

## *That Feeling, You Can Only Say What It Is In French...*

The title of this article, stolen from a short story by Stephen King, refers to a feeling many people have had. Namely, the feeling that a new situation you are currently experiencing has been experienced previously - déjà vu. Theories have been put forward to explain the experience for over 100 years. This article will briefly look at the definition of déjà vu and some background. We will look at some of the more paranormal explanations before moving to some more scientific explanations.

A common definition of déjà vu is a feeling that occurs when a person has a subjective feeling of familiarity to a situation, place or event that is objectively new or not experienced previously. It usually elicits feelings of surprise or confusion and has no immediately obvious or identifiable trigger. The uncanny feeling provoked by déjà vu is usually short lived, typically lasting 10-30 seconds.

Research into déjà vu experiences suggest around two thirds of individuals have the experience at least once, and multiple experiences by an individual are common. It seems to decrease with age and increase with education and income. Studies have shown it to be more common in people who travel frequently, remember their dreams and hold liberal beliefs. Most often, it is experienced indoors and in a relaxed state of mind. It is more common in the evening than the morning and on the weekend compared to weekdays.

Several paranormal explanations have been proposed for the déjà vu experience. Two of the most common are precognition and past lives. Precognition is the experience of witnessing a place, person or event, usually in a dream, and then witnessing the same place, person or event in real life at some point in the future. There are many reports of precognition throughout history but none have ever been verified. The past lives theory proposes that one is reincarnated into the present while maintaining some memories from a former life. So, new situations which feel familiar in the present life, are actually stirring memories from previous lives.

The main rebuke against these theories is not that precognition or past lives are not valid, testable, evidence based theories *per se*, but that using the unexplained to account for the unexplained is actually no account at all, in any meaningful or verifiable way. There have however, been explanations of the déjà vu experience put forward from mainstream science which at least provide a testable foundation on which to build. The theories come mainly from neurobiology, sensory information processing and memory.

Theories relating the experience to biological dysfunction have been proposed. Essentially, these state that normal biological or neurological functioning is temporarily impaired or interrupted, leading the déjà vu experience. For example, it has been found that epileptics who suffer from seizures in the temporal lobe (a brain area, among whose functions is the processing of familiarity) often report the feelings associated with déjà vu. It has been proposed that if a small seizure occurred in the same brain area in non-epileptics, this may cause the déjà vu experience in an otherwise normally functioning brain.

Another theory is related to how the brain processes visual stimuli. When you view something, what your brain actually processes, are two separate views of the same scene, one from each

eye. This enables the brain to more accurately assess aspects of the environment such as distance, location and angle. These two separate 'packages' of information are sent to the visual processing brain areas via different pathways. Here the separate views are amalgamated to produce the perception of a single image. One speculation is that if these separate streams of input are not processed at exactly the same time (i.e. due to some neurotransmitter or synaptic interruption), the brain may perceive them as two separate experiences, rather than two slightly differing copies of the same event.

It is thought a time difference of at least 25ms between events is needed for the brain to perceive these events as separate events. Therefore, if the processing of visual information is interrupted by enough time the same visual scene may be perceived twice, giving rise to a déjà vu experience.

It is also hypothesized that actually perceiving the same scene twice can cause a déjà vu experience. While we perceive everything in our visual field, we do not attend to everything in it. Peripheral or unimportant aspects do not receive our direct attention. Consequently, we may register visual stimuli subconsciously initially, but then register them consciously if they receive our direct attention. It is possible that we may remember seeing visual stimuli while not recalling explicitly that they were already in our visual field. This could be compounded if our attention is momentarily perceptually or mentally distracted. Some support for this comes from the phenomena of 'inattention blindness'. This happens when a person can miss seeing an object that is otherwise clearly visible in front of them. If their attention is directed or distracted elsewhere, they simply do not perceive the object even though a memory for it is registered.

A strong explanatory candidate for the déjà vu experience is related to memory, specifically recognition memory. This type of memory allows one to know that what is currently being experienced has been experienced before. On seeing a picture, hearing a song or smelling a particular perfume, you experience a familiar feeling and recall the previous experience with those things. Recognition memory is believed to be a dual cognitive process, consisting of recollection based recognition (recalling when the current experience was previously experienced) and familiarity based recognition (only having a feeling of familiarity with the current experience). For recognition memory to function normally requires both cognitive processes.

As mentioned before, part of the definition of the déjà vu experience is the feeling of familiarity in an experience that is evidentially new. It has been proposed that familiarity based recognition without recollection based recognition, or put theoretically "*implicit familiarity without explicit recollection*", may account for the feelings associated with a déjà vu experience. This could explain certain findings associated with déjà vu research, such as the positive correlation between the experience of déjà vu and frequency of travel, remembering dreams and watching movies. People who report higher instances of these could have a larger 'library' of potentially familiar scenes or situations that a current experience may connect with.

Some support for this comes from a recent study. Students were presented with visual scenes from their own campus and an unfamiliar campus. At a later time the students were tested on their ability to discriminate between scenes they had previously visited from scenes they had not

visited. It was found that the students were more likely to report having been to the unfamiliar campus when they had previously been briefly exposed to images of it.

It is thought that it is not every specific element in an experience that elicits the feelings of *déjà vu*. Rather, a single element may ignite a feeling of familiarity, such as an object, the way the light falls in a room or the look on someone's face. If this single element cannot be consciously identified, the feeling of familiarity may be over generalized to the whole scene or experience, giving the sense that one has experienced the whole thing before. Alternatively, a more global aspect may induce familiarity. The layout of a room (rather than the specific objects or the location of all objects in a room) or sitting on a park bench at a particular time of day in particular weather (rather than a specific park bench viewing a specific scene) could be examples of a global aspect.

A further proposal is an affective trigger for a *déjà vu* experience. An object, picture or aroma may stir up a strong emotional response. One may attribute the emotional response to a sense of familiarity without being able to connect the feeling of familiarity to its source. In this sense, the *déjà vu* experience does not elicit the affective response, but rather an emotional response to a stimulus evokes the *déjà vu* experience.

While no one theory, paranormal or scientific, can be said to be the definitive theory to account for the cause of the *déjà vu* experience, the theories relating to recognition memory would appear to be the best candidate for a future account of the phenomena. It not only suggests a possible causal relationship between a cognitive process and the experience itself, but also possibly explains some factors that positively correlate with the experience. At this time, mainstream scientific inquiry into *déjà vu* may be somewhat limited, but there is enough to suggest that at least one as yet unexplained human experience can be wrested from the clutches of paranormal explanation.

Brown, A.S. (2004). The déjà vu illusion. *Current Directions in Psychological Science*. 13, 256-259.

Cleary, A. M. (2008). Recognition Memory, Familiarity, and Déjà Vu Experiences. *Current Directions in Psychological Science*, 17, 353-357.

King, S. (2002). *Everything's Eventual*. Great Britain: New English Library

Mack, A. (2003). Inattention blindness: Looking without seeing. *Current Directions in Psychological Science*, 5, 180-184.