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Strangely Familiar

Researchers are starting to pin down what d¿j¿ vu is and why it arises. But have you read this already? Maybe you just can't remember

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You're driving down the bustling main street of a picturesque little town you have never visited before. The traffic light turns red, you stop, and an old lady steps into the crosswalk from the left. All of a sudden you are overcome with a feeling that you have been here before--in the same car, at the same crosswalk, with the same woman stepping off the curb in the same way. Yet by the time she reaches your front bumper, you realize the scene no longer matches quite so well with what you thought you were recalling. And you do know you have not been here previously. The familiarity is broken.

Various studies indicate that 50 to 90 percent of us can recall having had at least one such déjà vu incident in our lives. We experience a vague sense of having encountered a situation before, identical in every detail, even though we can't say when the first event took place. Usually the sensation lasts only a few seconds. Teens and young adults stumble on the dreamlike state more often than older adults, yet people of all ages experience déjà vu, especially when they are either fatigued or overly aware because of stress. A few people sense the inverse of déjà vu, called jamais vu. When they encounter a familiar person or place, they nonetheless insist they have never seen the individual or scene before.

The term "déjà vu"--French for "seen already"--may have first been used in 1876 by French physician Émile Boirac. For much of the 20th century, psychiatrists espoused a Freudian-based explanation of déjà vu--that it is an attempt to recall suppressed memories. This "paramnesia" theory suggests that the original event was somehow linked to distress and was being suppressed from conscious recognition, no longer accessible to memory. Therefore, a similar occurrence later could not elicit clear recall yet would somehow "remind" the ego of the original event, creating an uneasy familiarity.

Many who have experienced déjà vu share the conviction that the phenomenon must arise from some mystical power or as a sign of a past life and reincarnation. They reason that because logical thought and clear perception reign immediately before and after an episode, some paranormal force must be the only plausible explanation.

Scientists, unsatisfied with such conjecture, have long sought clues about the physical causes behind déjà vu, but investigation has proved elusive, because déjà vu never announces itself in advance. Scientists have been forced to rely mostly on the recollections of test subjects. But enough accounts have been examined to allow experts to start defining what déjà vu is and why it arises.

Not Hallucination

One place to start is to distinguish déjà vu from other unusual perceptual experiences. The

scenes are not hallucinations, for example, which involve heightened awareness of visual, auditory or other sensations triggered by internal brain imbalances, whether from mental illness or narcotics such as LSD. Fausse reconnaissance--"false recognition" or "false memory"--is not the same either; this condition often appears during a phase of schizophrenia and can drag on for hours.

Patients who suffer from temporal lobe epilepsy also have experiences that resemble déjà vu. For example, a young male patient in Japan was convinced that he was constantly reliving several years of his life and marriage. Desperate to escape the cycle, he repeatedly tried to commit suicide. But this phenomenon differs from déjà vu in a distinct way: a person with temporal lobe epilepsy firmly believes his experience is identical to a past situation, whereas during déjà vu a person quickly recognizes it as illusionary and unreasonable.

A survey we conducted several years ago with more than 220 students at the Martin Luther University of Halle-Wittenberg in Germany showed that after they had experienced déjà vu, 80 percent of the respondents were able to recall a past event that was indeed similar in nature--an event they had forgotten. In line with this study, cognitive psychologists have shifted their attention to another unconscious process, that which is responsible for so-called implicit, or nondeclarative, memories. These are artifacts that we have long forgotten and do not retrieve consciously, although they have not been erased from our neural networks. Consider seeing an old cupboard at a flea market, and suddenly it seems strangely familiar, as does the act of viewing it. What you may have forgotten--or, rather, cannot retrieve--is that when you were a young child, your grandparents had a cupboard just like this one in their home.

A related theory implies that we may perceive a person, place or event as familiar if at some earlier time in our lives we were exposed to just a partial aspect of the experience, even if it was within a different context. Perhaps, when you were young, your parents stopped at a flea market while on vacation and one vendor was selling old kitchen cupboards. Or perhaps you smell an odor that was also present at that flea market you attended as a child. A single element, only partially registered consciously, can trigger a feeling of familiarity by erroneously transferring itself to the present setting.

Insufficient Attention

These assumptions, which are founded on the unconscious processing of information, ultimately place responsibility for déjà vu on gaps in our attention system. Let's say you're driving down a hectic street and are concentrating on the flow of traffic. An old lady is standing on the sidewalk; you see her in your peripheral vision, but you are not really consciously aware of her. A second later you have to stop at a traffic light. Now you have the time to look around. As you glance at the old woman, stepping with difficulty off the curb into the crosswalk, leaning heavily on her cane, she suddenly seems familiar, even though you don't believe you have ever seen her before and you know you have not been at this intersection before. The first image of the woman, perceived during your distracted state, was immediately followed by a second image when you were fully alert. Because the information was received without conscious attention only shortly before, it is now falsely interpreted as a long-term memory.

A long-forgotten sight or smell can trigger familiarity by erroneously transferring itself to the present.

