

Moral responses change as people age

June 3 2011

Moral responses change as people age says a new study from the University of Chicago.

Both preschool children and adults distinguish between damage done either intentionally or accidentally when assessing whether a perpetrator has done something wrong, said study author Jean Decety. But, adults are much less likely than children to think someone should be punished for damaging an object, for example, especially if the action was accidental.

The study, which combined brain scanning, eye-tracking and behavioral measures to understand [brain responses](#), was published in the journal [Cerebral Cortex](#) in an article titled "The Contribution of Emotion and Cognition to [Moral Sensitivity](#): A Neurodevelopmental Study."

"This is the first study to examine brain and behavior relationships in response to moral and non-moral situations from a neurodevelopmental perspective," wrote Decety in the article.

Decety is the Irving B. Harris Professor in Psychology and Psychiatry at the University of Chicago and a leading scholar on affective and social neuroscience. The National Science Foundation's (NSF) Division of Behavioral and Cognitive Sciences funds the research.

"Studying moral judgment across the lifespan in terms of brain and behavior is important," said Lynn Bernstein, a program director for [Cognitive Neuroscience](#) at NSF. "It will, for example, contribute to the

understanding of disorders such as [autism spectrum disorder](#) and psychopathology and to understanding how people at various times in the lifespan respond to others' suffering from physical and psychological pain."

The different responses correlate with the various stages of development, Decety said. As the brain becomes better equipped to make reasoned judgments and integrate an understanding of the mental states of others, [moral judgments](#) become more tempered.

Negative emotions alert people to the moral nature of a situation by bringing on discomfort that can precede moral judgment, said Decety. Such an [emotional response](#) is stronger in young children, he explained.

Decety and colleagues studied 127 participants, aged 4 to 36, who were shown short video clips while undergoing an fMRI scan. The team also measured changes in the dilation of the people's pupils as they watched the clips.

The participants watched a total of 96 clips that portrayed intentional harm, such as someone being shoved, and accidental harm, such as someone being struck accidentally, such as a golf player swinging a club. The clips also showed intentional damage to objects, such as a person kicking a bicycle tire, and accidental damage, such as a person knocking a teapot off the shelf.

Eye tracking revealed that all of the participants, irrespective of their age, paid more attention to people being harmed and to objects being damaged than they did to the perpetrators. Additionally, an analysis of pupil size showed that "pupil dilation was significantly greater for intentional actions than accidental actions, and this difference was constant across age, and correlated with activity in the amygdala and anterior cingulate cortex," Decety said.

The study revealed that the extent of activation in different areas of the brain as participants were exposed to the morally laden videos changed with age. For young children, the amygdala, which is associated the generation of emotional responses to a social situation, was much more activated than it was in adults.

In contrast, adults' responses were highest in the dorsolateral and ventromedial prefrontal cortex areas of the brain that allow people to reflect on the values linked to outcomes and actions.

"Whereas young children had a tendency to consider all perpetrators malicious, irrespective of intention and targets (people and objects), as participants aged, they perceived the perpetrator as clearly less mean when carrying out an accidental action, and even more so when the target was an object," Decety said.

Joining Decety in writing the paper were Kalina Michalska, a postdoctoral scholar, and Katherine Kinzler, an assistant professor, both in the Department of Psychology.

Provided by National Science Foundation

Citation: Moral responses change as people age (2011, June 3) retrieved 2 May 2024 from <https://medicalxpress.com/news/2011-06-moral-responses-people-age.html>

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