

令和3年度入学者選抜学力検査問題

(前期日程)

英 語

(注 意)

- 1 問題紙は指示があるまで開いてはいけません。
- 2 問題紙は本文10ページです。答案用紙は3枚あります。
- 3 答えはすべて答案用紙の指定のところに記入してください。
- 4 問題紙と下書き用紙は持ち帰ってください。

I The following passage is a newspaper article on job interviews and the problems associated with them. Read the passage and answer the questions.

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- II The following passage is a science article on the evolution of facial muscles in dogs. Read the passage and answer the questions.

Dogs Evolved a Special Muscle That Lets Them Make 'Puppy Dog Eyes'

Dogs have a secret weapon when it comes to getting what they want or getting out of trouble: puppy dog eyes. When our canine companions¹ raise their eyebrows, making their eyes look wider, more helpless and baby-like, it seems the facial expression was designed to manipulate human emotions. And it turns out, that's likely true, according to a new study in the journal *Proceedings of the National Academy of Sciences*.

In previous studies, researchers had already identified the muscle movement that raises the dog's inner eyebrow and produces those adorable droopy eyes. "This movement makes a dog's eyes appear larger, giving them a childlike appearance," co-author Bridget Waller, a psychologist at the University of Portsmouth, says in a press release. "It could also mimic the facial movement humans make when they're sad."

Dogs likely evolved these special muscles after the breed split with wolves, the closest living wild relatives of domestic canines, and started cozying up to our human ancestors. That's why researchers decided to look more closely at the facial anatomy of dogs and wolves to better understand the origins of the eyebrow lift. Ian Sample at *The Guardian* reports that the team analyzed the facial structures of both wolf and dog cadavers² from taxidermists³, a state wildlife organization and several museum specimens. (No dogs were killed for this research.) They also conducted behavioral studies of wolves at wildlife parks and dogs in rescue shelters in Germany and the United Kingdom.

They found that the dog breeds—including a chihuahua, a labrador, a bloodhound, a German shepherd, a Siberian husky and a mutt—all had a small, specialized muscle called the levator anguli oculi medialis, or LAOM, which they

use to produce their wide-eyed, doleful stare. In the four wolves that were looked at, the muscle did not exist—save for a few stray fibers. Another muscle, called the retractor anguli oculi lateralis or RAOM, which pulls the eyelids toward the ears, was well developed in all the dogs except the husky, a breed with an ancient lineage. It was also less prevalent in the wolves.

The researchers suggest that in the 20,000 years or so since humans and dogs began hanging out, evolutionary pressures have caused the LAOM muscle to develop in canines in order to communicate with their human companions. “They are very powerful animals in how they capture our hearts,” Waller tells *The Guardian’s* Sample. “We pay a lot of attention to faces, they are meaningful to us, and this expression makes dogs look juvenile and sad. It induces a nurturing response. It’s a cute factor.”

In the behavioral portion of the study, the researchers also had a team of experts observe humans interacting with the shelter dogs as well as the wolves in captivity. The team recorded the number of times the dogs and wolves made the puppy-dog eye expression, scoring the intensity on a scale of 1 to 5. While wolves occasionally made the expression with “low intensity,” dogs made it much more frequently and with more intensity, suggesting it’s an important part of human-dog interaction.

It’s unlikely that dogs developed the puppy-dog eye routine on purpose. Instead, humans probably bred the look into their four-legged companions. “The findings suggest that expressive eyebrows in dogs may be a result of humans’ unconscious preferences that influenced selection during domestication,” lead author Juliane Kaminski, also of the University of Portsmouth, says in the release. “When dogs make the movement, it seems to elicit a strong desire in humans to look after them. This would give dogs that move their eyebrows more a selection advantage over others and reinforce the ‘puppy dog eyes’ trait for future generations.”

