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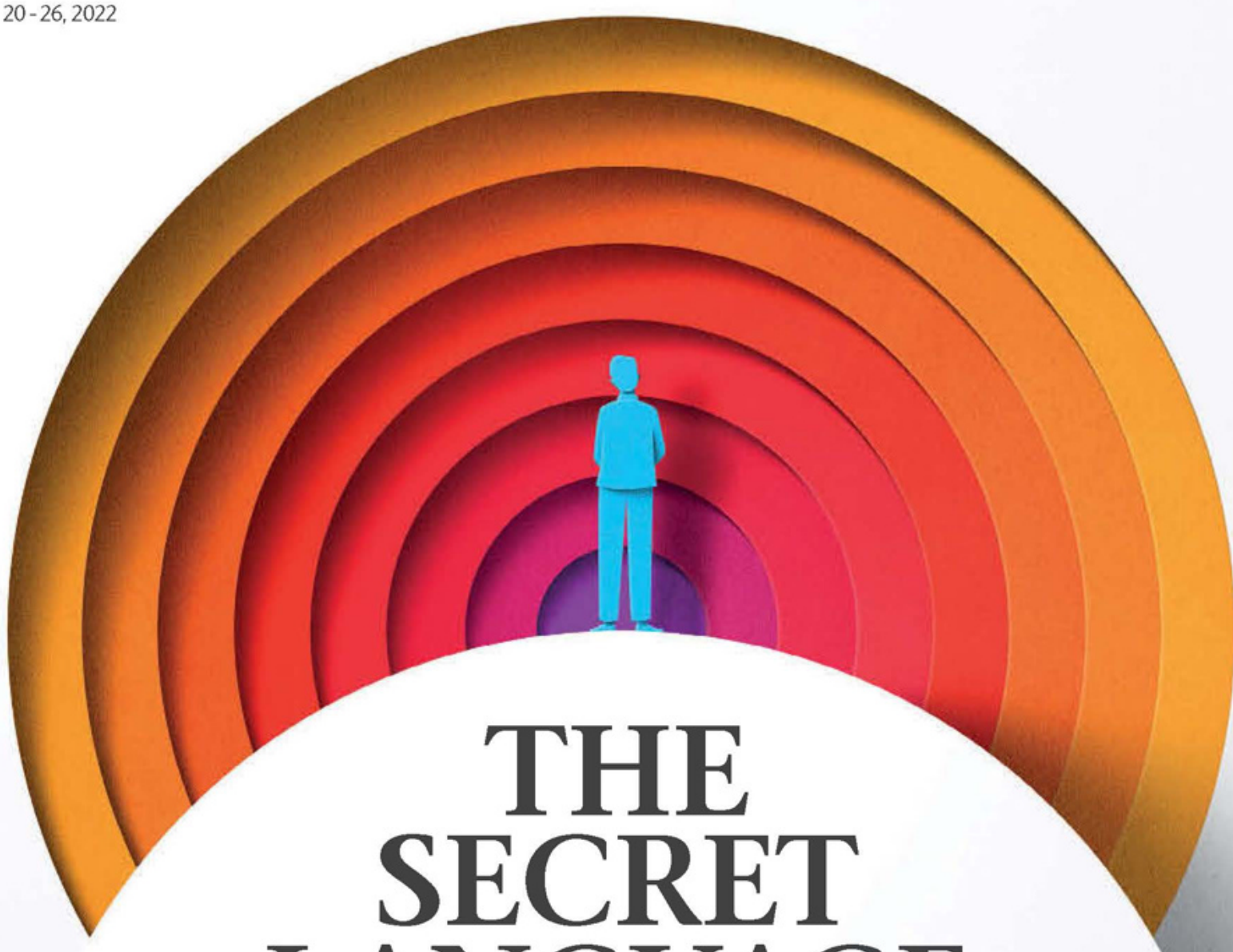

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Memory

People with half a brain recognise words and faces well

Jason Arunn Murugesu

ADULTS who had one half of their brain removed in childhood to treat seizures still recognise faces and words at a reasonably high level.

