

A little help from your friends just increases pain

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Nurse gives injection to woman, New Orleans, 1941. Credit: Wikipedia.

Maybe misery doesn't love company. When physical pain is involved, having an equally suffering friend nearby just makes you feel worse, according to a study published online Thursday in the journal *Current Biology*.

The study wasn't aimed at figuring out whether we get by with a little help from our friends, but whether we catch emotions from them. It found that the stress induced by a social encounter with a stranger can block emotional contagion that otherwise is rampant between acquaintances. Even mice displayed more pain-related behavior when they suffered beside equally miserable acquaintances, the study suggests.

"The contagion of the pain of one is adding to the pain of the other, making it bigger than it otherwise would be," said neuroscientist Jeffrey Mogil of McGill University in Montreal, lead researcher of the study. "In both species, this only works if they

know each other."

For the mice, the experiments involved some simple injections and restraints. Humans had to hold a hand in a bucket of water chilled to 39 degrees Fahrenheit.

Subjects rated their pain while soaking their hand, then were paired with either an acquaintance or a stranger. When just one person in the pair was experiencing the pain of the cold water, there was no change in anyone's solo rating of pain. When both were in pain, each reported a higher perception of their own pain if they were paired with someone they knew, but not if they were with suffering [strangers](#), the study found.

Mogil's lab, which had already shown a similar effect among mice, wondered whether the stress of meeting strangers had something to do with the difference in pain perceptions. The researchers measured levels of the stress-related hormone cortisol. It was higher during encounters with strangers.

When they administered a drug that blocked the effects of the hormone, it effectively made strangers into friends, upping their pain ratings.

The drug wasn't the only thing that worked to take stress out of the equation, though. Apparently, all you need is love - or at least a few Beatles songs. Researchers made some strangers play four Beatles songs together on the video game "Rock Band."

After strangers played the [video game](#) together, their pain from the dunking experiment was contagious, an effect that didn't show up if they had played by themselves, according to the study.

Mogil is convinced that the increase in [pain](#) ratings is a manifestation of empathy, at least in its simplest form. By that definition, then, mice show

empathy, he said.

"Empathy is a multidimensional phenomenon," Mogil said. "It's a group of things, the simplest of which is something called emotional contagion. And [emotional contagion](#) is simply when my emotional state influences your emotional state."

Scientists who study human behavior theorize that without a transfer of emotional information, empathy and pro-social behavior isn't possible. Even psychopaths seem to be able to summon empathy, one brain scan study has found.

But there is heated debate about whether animals can be truly empathetic or altruistic.

Mogil suspects humans are over-thinking things.

"We think human social interactions are very complex, but I think that is just an illusion - we think that because we are in the middle of it," he said. "It actually boils down to something quite a bit more simple than that - the kind of thing that other animals also do."

Peggy Mason, a neuroscientist at the University of Chicago, has tested whether rats will help one another out by springing a fellow rat from confinement. They will, but with some important social limits, her studies show.

Rats will free strangers that are of their own genetic strain, but not those from another strain, according to Mason's studies. Housing rats from different strains together, however, eliminates that distinction - they'll free any rat from the other strain, not just one they know. More important, a rat raised among rats of another strain, and that never saw its own kind, won't spring a rat from its own strain, she found.

For that reason, Mason is intrigued by the "Rock Band" part of Mogil's study.

"Playing 'Rock Band' with an individual leads to acting as though that individual is a familiar - that's really cool," she said. "Cooperation is leading to a change in the way they view each other."

Mason now wonders whether there might be a "Rock Band" equivalent that could make unacquainted rodents more pro-social.

Maybe she'll play "All You Need Is Love" for them?

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