empathy?

¹ A male chimpanzee who was raised by a Russian scientist sometimes liked to climb up to the roof of the scientist's house. ² She (the scientist) tried various ways to encourage the chimp to come down (for example, by putting some food on the ground), but those tricks never worked. ³ However, if the scientist herself pretended that she was hurt and began to cry, the chimp would hurry down from the roof and put his arm around her. ⁴ As a result, it appeared that this chimp was more motivated by empathy than even food!

² Empathy can be described as the ability to "put yourself in someone else's shoes," and scientists are trying to determine whether creatures (besides humans) are able to feel and express this emotion. Are animals able to understand the pain that others are experiencing? Are they able to feel pleasure when others are experiencing joy?

³ Dr. Frans de Waal, director of the Living Links Center at Yerkes Research Center, and Kristi Leimgruber, a research specialist, conducted some studies concerning empathy, using eight female capuchin monkeys (the subjects of the study). Each capuchin was paired with one of three other capuchins, either a female relative, a familiar but unrelated female, or a female who was a stranger from a different group. Then, the subjects were given a task to perform and were rewarded with a token if they carried it out correctly. After that, they had two options for using these tokens. One option was called "the selfish option," in which the subject alone received an apple

slice as a treat. The second option was "the pro-social option," which meant that the subject and her paired capuchin would *both* receive an apple slice. The subjects more often chose the pro-social option when they were paired with a relative or other familiar capuchin than when they were paired with a stranger. In other words, they chose the option in which both they and their relative or a familiar capuchin would get slices of apples, but chose not to get an apple slice for a stranger. Waal concluded, "The fact that capuchins predominantly selected the pro-social option must mean that seeing another monkey receive food is satisfying or rewarding for them. We believe pro-social behavior is empathy-based. Empathy increases in both humans and animals with social closeness, and in our study, closer partners made more pro-social choices. They seem to care for the welfare of those whom they know,"

⁴ In order to feel empathy, an individual must have self-awareness. ² If an individual is able to recognize itself, then perhaps it can understand the emotions of others. ³ In fact, experimenters have used tests to see if an animal is able to have this. ⁴ One way that they've done this is by placing a mirror in front of the animal. ⁵ When cats, for example, see their image in a mirror, they react as though they were looking at another cat. ⁶ Rats react in a similar manner. .

⁵ In contrast to the cats and rats described above, dolphins and apes realize that they are looking at their own image in the mirror. In a study of self-recognition among

elephants, Joshua Plotnik, a graduate student at Emory University, placed a white X on the foreheads of three elephants. It was apparent that the three of them immediately recognized that the image in the mirror was not that of another elephant. As they were looking in the mirror, they moved their heads from side to side and watched how their image changed. One elephant used the image to guide her trunk to the mark on her own forehead in order to examine it.

⁶ Another sign of self-recognition and empathy is yawning. When people see another person who is yawning, they themselves tend to yawn. This is called “contagious yawning.” Researchers have found that this phenomenon is common not only with people, but also with chimpanzees. Dr. James Anderson, of the University of Stirling in Scotland, found that when chimps observed a videotape of other chimps who were yawning, they started to yawn too. Interestingly however, when offspring were present when adult chimps yawned, none of them yawned. This is similar to human children; like young chimps, they are also not susceptible to contagious yawning perhaps because they have not developed the self-awareness that is necessary to feel empathy for someone else who is yawning.

⁷ There are other examples of apes who apparently have demonstrated the ability to feel empathy. In 1997, at the Brookfield Zoo, near Chicago, a 3-year-old boy fell into a gorilla enclosure, hit his head, and became unconscious. Soon, a female gorilla, named Binti Jua, picked up the boy and held him in her arms like a baby. After a few minutes, Binti Jua took the boy to the closed door which the zookeepers use to enter her area and gently laid the boy in front of it.

⁸ Was Binti Jua exhibiting empathy? We cannot be sure because it is not clear

whether her actions were the result of truly understanding the feelings of the child. Would she have treated a conscious child, or a cat, or a doll any differently?

⁹ A similar episode perhaps more clearly demonstrates an animal who is showing empathy. One day, in a zoo, Kuni, a bonobo (a type of monkey that is similar to a chimpanzee) noticed that a small bird had hit the window pane of her glass enclosure. Kuni picked up the stunned bird and carried it to a tall tree in her enclosed area. Then she carefully spread the bird’s wings with her fingers and gently threw it up into the air, just as someone toss a toy airplane up in the air. However, the bird immediately fell to the ground, so Kuni sat down next to it and watched over it until, later in the day, when the bird was able to fly away on its own.

¹⁰ What is interesting about the story of Kuni is that, in order to assist the injured bird, she needed to understand the problem that the bird had. In other words, she needed to have empathy. How she helped the bird was completely different from anything she would have previously done to assist another ape with a physical problem. That is to say, her actions were not something that was just part of normal ape behavior. Instead they were the result of her ability to understand the needs of the bird and to help it in a unique and specific way.

