



Close Ad X



SCIENCE/TECH

Do You See What I See? Brain's Tracking System Uses 'Ensemble Coding' To Follow Crowd's Gaze

Aug 19, 2014 04:37 PM

By
Chris Weller



Gaze-tracking ability is something nearly all humans are born with, but new research could help illuminate the challenges of autism. *Allen Skyy, CC BY*

2.0

Comment

0 9

email more

Even without the introductory “Look!,” psychology says you’d still be able to pick up that flying high above was not, in fact, a bird or a plane but Superman himself. Our brains have evolved the uncanny ability to track people’s gazes, and new [research](#) says the more people, the merrier.

Almost instinctually, if a group of people turns its collective gaze in one direction, you’ll follow suit. Why? Psychologists call it “ensemble coding.” Much in the same way you see a tree as a solid object, rather than a dense network of branches and leaves, your brain sees a crowd of people (an ensemble) and processes it (coding) as one unit. One person turns to look over your shoulder, and you don’t bat an eye. Twenty people look over your shoulder, and you’d better turn around.

According to psychology researcher Timothy Sweeny, of the University of Denver, “this highlights the importance of group behavior in human experience.” The notion of a “group” is so fundamental to our flourishing as a species “that we have, in fact, evolved dedicated

brain processes to perceive them,” he said in a [press release](#).

Sweeny and his co-researcher David Whitney, from the University of California, Berkeley, wanted to learn more about ensemble coding and what sort of visual “gist” people get when they look at crowds. They had people look at a crowd of 16 computer-generated faces and asked them, after showing the crowd for only a fifth of a second, where they thought the crowd was looking. Sometimes people looked at four people at a time, others only one or two.

There wasn’t enough time, Sweeny and Whitney explain, for participants to look at each crowd member’s gaze individually. To answer correctly, they had to get the gist of the gaze. And with each added face in the crowd, the researchers found their hypothesis proved truer. Ensemble coding improved, which meant gaze-tracking improved.

“Even though there wasn’t enough time to inspect the individuals, the participants were still able to see the gist of what the entire crowd was doing, as a group,” Sweeny said. “These findings suggest that many of our complex social behaviors are actually rooted in basic visual processing.”

It makes sense that our visual systems are tied up in what other people are doing. Sure, we meddle. But sometimes meddling is what keeps us safe. One pair of eyes — one data point — isn’t convincing enough to get us looking one way or another. The tipping point comes when we notice groups of other people looking at something, because that implicitly tells us that that something is *worth* looking at, whether it’s a caped superhero or a shark in the water.

In terms of clinical significance, the team believes the greatest benefactor is autism research. Part of the difficulty found in children with autism spectrum disorder (ASD) is getting them to respond correctly to social cues. Kids with ASD frequently miss when their peers express emotion, and physical gestures that would otherwise be obvious go unnoticed.

Gaze-tracking falls squarely in this category of deficiency, and the research team hopes to learn more about which visual systems are directly involved with social group perception. By understanding this interplay, Sweeny speculates they could gain insight into the “broader social functioning in ASD.”

Source: Sweeny T, Whitney D. Perceiving Crowd Attention Ensemble Perception of a Crowd’s Gaze. *Psychological Science*. 2014.

Comment

09

email print more



CHRIS WELLER

Chris is a Senior Reporter at Medical Daily, where he covers brain health and other fun stuff. [read more](#)

MORE IN SCIENCE/TECH

JOIN THE DISCUSSION



Add a comment...

Comment

Facebook social plugin

Sponsored From Around the Web



New "Skinny Pill" Takes Country by Storm



How to Save 50% on Alex & Ani Jewelry



Tricks Car Insurance Agents Don't Want You to Know



Don't Do Botox, Read This




71-Year-Old Outsmarts Botox Surgeon, Looks 47



How to Lose 20lbs of Belly Fat in a Month?

?






Pay-per-mile car insurance.

For those who prefer the bike lane over the traffic.

GET A QUOTE

metromile

- Vitality
- Under the Hood
- Innovation
- The Hill
- The Grapevine
- Weird Medicine
- Conditions

-   
- About Us
- Contact Us
- Advertising
- Privacy Policy
- Terms Of Service