

# Pain from rejection and physical pain may not be so similar after all

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

Over the last decade, neuroscientists have largely come to believe that physical pain and social pain are processed by the brain in the same way. But a new study led by the University of Colorado shows that the two kinds of pain actually use distinct neural circuits, a finding that could

lead to more targeted treatments and a better understanding of how the two kinds of pain interact.

For the study, published in the journal *Nature Communications*, the researchers used a technique recently borrowed from the computer science field by neuroscientists—multivariate pattern analysis—to examine [brain scans](#) that were taken while people looked at a picture of someone who had rejected them. The results were compared to [brain scans](#) made of the same people when they were receiving a painful heat stimulus.

"Physical pain and social rejection do activate similar regions of the brain," said CU-Boulder graduate student Choong-Wan Woo, lead author of the study. "But by using a new analysis tool, we were able to look more closely and see that they are actually quite different."

A study published in 2003 in the journal *Science* laid the foundation for the theory that [social pain](#)—resulting from rejection, isolation or loss—piggybacks on the brain systems used to represent [physical pain](#). The belief that the two types of pain are neurologically the same has led to some new ideas about how to treat social pain, including using traditional painkillers, such as acetaminophen, to try and ease emotional suffering.

The results of the new study are important because they could help understand how social pain can be measured objectively, and how the brain creates these uniquely distressing experiences. Ultimately, this could help direct scientists and clinicians toward prevention and treatment options that make the most sense for social pain.

"Though there are some similar psychological features between physical pain and social pain, they appeared to be quite different in the brain," said Woo, of CU-Boulder's Department of Psychology and

Neuroscience. "If we find that social pain is more similar to sadness or depression in the brain than physical pain, that could affect [treatment options](#)."

The findings could help scientists better understand the structure of emotion in the brain and how emotions are regulated. The study also is an important step in allowing researcher to test how the two types of pain interact, which could shed light on known relationships between emotions and physical pain, such as the connection between [pain disorders](#) and emotional trauma.

Provided by University of Colorado at Boulder

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