

NEWS

In autism, food quirks show up in social brain areas

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Young adults with autism who have intense sensitivity to taste show increased activation in social areas of the brain when they taste something sweet or look at pictures of food.

The results suggest that taste sensitivity and social difficulties in autism involve similar areas of the brain.

Researchers presented the unpublished findings today at the **2017 Society for Neuroscience annual meeting** in Washington, D.C.

Many **children with autism are picky eaters** and are reluctant to try new foods. These tendencies can be difficult for families to handle and are poorly understood. Previous work has suggested that there are no differences in the taste buds of people with autism and controls. Where these unusual responses to food arise in the brain is a mystery.

“There was no imaging research on these sensitivities,” says **Cameron Riddell**, a post-baccalaureate intramural trainee in **Alex Martin**’s lab at the National Institute of Mental Health in Bethesda, Maryland, who presented the work.

Riddell and his colleagues scanned the brains of 17 men with autism and 20 male controls while they received doses of sugar water on their tongue. The participants were all around 20 years old.

In both groups, the sweet liquid activates two neighboring areas of the brain called the anterior and mid insula. “That’s what we were expecting, because that’s the primary taste center in the brain,” says Riddell.

Among individuals with autism, those who score higher on a questionnaire measuring sensitivity to smells and tastes also show greater activation of the anterior and mid insula in response to the

sugar water than do those who score lower.

Among controls, there is no relationship between the scores and activation of the brain's taste center.

Tasty treats:

The researchers looked at the scans to see if activation in any other areas in the brain tracks with taste sensitivity.

They identified five regions that show a relationship, including the superior temporal sulcus, which is involved in processing social information, and the fusiform gyrus, the brain's face detector.

All five regions show increased activation with greater taste sensitivity in people with autism.

"There's this relationship between self-reported taste sensitivity and all these brain regions that have previously been implicated in autism," Riddell says.

Among controls, the relationship is the opposite: Those with greater taste sensitivity show less activity in these five brain regions in response to sugar water.

Testing other tastes such as bitter and umami could help confirm the results. "Sweet is associated with reward, so there could be some reward processing going on," Riddell says.

The researchers also recorded brain activity while the participants looked at pictures of food or non-food-related objects such as a wrench or a paintbrush.

In the autism group, the same five brain areas show a greater response to food pictures in those with more intense taste sensitivity. "It's not just unique to tasting food but more food on a conceptual level in the brain," Riddell says.

Among controls, this relationship is again reversed, with greater taste sensitivity associated with weaker response to food pictures in these areas of the brain.

For more reports from the 2017 Society for Neuroscience annual meeting, please [click here](#).