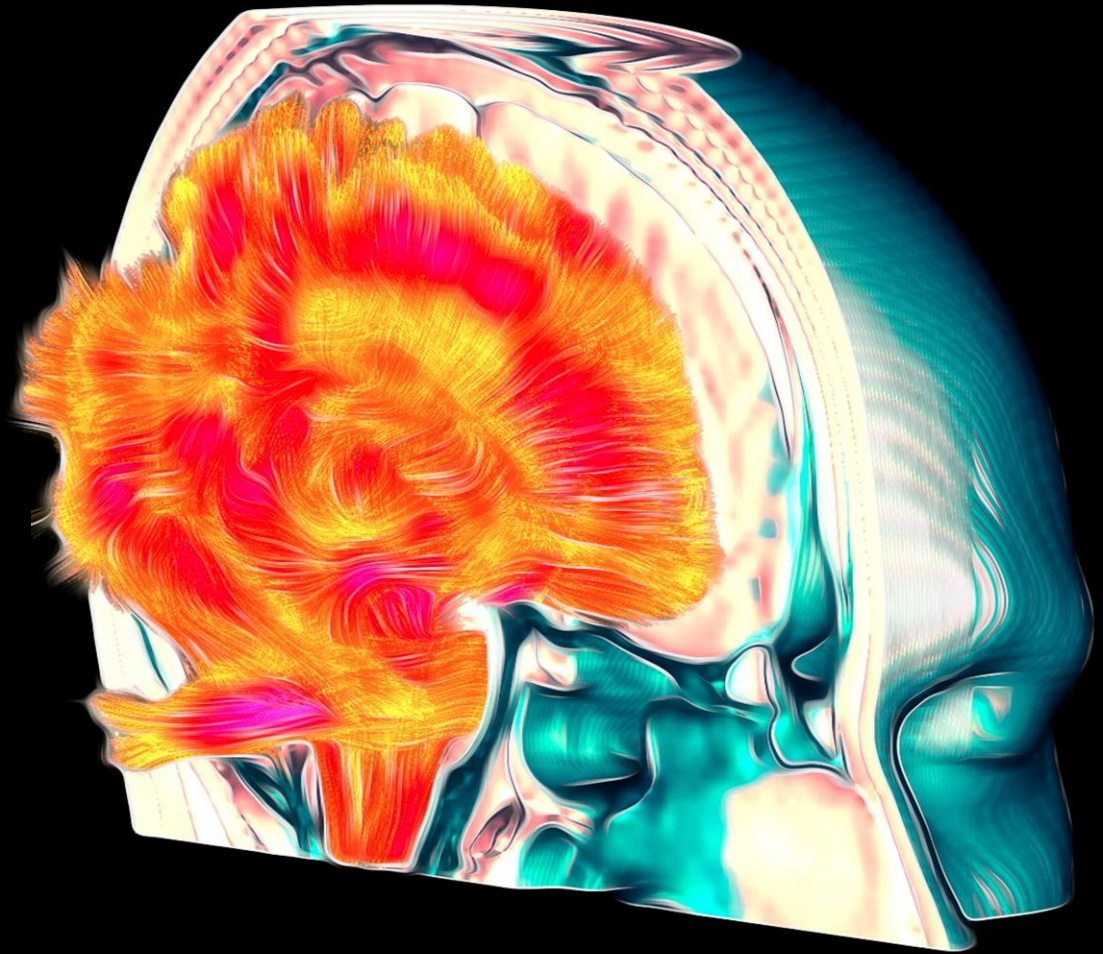


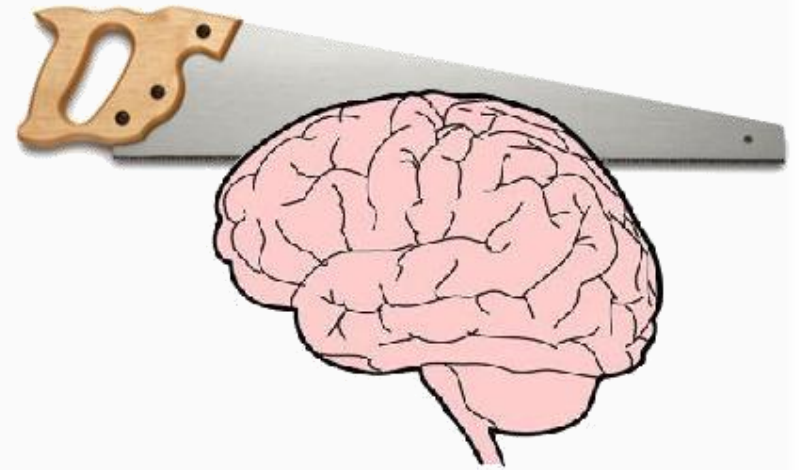
The Story of **AUTISM**

PART 9: **SPLIT BRAIN** **LANGUAGE AND** **THINKING**



The STORY OF AUTISM: Split Brain Language & Thinking

In the late 1950s, Dr. Roger Sperry of the California Institute of Technology pioneered a treatment for epilepsy known as **the split brain procedure**. In order to stop the seizures, doctors surgically sliced through the neural fibers of the corpus callosum literally splitting the brain in half.



The STORY OF AUTISM: Split Brain Language & Thinking

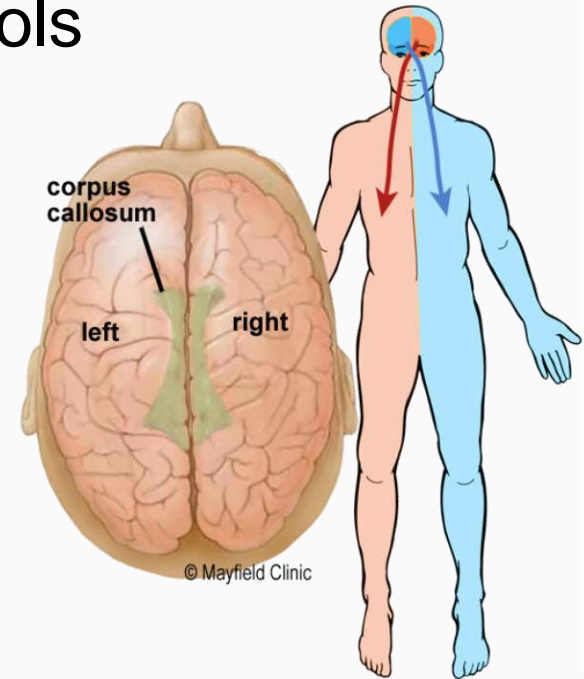
This procedure may sound drastic nowadays but, at the time and right up until the 1980s, this split-brain operation, known as a **corpus callostomy**, was accepted practice.

Dozens of split brain procedures were performed over three decades, and they revealed some remarkable things.



The STORY OF AUTISM: Split Brain Language & Thinking

The first of which was a **disconnection syndrome**. The right hemisphere controls the left side of the body and the left hemisphere controls the right side of the body. So, in patients who have had a complete corpus callostomy, this can give rise to a kind of **split personality**.



The STORY OF AUTISM: Split Brain Language & Thinking

The left hemisphere gives orders that reflect a person's rational goals, whereas the right hemisphere issues conflicting demands that reveal hidden desires.³

So a person might reach for a tempting pastry with the left hand and slap that hand away with the right hand in a continuing struggle to eat healthy.



The STORY OF AUTISM: Split Brain Language & Thinking

One of Dr. Sperry's child patients, Paul, had fully functional language centers in both hemispheres. This allowed the doctor to question each side of his brain.