Studies on subliminal awareness provide empirical support for this theory. In 1989 a team led by psychologist Larry L. Jacoby, now at Washington University, gathered test subjects in a room and very briefly projected onto a screen before them a single word, flashed so quickly that it was impossible for the viewers to consciously register it as a word, yet the visual imprint was recognized somewhere in the visual centers of the brain. Later on, when Jacoby projected the

same image again for a longer time, the participants repeatedly claimed to have seen the word before. The unconscious processing of subliminal stimuli allows for similar stimuli perceived later to be processed at a much faster rate--a procedure known as priming that has been widely researched since.

Priming and other attention traits seem to fit well with the general circumstances involving déjà vu. In the early 1900s Gerard Heymans, founder of psychology in the Netherlands, followed 42 students for six months. They filled out a short questionnaire immediately after any déjà vu episode. Heymans concluded that persons subject to mood swings or periods of apathy, as well as those with irregular work patterns, were more prone to such illusions. Other observers have reported that they were more prone to déjà vu experiences when they felt extreme fatigue and a higher stress load.

And in an independent study carried out recently at Halle-Wittenberg, 46 percent of students stated that they were in a relaxed mental state when déjà vu had appeared, with one third describing their state as happy. It seems that whereas déjà vu may be triggered during times of peak tension when one is overly alert, it may be even more likely when one becomes tired and attention starts to wane. New research also indicates that déjà vu may be more likely in people who can readily immerse themselves in fantasies and daydreams.

Delayed Vision

Understanding the neurological basis for déjà vu would certainly help scientists pin down its trigger, but neural connections are only partially understood. For a long time, one popular theory held that delayed neurological transmission was responsible. When we perceive, pieces of information from different neuronal paths enter the processing centers of the cerebrum and must, of course, blend together to consistently produce a uniform impression. It would make sense that any delay in some aspect of transmission could be muddled and set off déjà vu.

In 1963 Robert Efron, then at the Veterans Administration Hospital in Boston, tested this general notion. His experiments led him to conclude that the temporal lobe of the brain's left hemisphere was responsible for the punctual sorting of incoming data. He also found that this location received signals coming over visual pathways twice, within milliseconds of one another--once directly and once via a normal detour through the right hemisphere. If, for some reason, a delay were to occur in the detoured transmission, the left temporal lobe would register a time lapse on the second arrival and could interpret the visual scene as having already happened.

Efron's theory of double perception has yet to be refuted or verified. But it appears that the temporal lobes play a decisive role. Some patients who have suffered damage to this area report frequent déjà vu experiences. So do those who have temporal lobe epilepsy, characterized by seizures in the temporal lobes that produce vivid hallucinations of what seem to be memories. Some researchers therefore think that déjà vu is nothing more than a small circuit failure within the brain.

Observations during neurosurgery also point to the temporal lobes. The first came from Wilder Penfield, a neurosurgeon at the Montreal Neurological Institute, who in the 1950s conducted now famous experiments in which he electrically stimulated the temporal lobes of patients during open-brain surgery. Subjects often reported dreamlike states and déjà vu experiences during the stimulation. Similar accounts also came from a 1994 paper by Jean Bancaud and his team at the Paul Broca Center in Paris: stimulating the lateral or medial temporal lobes occasionally triggered dreamlike trances, including déjà vu.

Memory without Memories

Although questions exist about how well such artificially induced déjà vu episodes resemble those that occur naturally, the findings are intriguing. After all, neuroscientists have proved that

the medial temporal lobe is directly involved in our declarative, conscious memory. The hippocampus, which helps to register perceptual events as episodes and which later makes it possible for our minds to recall them as if we were watching a movie, is also found in this section of the brain.

Also located in the medial temporal lobe is the parahippocampal gyrus, the rhinal cortex and the amygdala, all of which are heavily involved in memory. In 1997 John D. E. Gabrieli and his colleagues at Stanford University established that the hippocampus makes possible the conscious recollection of events and that the parahippocampal gyrus distinguishes between familiar and unfamiliar stimuli--and does so without having to retrieve a concrete episode from our memories.

Many regions of the brain may ultimately be involved in producing déjà vu. The emotions this experience elicits, triggered by a sense of alienation from oneself and one's surroundings as well as the loss of all sense of time, indicate that a complex process is at work. When déjà vu occurs, we doubt reality for a moment. For neuroscientists, these small errors offer invaluable insight into the workings of our consciousness. Further research on the déjà vu phenomenon will help explain not only how we manage to deceive our memory but perhaps how the brain ultimately succeeds in producing a coherent likeness of reality.

Further Reading

- Alzheimer's Drug May Prevent Brain Damage in Preemies
- Musicophobia: When Your Favorite Song Gives You Seizures
- Stem Cells Stop Mouse Shivers Cold, Could Thwart Rare, Neurological Disorders
- Spheres of Influence

- A Novel Chemical Target
- Ted Kennedy Diagnosed with Malignant Brain Tumor
- The Aging Brain: Is It Less Connected?
- Infected with Insanity: Could Microbes Cause Mental Illness?