

Lending a hand, or a paw—what drives us to help others?

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Our social connections and social compass define us to a large degree as human. Indeed, our tendency to act to benefit others without benefit to ourselves is regarded by some as the epitome of human nature and culture. But is it truly a quality unique to humans, or is this apparent virtue common to other species such as rats?

"We would not hesitate about helping an older person trying to cross the road," says Dr. Cristina Márquez, who conducted this study with Scott Rennie and Diana Costa from the Behavioural Neuroscience Lab, led by Dr. Marta Moita. "This type of actions is called [prosocial behavior](#). It means your are actioning to results in a benefit to someone else."

To understand how our brain generates this type of behaviour, it is crucially important to develop tools to study prosocial decisions under laboratory conditions. "In this study, we set out to discover whether rats act prosocially, with no benefit for themselves and outline the factors that drive this behaviour."

The researchers emphasise that the kind of behaviour they are studying is different from altruistic acts, which involve a sacrifice, or a cost, to the helper.

The query for evidence for prosocial decisions in species other than humans has proven to be a challenging task. But the researchers, inspired by studies in chimpanzees were able to create an experimental setup that allowed them to address this question directly in rodents. "In our

experiment, we assigned a pair of rats different roles. One was the Helper and the other was the Partner. The Helper was free to make one of two choices. The selfish choice - opening a door where a food reward was given only to itself. Or a prosocial choice - opening another door, where both rats received a food reward" - explains Dr. Márquez. "Importantly, the Helper received an identical reward regardless of whether it made a prosocial, or a selfish choice."

The researchers found that the majority of rats favoured prosocial choices. "The rats in the role of the Helper would make the choice leading to a food reward to the other about 70 percent of the time. Of the 15 rats we tested, only 1 made selfish choices consistently" - says Dr. Márquez.

Even though the Partner was not able to control the opening of the doors, it was able to demonstrate its preference towards one of them, a factor the researchers revealed to be a crucial one. "If the Partner was not reaching towards the door that led to the prosocial outcome, the Helper would not develop a preference for that side", says Dr. Márquez. This is the first time a connection between behavioural displays of preference and prosocial choice is reported in rodents. It is comparable to the way it works with humans, if you are not asked, you may not realise that someone needs help.

However, what if someone is asking for your help, but you can see that they don't really need it? Would you continue helping them?

To find out whether the Helper was choosing the prosocial side simply because it was following the Partner's preference, or because they were sensitive to the rewards it received, the researchers asked what would happen if they broke the link between the Partner's display of preference and the location of the reward. To achieve this, the team trained the Partner to demonstrate preference towards one side of the maze, even

though it received a reward on both sides. "If the Partner was given a food reward on either side, the Helper disregarded the Partner's side preference. They were making prosocial choices not only because the Partner was displaying a preference to go towards that side, they seemed to realise this display of preference was connected with the Partner receiving food."

This finding expands a new wave of studies unraveling the complexity of social interactions in rodents. Scientists had recently discovered that rats would free a trapped partner and that they show increased pain or defence responses when witnessing partners in distress. In this new study, it is the first time scientists show that rats behave prosocially under conditions that are not stressful. "This distinction is important because it was believed that helping behaviour in species other than primates was only possible under stressful conditions."

Do these observations mean that rats share the higher values of humans, or that humans share some basic socio-biological mechanisms with rats? "Prosociality is beneficial in many situations, for both humans and rats. Simple biological mechanisms such as a positive feeling when a group member receives a reward, or being sensitive to attempts of others to achieve a goal, may benefit the individual. Humans are extremely social and we are also extremely confabulatory. So it is possible that the stories we construct about the motives to our social actions could also be explained by biological mechanisms that have evolved to keep a group of individuals cohesive," concludes Dr. Moita.

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