A sad raven bums out its friends

Enlarge / Does he look happy or sad to you?

reader comments

64 with 37 posters participating, including story author

Share this story

As social creatures, we subconsciously match moods with those around us—and not just when a cranky supervisor darkens your day (*Editor's Note*: Is it something I said?). The scientific term for the spread of feelings is "emotional contagion," a term that may feel particularly appropriate when it comes to grumpiness. But as is so often the case with human psychology, this very human behavior does not appear to be unique to our species.

Studying emotions and their contagious nature in other animals can be tricky. Relying on outward displays runs the risk of conflating a simple emotion with some overt rowdiness that makes it visible. Getting at that underlying emotion requires understanding how critters act in varying moods. A team led by the University of Vienna's Jessie Adriaense tried to do that with ravens by designing a test to reveal whether they were feeling optimistic.

Emotional control

The first goal of the experiment was to induce a positive or negative emotional state in a raven. To do so, the raven was shown a pair of food items: dog kibbles (a highly rated treat)

and some raw carrot (a hard pass). One of the food items would then be taken away. When the tasty treat remained in view, the raven should be enthused; it responded by walking up to that side of the cage and focusing its attention on the snack. When the carrot was left, the bird gave it a dominantly left-side side-eye (the left eye and right brain hemisphere are linked to negative stimuli) and scratched at the ground in frustration.

To study social contagion, this was done with another familiar raven looking on from behind a barrier that blocked its ability to see the food. From the next cage, the second raven could see the first bird's reaction, but it couldn't see what was inducing it. The question, then, was whether the first bird's mood would transfer to the second one.

Once a day for a few days in a row, the experiment was repeated using four friendly pairs of birds. After each go, the second bird took a sort of pessimism/optimism bias test. This test involved placing a wooden box on either the left or right side of the bird's enclosure. On one side, the box would always contain a treat; the other side never did. When the raven pecked the box, the lid would be removed to reveal what was inside.

Ravens apparently can't resist the urge to peck the box even if they know there's nothing in it, but the length of time it took them to do so showed they had figured out the game. On the always-reward side, they pecked the box immediately, while they would wait two or three seconds before giving the eternally disappointing box a peck.

Are you a box-half-full bird?

But on experiment days, the second bird was presented with a twist—the box could also be placed smack in the middle. An optimistic bird might peck it pretty quickly to find out if it contained a treat, while a pessimistic bird might wait as long

as it did with the eternally disappointing boxes. (In tests run before the experiment days, that’s exactly what happened.)

Ravens that had just observed their friend happily eyeing an expected treat did, in fact, behave optimistically, giving the mystery box a quick peck (this seemed to be their default behavior). But when they had just watched their friend scratch in frustration at the disgusting concept of a carrot, they pessimistically waited a couple of seconds. Some readers may appreciate the fact that the pessimistic guess was also the correct one, as the mystery box never contained a treat.

The experiment implies that ravens, too, are subject to “emotional contagion,” feeling the negative feeling they see in a groupmate. The first raven didn’t actually get the treat, which the second raven never saw, and there were also no food squawks or caching behavior that could send the second raven searching for its share. The result seems more subtle than that.

The researchers explain that emotional contagion is a pretty useful way of sharing information. After all, if something is upsetting your fellow ravens, it’s likely to upset you, too. More generally, this information sharing also underpins empathy. And if you want to understand the evolutionary roots of empathy, it’s pretty valuable to find it on display in groups as different as primates and birds.

PNAS, 2019. DOI: 10.1073/pnas.1817066116 (About DOIs).

https://arstechnica.com/?p=1509993