

Research raises new questions about animal empathy

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The emotions of rats and mice and the mental infrastructure behind them promise to illuminate the nature of human emotions, including empathy and nurturance, a Washington State University neuroscientist writes in this Friday's issue of the journal *Science*.

Jaak Panksepp, Baily Endowed Chair of Animal Well-Being Science and a professor of Veterinary and Comparative Anatomy, Pharmacy and Physiology, makes his case in a Perspectives column responding to [research in which rats helped other rats with no explicit rewards at stake](#). The research, Panksepp writes, "raises questions about the affective experiences of animals other than humans."

Panksepp, who has pioneered work in how core emotions stem from deep, ancient [parts of the brain](#), said there remains a good deal of resistance in the scientific community towards the notion that "nonhuman animals have affective experiences, and that these can and should be studied in empirical ways."

But he argues that recent advances in neuroscience are letting researchers look at how animal affect, or emotions, control learning, memory and behavior.

"Simplified models of empathy, as in mice and rats, offer new inroads for understanding our own social-emotional nature and nurture," he writes. "Such knowledge may eventually help us promote nurturant behaviors in humans."

Panksepp elaborated on his essay in a recent correspondence with the Washington State University News Center:

Q: Humans are under the impression that they are the animal with the greatest feelings and certainly have the greatest capacity to empathize with other creatures. Is this a mistaken assumption? Why?

Panksepp: There is no question that all other animals have emotional feelings. The science is strong for that. And all our strongest basic emotional feelings come from brain networks all mammals share. Unfortunately, currently we can't scientifically compare the intensity or greatness of feelings across species.

However, because we have a greater capacity to think than most, we can do more with our emotions than other animals. We can write music. Create poetry. And because of our higher mental abilities, we also have greater capacities for both empathy among strangers and cruelty. There are hints that across modern history empathy has been winning out over cruelty. But then one looks at the 20th century and wonders.

Still, the only way that empathy will continue to grow is if our higher mind gets in touch with the better angels of our lower minds—with maternal care and social joy being among the most important.

Q: If I read you correctly, the logic of attributing empathy to other, lower order animals grows out of the way our brain reflects our evolution, with higher order thinking and feeling on the more recently evolved outer layers but key, core emotions lying deep in the center. So while an animal may have a more rudimentary brain, its brain still has core functions that can include empathy. Right?

Panksepp: Indeed, we mammals share the basic tools for feeling and learning and perhaps even thinking. And empathy is reflected at all these

levels. But our capacity for empathy would probably collapse without the basic emotions we share with other mammals.

Emotional contagion, a primitive form of empathic feelings, seems universal among mammals. Thinking about what others are thinking about and feeling seems much more developed in us than any other creature, except perhaps those with brains as big and complex as ours, like dolphins. Indeed, dolphins have certain brain areas that are more enlarged than ours—higher emotional regions of the brain that probably are needed for higher forms of empathy and positive fellow feelings.

Q: Why are people resisting the notion that nonhumans can have affective experiences?

Panksepp: I don't think animal lovers have much doubt about the fact that animals have emotional feelings. Many scientists have little more than doubts. Thus, science has not yet reached agreement on how to study the many kinds of basic feelings we have, and that many other animals surely have.

It is clear that when we finally understand their emotions, we will begin to have lasting scientific knowledge about our own. Only modern brain science can give us answers to questions such as, 'What are emotions?' and 'What are affective feelings?' It is clear that we can have many types of affective experiences—feeling good (positive) and bad (negative) in various ways. Certain positive and negative feelings are aroused by our sensory channels, like various forms of pain and taste. Others arise from inside our bodies, like hunger and thirst signals to the brain. And then there are emotional feelings that arise largely from complex networks that reside completely within our brains, but which move our bodies intensely in various ways.

These last kinds of feelings are most important for understanding our

moods and psychiatric disorders. We now have a great deal of knowledge about which brain systems generate various basic emotional feelings—experiences like desire, anger, fear, lust, motherly love, grief and playfulness. Once we understand the brain chemistries that control these kinds of [emotional feelings](#) in animals, we will better understand ourselves, as well as develop much better medicines for human emotional problems.

Q: You have a zinger of an ending. If we better understand the affective processes of mouse and rat brains, we might be better able to help humans be more nurturing. I read it this way: Humans may have the greatest capacity for compassion and empathy on earth, owing in part to our consciousness, but at times we behave worse than rats. If we understand the core, instinctual capacity for [empathy](#) among all animals, we might be better humans in the humanistic sense.

Panksepp: Yes, I think the more we know about the emotions of other animals, the more we will understand our own emotions. Without the ancient emotional systems that all mammals share, our ability to be conscious is drastically impaired. The more we know about our animal emotions, which support the rest of our mental apparatus, the more ideas we will have about how to be better people. As we follow the old philosophical advice to, "know thyself," the more options we will have for being good to others and the world.

But until quite recently, an enormous gap in our knowledge has been any solid scientific knowledge about our emotional nature. [Neuroscience](#) is changing that. And when we really know ourselves, we will be able to think about ourselves more clearly as creatures of the world. What we do with this knowledge will vary from one mind to another. My hope is that our desire to care about others will grow. To do that well is one of the best ways to take care of yourself. . .and the world.

Provided by Washington State University

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