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When Sperry asked Paul's right brain what he wanted to be when he grew up, he replied "an automobile racer." When he posed the same question to the left brain, however, Paul responded "a draftsman." 4



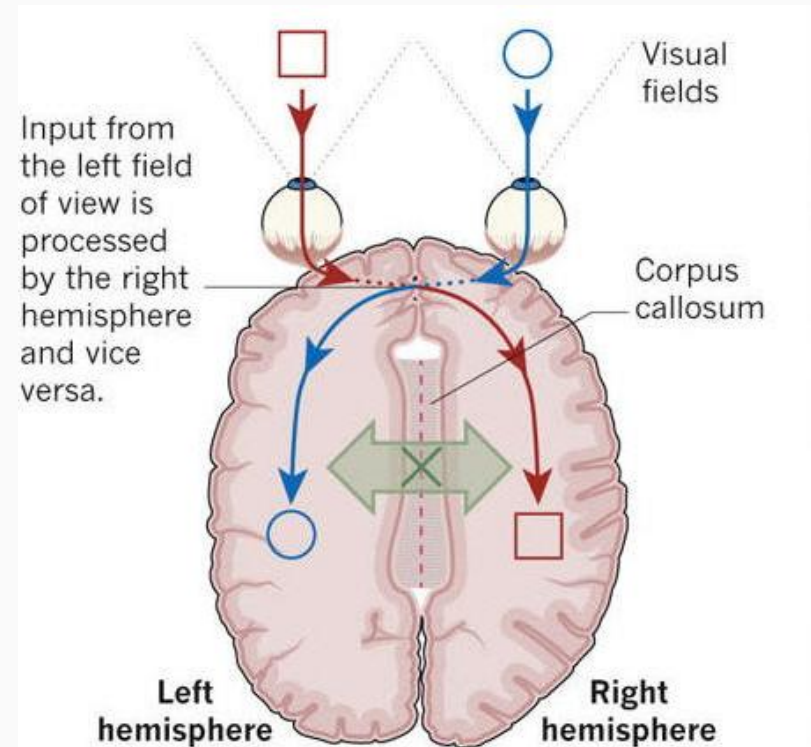
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The real surprise came when Dr. Michael Gazzaniga, head of the cognitive neuroscience program of Dartmouth College, performed a split brain procedure on a woman (Vicky or V.J.) in 1979.



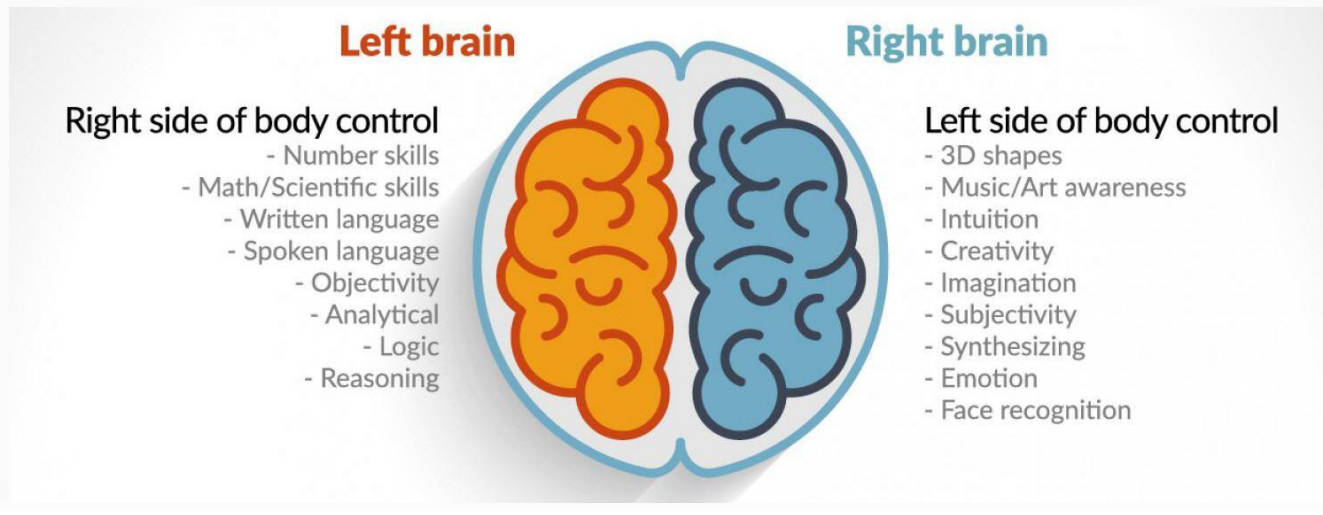
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After she recovered, she discovered that she could no longer write. She could still speak and understand spoken language, but she could not write anything – not even her name.



