NEWS

Looking directly in the eyes engages region of the social brain

BY **SARAH DEWEERDT**

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The social brain has a sweet spot that activates when people look each other directly in the eyes but not when they look at eyes in a video.

Researchers presented the unpublished work yesterday at the **2019 Society for Neuroscience annual meeting** in Chicago, Illinois.

Eye contact is key to social interaction, says study leader **Joy Hirsch**, director of the Brain Function Laboratory at Yale University. “Eye contact opens the gate between two perceptual systems of two individuals, and information flows.”

People with autism often **avoid eye contact**. But isolating what happens in the brain during eye contact is tricky because the studies typically involve a person lying alone in a scanner. Some researchers are beginning to find creative ways to capture brain responses during **real-life social interactions**.

Hirsch’s solution to the problem is functional near-infrared spectroscopy (fNIRS). In this method, participants wear a cap embedded with light-detecting sensors that measure blood flow, a proxy for neural activity in the outer layer of the brain.

The team first recorded brain activity in people sitting across from each other at a table. A recorded tone prompted each participant to make eye contact with their partner and to then shift their gaze to the side for three seconds at a time[1]. The participants repeated these steps, but this time with a face on a video screen.

Smart setup:

In a second experiment, participants looked at each other through a panel of ‘smart glass.’ They

listened to a recorded story while making natural facial expressions, including frequent eye contact, in response to the narrative. Meanwhile, the smart glass switched from clear to occluded on a 15-second cycle.

The researchers also recorded brain responses while the participants watched a face in a video or looked at a blank screen for 15 seconds at a time. They have data from 30 people for the 3-second experiment and from 16 people for the 15-second one.

In both experiments, live eye contact activates areas of the right temporal parietal junction more strongly than when people look at eyes on a screen. The region is known to be “a nexus of social sensitivity,” Hirsch says.

The researchers combined the 15-second imaging data with **eye-tracking** data and found that direct, simultaneous eye contact activates areas associated with high-level visual processing, as well as a part of the temporal parietal junction called the right angular gyrus.

The more often a person makes direct eye contact, the stronger the signal in the right angular gyrus. “That's pretty good evidence — when you poke it and it jumps, and you keep poking it and it jumps higher — that you're on to a causal relationship,” Hirsch says.

The researchers are conducting the three-second version of the experiment in autistic adults.

*For more reports from the 2019 Society for Neuroscience annual meeting, please **click here**.*

REFERENCES:

1. Hirsch J. *et al. Neuroimage* **157**, 314-330 (2017) **PubMed**