Self-centered kids? Blame their immature brains

March 7 2012

A new study suggests that age-associated improvements in the ability to consider the preferences of others are linked with maturation of a brain region involved in self control. The findings, published by Cell Press in the March 8 issue of the journal *Neuron*, may help to explain why young children often struggle to control selfish impulses, even when they know better, and could impact educational strategies designed to promote successful social behavior.

Human social interactions often involve two parties who want to maximize their own outcomes while reaching a mutually satisfactory result. It is generally accepted that over the course of childhood behavior shifts from a more selfish focus to an increased tendency to consider the benefits to others. However, little is known about age-related changes in this type of "strategic social behavior" or the underlying neuronal mechanisms.

Researchers from the Max-Planck Institute for Cognitive and Brain Sciences in Leipzig conducted behavioral and brain-imaging studies comparing children of different ages as they engaged in two carefully constructed games called "The Dictator Game" and "The Ultimatum Game." In the Dictator Game, children were asked to share a reward with another child who could only passively accept what was offered. In the Ultimatum Game, the recipient had to accept the offer or neither child received a reward. Therefore, the games differed in the demand for strategic behavior for the child making the offer.

"We were interested in whether children would share more fairly if their counterparts could reject their offers, and to what extent strategic behavior was dependent on age and brain development," explains lead study author, Dr. Nikolaus Steinbeis. "We observed an age-related increase in strategic decision making between ages 6 to 13 years and showed that changes in bargaining behavior were best accounted for by age-related differences in impulse-control abilities and underlying functional activity of the left dorsolateral prefrontal cortex, a late-maturing brain region linked with self control," explains Dr. Steinbeis.

The results suggest that egocentric behavior in children may not be a function of an inability to know "fair" from "unfair," but is instead due to an immature prefrontal cortex that does not support altruistic behavior when faced with a situation that has a strong self-serving incentive. "Our findings represent a critical advance in our understanding of the development of social behavior with far-reaching implications for educational policy and highlight the importance of helping children act on what they already know," concludes Dr. Steinbeis. "Such interventions could set the foundation for increased altruism in the future."

More information: Yuen et al.: "Repeated Stress Causes Cognitive Impairment by Suppressing Glutamate Receptor Expression and Function in Prefrontal Cortex." DOI:10.1016/j.neuron.2011.12.027

Provided by Cell Press