That's not just idle speculation. In a 2013 study, Kaminski and her team found that dogs with big, droopy puppy eyes were adopted more quickly from animal shelters. Haley Weiss at *The Atlantic* reports that in a 2017 study, Kaminski found that dogs moved their eyebrows more when humans looked at them and kept the brow-raising to minimum when they were ignored or denied food, suggesting that some of the puppy-eyeing is voluntary.

The development of the LAOM muscle is surprising because it actually developed quite rapidly in the long scale of evolution. "These muscles are so thin that you can literally see through them — and yet the movement that they allow seems to have such a powerful effect that it appears to have been under substantial evolutionary pressure," co-author and anatomist Adam Hartstone-Rose of North Carolina State University says in the press release. "It is really remarkable that these simple differences in facial expression may have helped define the relationship between early dogs and humans."

There's also an alternative explanation. The muscles might help expose the whites of a dog's eyes, which is appealing to humans, the only creatures whose eye whites are constantly exposed. Whatever the case, it's likely that the LAOM muscle makes dogs look more human and more expressive, which makes us feel more bonded with the furry beasts — even if those wide, doleful eyes are just an evolutionary trick.

(Adapted from "Dogs evolved a special muscle that lets them make 'puppy dog eyes'," *Smithsonian Magazine*, June 18, 2019)

canine companions¹ : pet dogs

cadavers² : dead bodies

taxidermists³ : people who stuff animals for display purposes

Question 1: Based on the passage, answer questions (A) to (D) with one complete sentence in English. Your answers should not be more than 25 words each.

- (A) In human-dog interaction, what is the effect of puppy dog eyes?
- (B) What are the differences between dogs and wolves in terms of eye muscles?
- (C) What did the researchers examine in the behavioral study comparing shelter dogs and wolves in captivity?
- (D) In their 2013 study, what did Kaminski and her colleagues discover?

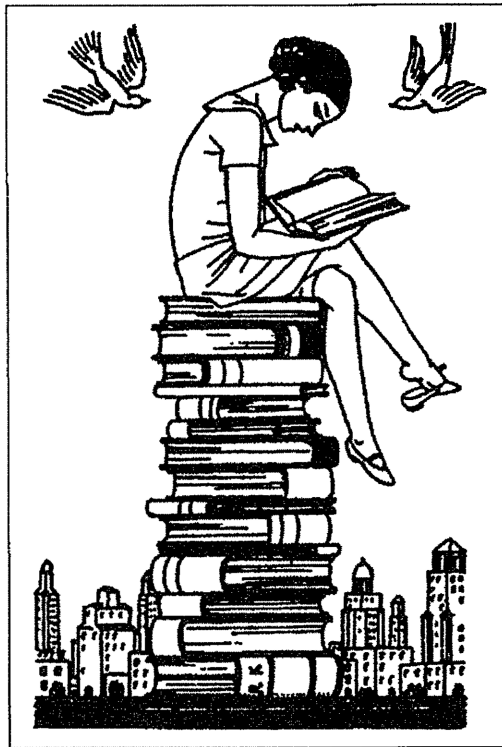
Question 2: For statements (E) to (I), write T if the statement is true according to the content of the passage. Write F if the statement is false according to the content of the passage.

- (E) The RAOM muscle is widely found in wolves.
- (F) Humans trained dogs to use the muscles around their eyes to look cute.
- (G) Researchers looked at both the facial anatomy and behavior of dogs and wolves when studying the puppy-dog eye expression.
- (H) Dogs' eye muscles developed very slowly in the scale of evolution.
- (I) Dogs can do the puppy-dog eye expression voluntarily.

Question 3: Pets bring us happiness and joy, but it is very important to realize that owning a pet comes with a lot of responsibilities. Give an example of one responsibility and explain why it is important in 25 to 35 English words.

III Look at the picture below and write a paragraph in 80 to 120 English words.
Your paragraph should address each of the following points:

- What you think the picture suggests
- Why the picture suggests this to you
- How your interpretation of the picture relates to your life now



(Adapted from an illustration by Rockwell Kent, 1936)