¹¹ In 1964, Jules Masserman conducted some experiments with rhesus monkeys. The monkeys were designated as either “actors” or “receivers.” An actor was put in a cage with two chains. Whenever he saw a brief flash of light, he could pull one of the chains to receive some food. Then, Masserman changed the experiment a bit. He put a cage with a “receiver” monkey in it next to the actor’s cage. Also, he changed the consequences of pulling the chains when

the actor saw a flash of light. In this second experiment, when the actor saw a flash of light *of a certain color*, he could pull the first chain and receive some food. However, if the flash as a different color, the actor could pull the second chain; and it would deliver food to him—and *give a severe electric shock to the receiver in the next cage*. In fact, during between five and 15 days, two of the 15 actors completely stopped pulling the chain with the food and shock! In addition, when Masserman put a receiver who was a familiar monkey in the next cage, the actor *was even less likely* to pull the chain that delivered a shock to that receiver.

¹² It is interesting that, in order to avoid delivering a shock to another monkey, some monkeys stopped pulling a chain that would give them food. In other words, if the only choice was to deliver a shock to another monkey in order to get food for themselves, they completely stopped eating. They may have stopped eating because they could imagine the pain that the other monkey was feeling. In other words, they may have felt empathy!

¹³ For years, people in everyday life have observed examples of animals who showed empathy. It is exciting that researchers are also finding evidence that acts of empathy might be the result of truly understanding the feelings of others.

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Imaginary Course: Science**Topic:** Similarities between humans and animals**Imaginary assignment:** For your science class, you are studying ways in which humans and animals are similar. You will write a paper about the possibility that animals can experience emotions. You will use information from this article to discuss this.**Task 1. Assignment Analysis Exercise** Read the *Imaginary assignment* above. For this assignment, what type of information will you look for? (Choose the best answer.)

- a) Information about how animals can feel happiness, sadness, sympathy etc.
- b) Information about how animals and humans are physically similar.
- c) Information about why we should not be cruel to animals and why we should treat them as we treat humans.

PART 1 (¶ 1-6)**Task 2. Content Exercise**

1. According to the article, what is empathy? (Choose one.)
 - a) feeling sad when something bad happens to you.
 - b) understanding the emotions that someone else is feeling.
 - c) having many experiences that cause emotions.
2. In ¶ 1, one sentence explains the reason why the author told this story about the chimpanzee. What is that sentence number? ____
3. How did the chimp show empathy?
 - a) He put his arm around the scientist to comfort her.
 - b) He wouldn't come down to get food.
 - c) He climbed up to the roof.

4. This is a summary of the study in ¶ 3. If the underlined words are a mistake, correct them. If they are correct, write "OK."

eight *OK*

The study used four female monkeys who were the subjects of the study. Each monkey was paired with a second monkey. Some were paired with a monkey who was a relative. Others were matched with a familiar monkey. And some were paired with a monkey that she lived with. The subjects were rewarded with tokens and had two options for using these. They could use the token to get a banana for themselves. This option was called "the pro-social option." The second option was called "the selfish-option." In this one, the monkey would

share a piece of apple with its paired monkey. The monkeys tended to share the apple with a stranger but not a relative or familiar monkey.

5. Waal the researcher explained the results of this study. Circle the letters of his conclusions. (Circle all that are correct.)

- a) Most of the monkeys chose to eat the apple by themselves, so this showed that they had empathy.
- b) Monkeys felt good when they could see another monkey enjoying the apple and that is probably the reason why they decide to share it. This shows empathy.
- c) Sharing with others is a way of showing empathy.
- d) People tend to share with friends and relatives but monkeys tend to share equally with friends, relatives and strangers.
- e) People and monkeys tend to show more empathy to friends and relatives than strangers.

6. Which paragraphs discuss self-recognition? ___ ___ ___

7. Which sentence in ¶ 4 is very important and helps the reader understand the connection between self-recognition and empathy? ___

8. In ¶ 4, it describes cats. What does it say about cats?

- a) If they see themselves in a mirror, they think that it is a different cat. This shows self-recognition.
- b) If they see themselves in a mirror, they think that it is themselves. This shows self-recognition.
- c) If they see themselves in a mirror, they think that it is a different cat. This shows that they don't have recognition.
- d. If they see themselves in a mirror, they think that it is themselves. This shows that they don't have recognition.

9. In ¶ 4-5, which animals showed self-recognition?

10. In ¶ 5, it said that researchers drew an X on the foreheads of three elephants. How did the elephants demonstrate self-recognition when they looked in the mirror?

- a) One elephant touched the X on a different elephant.
- b) One elephant touched the X on her own forehead.

11. In ¶ 6, it says, “*Researchers have found that this phenomenon is common . . .*” What is the “phenomenon” that is common? _____

12. This is a summary of the study in ¶ 6. Circle the correct underlined words.

The researcher showed a videotape to chimps of [other chimps / people] yawning. While watching the video, the chimps [did not / began to] yawn. This showed that they [had / had not] developed self-awareness. However, when the young chimps saw the videos, they [yawned / did not yawn] because they [had / did not have] self-awareness. Young children [will not / will] yawn because they [will not / will] feel contagious yawning. To summarize, in order to feel empathy, it's necessary [to not have / to have] self-awareness, and [self-awareness / no self-awareness] is necessary in order to experience contagious yawning.

