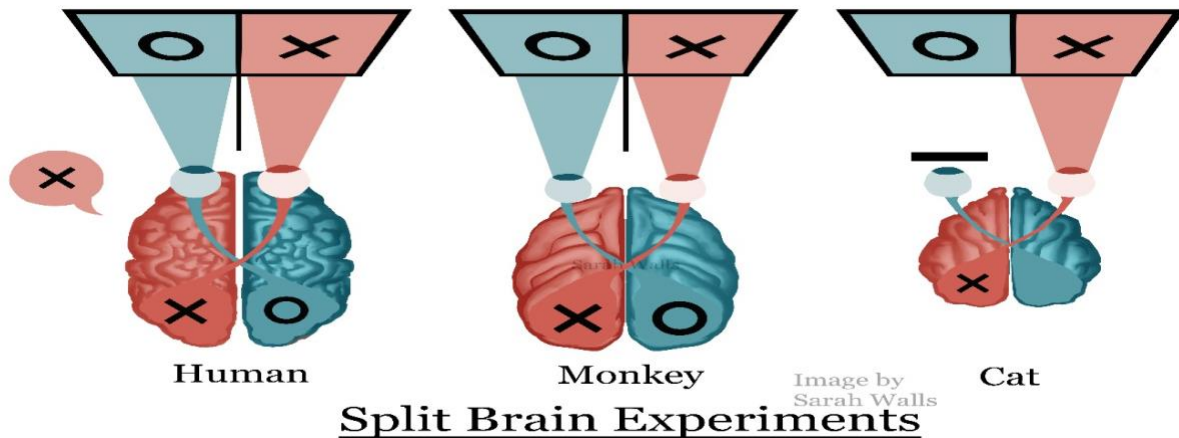


The Unnerving Reality About Human Consciousness - A Neuroscience Perspective



Human consciousness, a subject of controversy and discourse, has long captivated philosophers and scientists alike, from the age-old mind and body debate to the nature of consciousness, while philosophical probes limit one onto their abstract nature, a neuroscience perspective can perhaps offer a plausible insight. By dissecting the peculiar case of split brain patients this article attempts to explore the neuroscience of consciousness

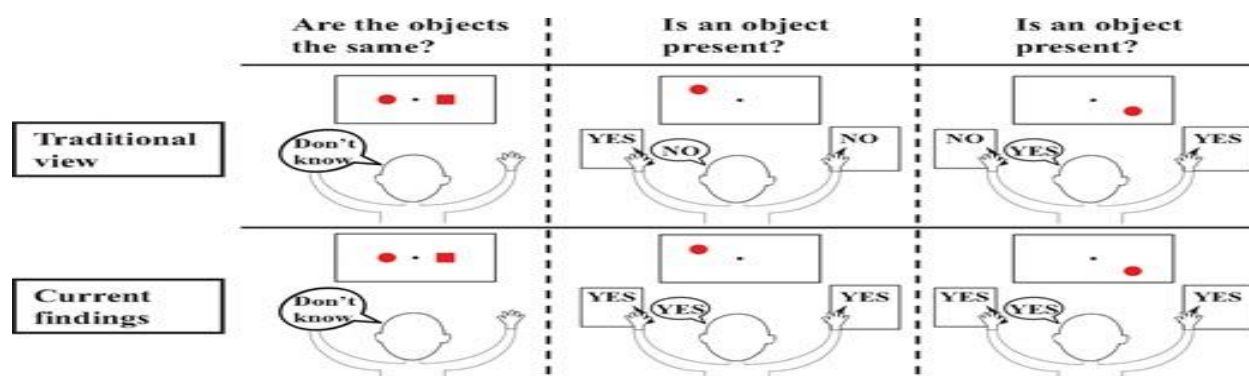
In the 20th century, a group of doctors severed a patient's brain into two halves, as a form of treatment for severe epilepsy. The term split-brain arises from patients who undergo surgical incision of the corpus callosum. Due to the radical and invasive nature and easy access to drug treatment, it's mostly abandoned today. Nevertheless, this surgical procedure at the time not only improved the lives of many but also caused a huge revelation in unravelling secrets of the human consciousness; or so we thought.

It was hypothesised by Bayne and Chalmers 2003 that the neurotypical human experience is "unified", that the subject of unity is present in all the experiences generated in a system belonging to one subject. In other words, if a system contains a

first-person perspective, then subject unity is preserved if that system only contains one such perspective. I mean, that's what makes sense right?

However, in the case of split-brain patients, their consciousness was not unified in the way it is of neurotypical individuals; they'd adopted *conscious duality*, according to which there are two conscious beings within a split-brain patient, each associated with one hemisphere. Supporting the [Global Workspace Theory of consciousness](#).

One famous case is of Joe's, whose corpus callosum was cut to reduce epileptic seizures. But little did we know there was something interesting happening within Joe's head. He was shown a hammer on his right side (left hemisphere) and a handsaw on his left side (right hemisphere). And when he was inquired on what he saw, he verbally reported seeing a hammer, but when asked to draw what he saw his left hand (controlled by the right hemisphere). He drew the handsaw, in contrast to Joe's language-dominant (left hemisphere) fabricated a story to make sense of the inconsistencies this discrepancy highlights *Anosognosia*. Sperry(1966) quoted this phenomenon as "two aware and autonomous minds within the same cranium, each with its own feelings, views and conception patterns."



Variability in Split-Brain Cases

In spite of the split-brain research being replicated, this area is largely split. Recent studies have revealed findings exposing the confounding variables found in the Sperry 1957-1975 as the result actually depended on the varying degrees of colossal sectioning being the cause, showing the lack of generalisability, going against the [Global Workspace Theory of consciousness](#).

Additionally, Pinto and colleagues, in their paper “Split brain: divided perception but undivided consciousness,” presented evidence that some patients might still respond verbally to stimuli processed by the non-dominant hemisphere, contrary to earlier beliefs. Experiments with patient DDC revealed that, despite the severed communication between hemispheres, DDC was able to consciously perceive and localise stimuli across both visual fields, regardless of response type. This finding supports the [The Recurrent Processing Theory](#) further complicating the initial generalization of Sperry’s findings, raising more questions about the extent to which the split influences consciousness.

Recent insights from Haan et al. (2020) show that it's still unclear whether split-brain patients have one or two conscious agents. One possibility is that each hemisphere acts like its own agent with separate experiences, but they assemble their actions. Another possibility is that there is one agent who receives information in a fragmented way, like watching a movie where the sound and picture don't match up.

Further backed up from the findings from Gray (2002) and Wolman (2012) show that even if patients say they don't see something in one visual field, their left hand can still draw it accurately. This suggests that their actions are coordinated, but it might depend on the complexity of the task.

Despite the lack of communication between the hemispheres, patients seem to maintain some level of conscious awareness. This means they may not fully realise the split between their hemispheres, which affects how they respond to stimuli.

The mind-scratching part of whether each hemisphere of a split-brain individual supports as an independent conscious agent remains unsolved. Hence, further research is needed to clarify and fill in this huge research gap. Analysing and using contemporary tech like brain modelling and employing event-related potentials (ERPs) to assess concurrent conscious processing across hemispheres could offer further insights.

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