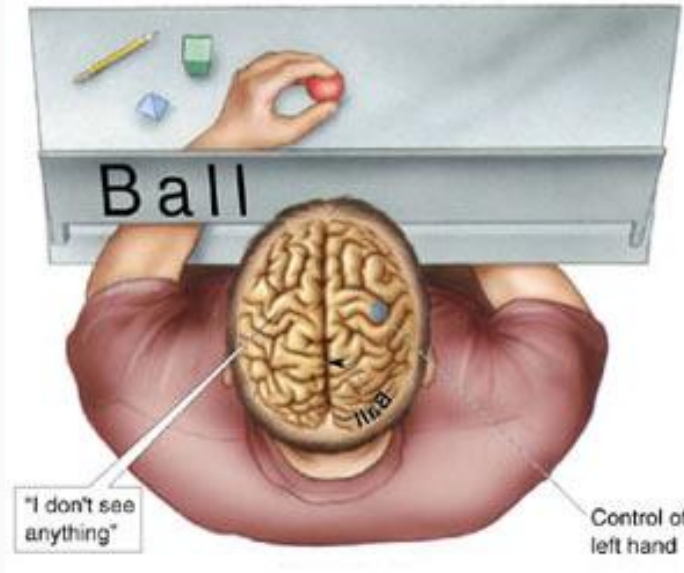
The STORY OF AUTISM: Split Brain Language & Thinking

This surprised her doctors because, up until that time they had assumed that **all the language functions - speech, reading and writing - were grouped together and located in the left brain.**



The STORY OF AUTISM: Split Brain Language & Thinking

The fact that Vicky had lost the ability to write showed that this function was disconnected from the others. So they tried an experiment.

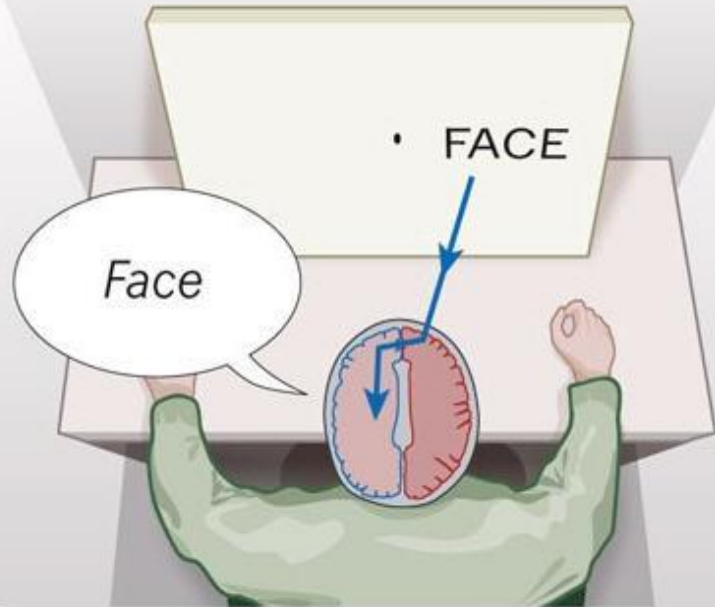


The STORY OF AUTISM: Split Brain Language & Thinking

Vicky was put in front of a screen onto which words - nouns, verbs and adjectives - were flashed to each side of her brain independently. Her hands rested below the screen, shielded so that her eyes could not see them. Each hand held a pen over a tablet of paper. 5