PART 1

Task 4. Academic Vocabulary Definition Exercise Look in the article and find the words that have these meanings.

| Word | ¶ | Find the word that means . . . |
|------|---|------------------------------------------------------------------------------------------------------------------|
| 1. | 1 | very keen to do something or achieve something, especially because you find it interesting or exciting: |
| 2. | 3 | a piece of work that must be done, especially one that is difficult or unpleasant or that must be done regularly |
| 3. | 3 | decided that something is true after considering all the information you have |
| 4. | 3 | mostly or mainly |
| 5. | 3 | the health and happiness of someone |
| 6. | 4 | knowledge and understanding of yourself (two words) |
| 7. | 4 | a picture of an object in a mirror |

Task 5. Vocabulary Fill-in Exercise: Choose the words in Task 4 to fill in the blanks below.

1. My brother was _____ to go to college because he wanted to become a doctor.
2. My friends _____ choose to have parties on Saturday nights rather than Fridays.
3. A good driver will often check the mirrors in his car while driving to see the _____ of other cars around him.
4. Parents' most important concern is about the _____ of their children.
5. His mother always gave him some _____ to do around the house, for example, taking out the garbage, before he could play with his friends.
6. One reason that some people get nervous when they give a speech is because of their _____ . They are worried that they will be embarrassed if they make a mistake.

7. After seeing on the weather report that it was going to rain the next day, we _____
that it would not be a good day to go to the beach.

PART 2 (¶ 7-11)

13. In ¶ 7-10, the author tells about Binti Jua and Kuni.

- 1) According to the author, which of these two most clearly showed empathy? _____
- 2) Which paragraph sentences tells the researcher's opinion? ____
- 3) Explain his opinion. (Do not look at the article while you write the answers. After you write your answer, you can look back at the article and revise your answer.)

14. Read ¶ 11-12 again. Number each step in the experiment.

- ___ The actors stopped pulling the chain that gave a shock to the receiver.
- ___ When the actors saw a flash of light, they could pull a chain and get a reward of food.
- ___ As a result, the actor stopped receiving food.
- 1_ The monkeys were labeled as “actors” or “receivers.”
- ___ When an actor saw a flash of light, he could pull a chain and get food, but the receiver would receive an electric shock if he pulled the chain.
- ___ The researchers put a receiver monkey in a cage next to the “actor’s cage.
- ___ The actors were in a cage that had two chains.

15. In which paragraph does the author tell his conclusion about the experiment with the monkeys and electric shock? ____

16. What is the author's conclusion? (Choose all that are correct.)

- a) The reason why the actors stopped pulling the chain was because they felt the shock.
- b) The actors might have stopped pulling the chain because they felt empathy for the receivers.
- c) The actors might have stopped pulling the chain because they might have been able to know that their action was causing pain for the receivers.
- d) The actors stopped pulling the chain because they were not hungry.

Task 3. Application. Did you find some information in this article especially interesting, surprising or new to you? Explain.

PART 2

Task 4. Academic Vocabulary Definition Exercise Look in the article and find the words that have these meanings.

| Word | ¶ | Find the word that means . . . |
|------|----|-------------------------------------------------------------------------------------------------------------------|
| 1. | 4 | behave in a particular way or show a particular emotion because of something that has happened or been said |
| 2. | 7 | we use this word to say that you have heard that something is true, although you are not completely sure about it |
| 3. | 8 | clearly showing a particular quality, emotion, or ability |
| 4. | 9 | an event or a short period of time during which something happens |
| 5. | 9 | too surprised, shocked or hurt to speak or move |
| 6. | 11 | things that happen as a result of a particular action or set of conditions |
| 7. | 13 | facts or signs that show clearly that something exists or is true |

Task 5. Vocabulary Fill-in Exercise: Choose the words in Task 4 to fill in the blanks below.

- The little boy told his mother that he had not eaten any candy. However, his mother found _____ that he had. There was chocolate around his mouth.
- Last week, someone tried to break into my car. Yesterday, a similar _____ happened. Someone stole a cell phone from my brother's car.
- Whenever little Tommy's mother tells him to go to bed, he _____ with anger and starts to cry.
- You shouldn't talk on a cell phone while driving because the _____ could be bad.
- If you are _____ signs of the flu, for example a headache, runny nose, or cough, you should stay home.
- Ann was _____ when she heard that her younger sister was going to get married. She had known her boyfriend for only one month.

7. My friend didn't come to work today. _____ she is sick.

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| 4. | predominantly | 3 | mostly or mainly |
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- If you are exhibiting signs of the flu, for example a headache, runny nose, or cough, you should stay home.
- Ann was stunned when she heard that her younger sister was going to get married. She had known her boyfriend for only one month.
- My friend didn't come to work today. Apparently she is sick.