

Brain Scans Show Bullies May Enjoy Seeing Others in Pain

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Unusually aggressive youth may actually enjoy inflicting pain, research using brain scans shows. Scans of the aggressive youth's brains showed that an area that is associated with rewards was highlighted when the youth watched a video clip of someone inflicting pain on another person. Youth with normal behavior did not have that response.

"This is the first time that fMRI scans have been used to study situations that could otherwise provoke empathy," said Jean Decety, Professor in Psychology and Psychiatry at the University of Chicago. "This work will help us better understand ways to work with juveniles inclined to aggression and violence."

Decety is an internationally recognized expert on empathy and social neuroscience. The new research shows that some aggressive youths' natural empathetic impulse may be disrupted in ways that increase aggression.

The results are reported in the paper "Atypical Empathetic Responses in Adolescents with Aggressive Conduct Disorder: A functional MRI Investigation" in the current issue of the journal *Biological Psychology*. Benjamin Lahey, the Irving B. Harris Professor of Epidemiology and Psychiatry at the University, co-authored the paper, along with University students Kalina Michalska and Yuko Akitsuki. The National Science Foundation supported the work.

In the study, researchers compared eight 16- to 18-year-old boys with aggressive conduct disorder to a control group of adolescent boys with no unusual signs of aggression. The boys with the conduct disorder had exhibited disruptive behavior such as starting a fight, using a weapon and stealing after confronting a victim.

The youth were tested with fMRI while looking at video clips in which people endured pain accidentally, such as when a heavy bowl was dropped on their hands, and intentionally, such as when a person stepped on another's foot.

"The aggressive youth activated the neural circuits underpinning pain processing to the same extent, and in some cases, even more so than the control participants without conduct disorder," Decety said.

"Aggressive adolescents showed a specific and very strong activation of the amygdala and ventral striatum (an area that responds to feeling rewarded) when watching pain inflicted on others, which suggested that they enjoyed watching pain," he said.

Unlike the control group, the youth with conduct disorder did not activate the area of the brain involved in self-regulation (the medial prefrontal cortex and the temporoparietal junction).

The control group acted similarly to youth in a study released earlier this year, in which Decety and his colleagues used fMRI scans to show 7- to 12-year-olds are naturally empathetic toward people in pain.

The scans showed that when the children saw animations of someone hurt accidentally, the same portion of the brain that registered pain when they are hurt also was highlighted upon seeing someone else hurt. When they saw someone intentionally hurt, the portion of the brain associated with understanding social interaction and moral reasoning was highlighted.