Marlene Behrmann at Carnegie Mellon University in Pittsburgh, Pennsylvania, and her colleagues wanted to find out how the loss of either brain hemisphere affects our ability to recognise words and faces – word recognition is generally processed in the brain's left hemisphere and face recognition in the right hemisphere.

The team tested 40 people who had the surgery as children for epileptic seizures. The participants were presented with faces with all colour and hair removed. These appeared on a screen for 750 milliseconds. After a 150ms gap, they saw another face for 150ms and were then asked whether the faces were the same.

Word recognition was tested in the same way using similar four-letter words, such as tack and tank. The 40 participants were also age and gender-matched with 58 people who had both hemispheres.

The team thought people with only their right hemisphere would perform better at face recognition, while those with just their left hemisphere were expected to score more highly at word recognition.

Instead, people who had either hemisphere removed had an average accuracy of 86 per cent across both tasks, compared with 96 per cent in the control group (medRxiv, doi.org/h77w). Accuracy like this doesn't occur when damage to brain regions involved in face or word recognition occurs in adulthood.

Daniel Mirman at the University of Edinburgh, UK, says the study suggests the childhood brain is very plastic. "If only one hemisphere's resources are available, then both behaviours will rely on that resource rather than splitting it between the two hemispheres." ▮

Astronomy

Faint galaxies may be closer than they appear with JWST

Leah Crane

THE James Webb Space Telescope (JWST) is performing better than expected, which might be a problem for some of the early results. An update to the telescope's data stream could mean that many galaxies spotted early on aren't as distant as they seem.

Raw data from JWST doesn't come as complete images. Astronomers have to process it to make it usable, which requires understanding the sensitivity of the telescope's scientific instruments. As JWST takes more readings, we get a better sense of that sensitivity. However, the performance of an infrared camera caused the telescope's operators to update its data-processing algorithms in July – well after the first images were released – and threw some astronomers into a tizzy.

"When the first images came out, it was a bit of an 'astronomers at Christmas' scenario with everyone diving in to see what they could find," said Nathan Adams at the University of Manchester, UK, in a statement. "What I think flew under the radar of a lot of astronomers was a part of that report mentions that NIRCam (one of the main cameras on the telescope) was overperforming in its reddest wavelengths."

Astronomers use the colour of an object's light to measure its distance. The faster a galaxy is moving away from us, the redder it appears. Because of the expansion of the universe, this means that the redder a galaxy seems, the more distant it is, a phenomenon that astronomers use to measure distance.

"Some early science from JWST data may be incorrect, especially for the faintest galaxies"

Adams and his colleagues reanalysed some early JWST data after the update and found that some galaxies are actually less red – and so less distant – than they initially appeared (arxiv.org/abs/2207.11217).

"It's potentially a very big deal," says Guido Roberts-Borsani at the University of California, Los Angeles. Some early science coming from JWST data may be incorrect, especially for the faintest galaxies, where distance and luminosity are determined with fewer data points than brighter galaxies. Some faint galaxies may be more than 10 times closer than we thought.

However, that doesn't apply to everything. "This whole clamour of 'oh my god, everything that everyone has written in the last few weeks is wrong, throw it out the window' is really not the case," says Rohan Naidu at the Harvard-Smithsonian Center for Astrophysics. "This is not unexpected, and many researchers made conservative choices in their work to account for it." For bright galaxies, the corrections that need to be made to researchers' calculations may not be all that extreme, he says.

It may even solve a mystery: JWST's first observations seemed to show far more extremely distant galaxies than expected based on models of galaxy evolution. This might be the reason why, said Adams. If those galaxies aren't so far away, the tension between theory and observation evaporates. "This helps with part of the tension, but doesn't completely solve it," says Roberts-Borsani. "There are still these bright monsters at high distances where we don't really expect them to be forming stars like crazy."

More JWST calibrations will come through in the coming months, but they are expected to be less severe, said Adams. For now, astronomers who analysed JWST data before this update are double-checking their conclusions. "Of course, in the long run, we're going to iron all this out," says Naidu. ▮

A JWST image of the Cartwheel galaxy and several other galaxies

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