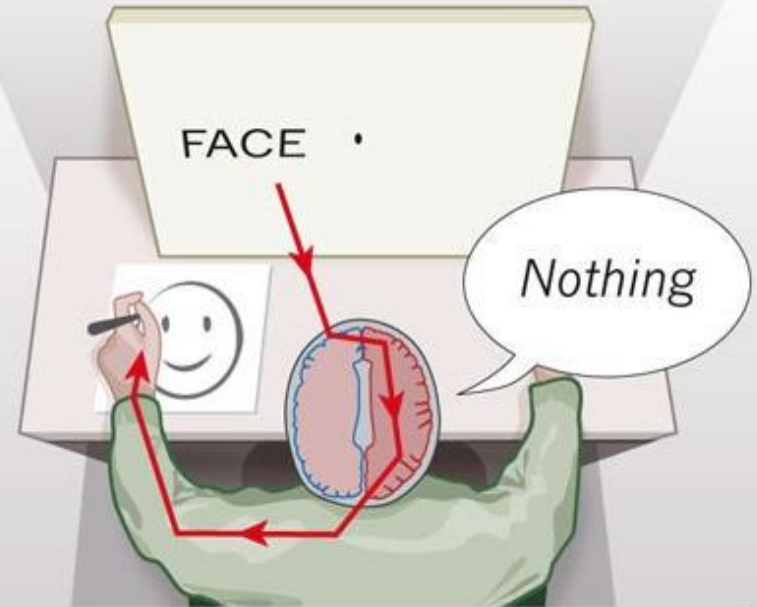


A word is flashed briefly to the right field of view, and the patient is asked what he saw.



Because the left hemisphere is dominant for verbal processing, the patient's answer matches the word.

Now a word is flashed to the left field of view, and the patient is asked what he saw.



The right hemisphere cannot share information with the left, so the patient is unable to say what he saw, but he can draw it.

The STORY OF AUTISM: Split Brain Language & Thinking

When a word was shown to the left hemisphere - the one with spoken language - she could read the word and spell it out loud, but she could not write it down. However, when words were shown to the right hemisphere, although could not read, speak or spell the words, she had no difficulty writing them down.⁶



The STORY OF AUTISM: Split Brain Language & Thinking

The researchers concluded that Vicky's left hemisphere controlled her speech and reading, but not writing.



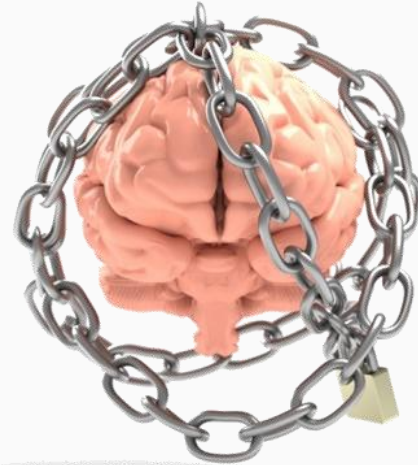
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Further split brain testing confirmed that **there are clearly, in some people, separate areas in the brain for oral language and written language and it is entirely possible to communicate one thing vocally and entirely different thing in writing.**⁷



The STORY OF AUTISM: Split Brain Language & Thinking

The implications of this are HUGE, especially when it comes to the communication challenges of people with autism. They may well have a lot more language locked up in their brains that we have been giving them credit for.



The STORY OF AUTISM: Split Brain Language & Thinking

FOOTNOTES:

3. <https://www.psychologytoday.com/us/blog/the-superhuman-mind/201303/the-brain-the-real-rain-man>

4. <https://www.psychologytoday.com/us/blog/the-superhuman-mind/201303/the-brain-the-real-rain-man>

5. <https://www.sciencemag.org/news/1998/05/split-brain-separates-writing-speech>

6. <https://www.sciencemag.org/news/1998/05/split-brain-separates-writing-speech>

7. <https://www.nature.com/news/the-split-brain-a-tale-of-two-halves-1.10213>

GO ON TO THE NEXT PRESENTATION

