

Facial expressions have greater impact on kids with bipolar disorder

November 26 2007

Children with bipolar disorder respond differently to facial expressions than children without psychiatric disorders, according to a new study led by a Bradley Hospital researcher.

These findings provide additional insight into the neurobiology of pediatric bipolar disorder. The study is published in the November issue of the journal *Bipolar Disorders*.

“Although we know a great deal clinically about bipolar disorder in kids, our understanding of its neurobiology is quite limited, making it difficult to design targeted treatments,” said lead author Daniel P. Dickstein, M.D., director of the pediatric mood, imaging and neurodevelopment program at Bradley Hospital. “We used neuroimaging technology to study the brain-behavior interactions of children with bipolar disorder in hopes of shedding some light on this relatively unknown area.”

Dickstein, who is also an assistant professor of psychiatry and human behavior at The Warren Alpert Medical School of Brown University, led this research while with the National Institute of Mental Health.

The study included 23 children with bipolar disorder and 22 typically developing children without psychiatric disorders between the ages of 7 and 17. Dickstein and his team used functional magnetic resonance imaging (MRI), a non-invasive technique that localizes regions of the brain activated during cognition and experience, to scan the children while they “encoded” different facial expressions.

During the MRI scan, the children viewed photos of 32 different actors – eight actors each displaying one of four emotions (angry, fearful, happy and neutral) – from standard gray-scale photograph sets of facial expressions. After seeing the photos four times, they rated each face by answering questions such as “How afraid are you” “How hostile is the face” and “How wide is the nose”

Thirty minutes after the MRI scan, children were given a surprise out-of-scanner memory task, during which they viewed 48 actors (half of which were seen previously during the MRI and half that were not previously viewed). They were then asked whether they recalled seeing the face during the earlier test.

During the encoding of “happy” faces, researchers observed increased activity in the region of the brain (striatum) associated with rewards in the children with bipolar disorder. Increased activity was also found in the part of the brain (orbitofrontal cortex) linked to irritability when the same children encoded “angry” faces. Brain activity in both instances was significantly greater than in children without bipolar disorder.

Based on the number of correct identifications during the memory task, Dickstein and colleagues also found that children with bipolar disorder demonstrated reduced memory for emotional faces as compared to children without bipolar disorder – particularly with "fearful" faces.

“This study suggests a neural basis for mania in children, which typically involves unusually irritable or excessively happy moods, and raises questions about whether treatments, therapy or medication could address these brain changes,” Dickstein said.

The authors say further research is required to determine the impact of mood state, medication and the presence of an additional illness, such as attention deficit hyperactivity disorder, on these findings.

Source: Lifespan

Citation: Facial expressions have greater impact on kids with bipolar disorder (2007, November 26) retrieved 26 April 2024 from <https://medicalxpress.com/news/2007-11-facial-greater-impact-kids-bipolar.html>

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