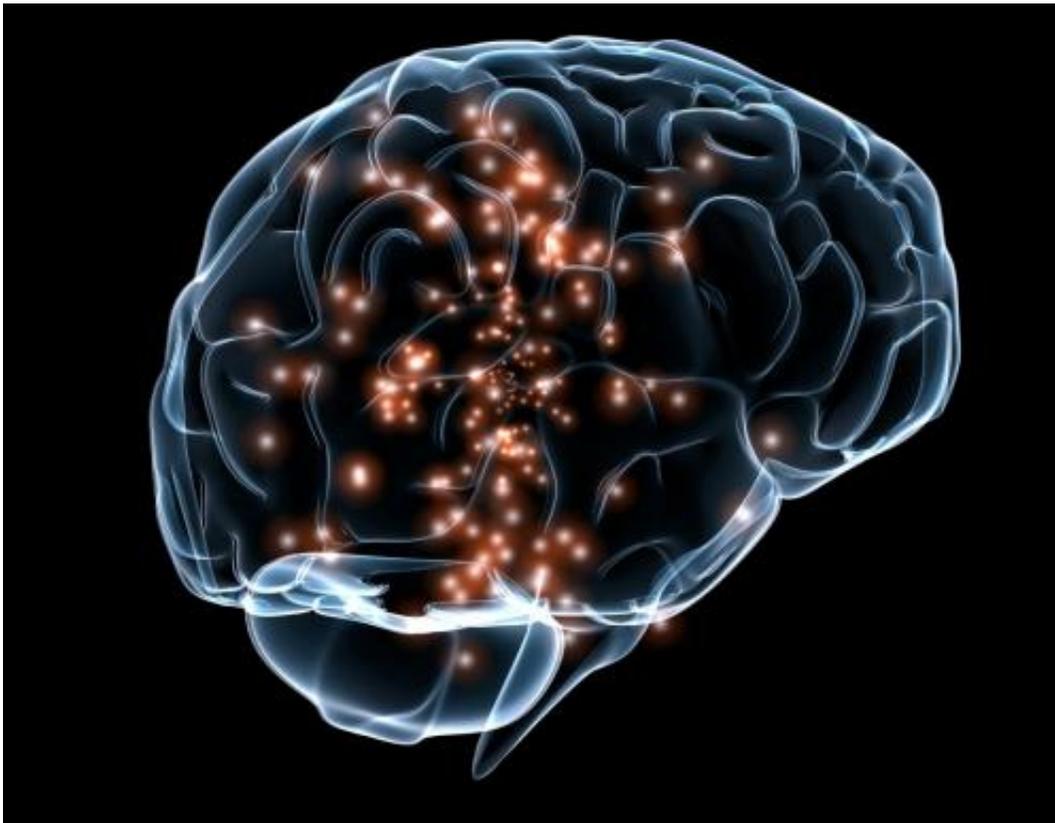


Early childhood stress affects brain's response to rewards

October 19 2015



Credit: Wikimedia Commons

A Duke University-led study has pinpointed how early childhood stress affects the adult brain's response to rewards. Their findings suggest a possible pathway by which childhood stress may increase risk of depression and other mental health problems in adulthood.

Many studies have connected early life stress to later [mental health issues](#) for adults, but little is understood about the reasons for this connection. The new study published in the current issue of *Social Cognitive and Affective Neuroscience* used functional magnetic resonance imaging (fMRI) to examine the relations between early life stress and reward-related brain activity in adults.

Participants in the study were closely monitored beginning in kindergarten and then were scanned using brain imaging when they were adults. The participants were all part of the Fast Track Project, which in 1991 began tracking how children developed across their lives.

For this new study, researchers focused on the levels of stress that 72 subjects were exposed to early in development. At age 26, the study participants completed an experimental game to assess how their brains processed rewards and positive feedback. The scientists focused on reward-related activity in an area of the brain known as the ventral striatum, measured using fMRI.

"We found that greater levels of cumulative stress during childhood and adolescence predicted lower reward-related ventral striatum activity in adulthood," said study lead author Jamie Hanson, a postdoctoral researcher at Duke's Center for Child and Family Policy and the Duke Department of Psychology and Neuroscience.

Hanson and colleagues found that early stress, specifically between kindergarten and grade three, was most strongly associated with muted responses to rewards in adulthood. Previous studies have identified this type of brain activity as a marker for increased risk of depression and anxiety.

"In participants with the greatest levels of early stress, we saw the lowest levels of activity in the ventral striatum in response to a reward," Hanson

said.

"We think reward-related [ventral striatum](#) activity is an important marker of mental health," Hanson explained. "Past studies have focused on the processing of threat and negative emotion after early stress. Generating positive emotions may potentially buffer some of the effects of stress."

The researchers say that a variety of [early life](#) stresses may affect whether children or not will grow up to be at risk for [mental health problems](#). They add that further work in this area may lead to the development of new interventions that will help prevent negative [mental health](#) outcomes after childhood [stress](#)

More information: Jamie L Hanson et al. Cumulative Stress In Childhood is Associated with Blunted Reward-Related Brain Activity In Adulthood, *Social Cognitive and Affective Neuroscience* (2015). [DOI: 10.1093/scan/nsv124](#)

Provided by Duke University

Citation: Early childhood stress affects brain's response to rewards (2015, October 19) retrieved 3 January 2023 from <https://medicalxpress.com/news/2015-10-early-childhood-stress-affects-brain.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--