

# Children with fragile X syndrome have a bias toward threatening emotion

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Credit: Robert Kraft/public domain

Anxiety occurs at high rates in children with fragile X syndrome (FXS), the most common form of inherited intellectual disability. Children with co-occurring anxiety tend to fare worse, but it can be hard to identify in infants. A new study in *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* reports that infants and children with FXS show bias

toward threatening emotion, rather than positive emotion, a pattern highly linked with anxiety. The study was led by Dr. Susan Rivera of University of California, Davis. The findings may help develop a marker to identify anxiety in FXS patients and open avenues for future treatment options.

In the study, first author Jessica Burris and colleagues studied attention to emotional faces in 47 children with FXS, ranging from several months to about 5.5 years old, compared with typically developing children. The researchers tracked eye gaze while the participants viewed pairs of face images that were presented very briefly, followed by a probe image on the same side as one of the faces. By comparing how quickly a participant fixated on the probe when it replaced an emotional (angry or happy) face versus a neutral face, they were able to calculate a "vigilance" or bias towards emotional faces.

"We demonstrate for the first time that young children with FXS show a significantly greater bias towards threatening than positive emotions than do typically developing children," said Rivera. Typically developing children showed a bias toward happy faces that was not apparent in the children with FXS.

"The results of this study by the Rivera lab are highly interesting because anxiety is a prominent aspect of the fragile X clinical presentation and the bias toward threatening information in these subjects parallels those seen in other clinical groups with prominent anxiety," said Dr. Cameron Carter, Editor of *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*. "While we cannot presume that this reflects a common neurobiological substrate for anxiety disorders (though this could be the case), it does seem that this is the case at a cognitive mechanistic level," he added.

Studying attentional bias in infants and children, particularly those with

neurodevelopmental disorders, has been difficult in the past because of the challenging procedures required by typical neuroimaging techniques. But the design of this study using passive viewing of images solved this problem. "These data support the utilization of eye tracking methodology to index neural and attentional responses in young children with FXS and other atypically developing populations," said Rivera.

According to Rivera, the findings provide a target for treatment of anxiety in FXS through the modification of attention [bias](#) toward positive emotion rather than threat, which has been shown to work in children with symptoms of [anxiety](#).

**More information:** Jessica L. Burris et al. Children With Fragile X Syndrome Display Threat-Specific Biases Toward Emotion, *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging* (2017). [DOI: 10.1016/j.bpsc.2017.06.003](#)

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