Brain Stimulation May Buffer Feelings of Social Pain

December 04, 2012

Accumulating evidence suggests that certain brain areas involved in processing physical pain may also underlie feelings of social pain.

But can altering brain activity in these areas actually change how people experience social pain?

Paolo Riva of the University of Milano-Bicocca and colleagues wanted to examine whether there might be a causal relationship between activity in the right ventrolateral prefrontal cortex (rVLPFC) – known to be involved in the regulation of physical pain and negative expressions of emotion – and experiences of social pain. Their findings are published in Psychological Science, a journal of the Association for Psychological Science.

The researchers recruited 79 university students to take part in a "mental visualization exercise." They used a constant-current regulator to stimulate the rVLPFC – all of the participants were told that they would receive stimulation for 15 minutes but only half of the participants actually received the current.

Five minutes before the end of 15-minute stimulation session, the students played a virtual ball-tossing game called Cyberball. The students were told that they were playing with two other players and that the three of them would take turns throwing the ball to each other. In actuality, a computer program controlled the game. Some of the participants were excluded, receiving the ball only twice and then never again, while other participants received the ball about a third of the time.

The students then reported the percentage of throws they thought they received and rated the unpleasantness of the pain they felt and the hurt feelings they experienced during the game.

Riva and colleagues found that, as predicted, the participants who were socially excluded reported that they received less often than participants who were included. Moreover, they rated the game as more unpleasant and reported more hurt feelings. Notably, these latter effects were reduced for participants who received stimulation over the rVLPFC.

Specifically, socially excluded participants who received the actual current experienced less unpleasantness and less hurt feelings than the participants who believed they were receiving the current. In both cases participants knew they were being excluded, but they appeared relatively unbothered by it if they received stimulation.

"Few studies have examined how the pain of social exclusion can be alleviated. Our results offer the first evidence that stimulation over the rVLPFC reduces the painful effects of social exclusion," Riva and colleagues conclude.

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