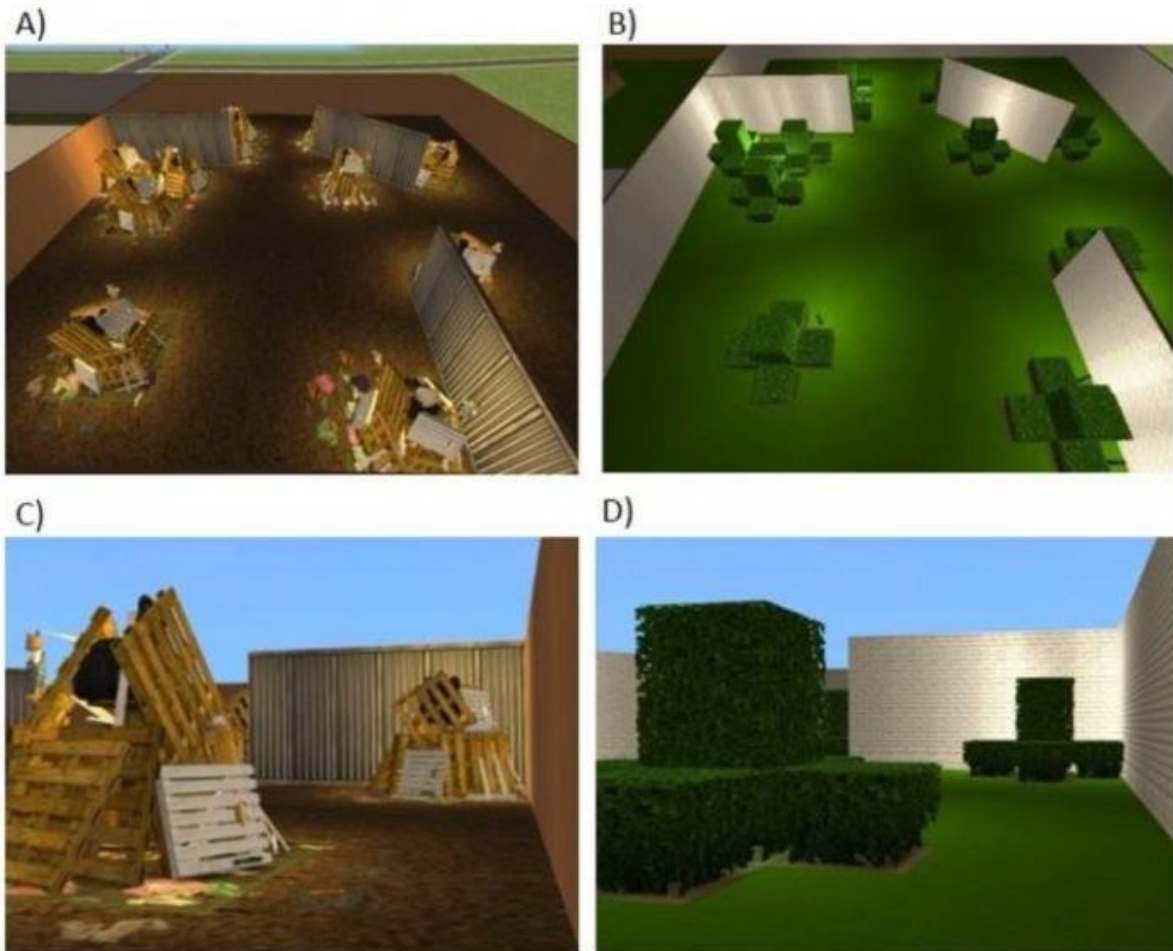


Déjà vu and feelings of prediction: They're just feelings

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Anne Cleary's team created virtual reality scenarios using the Sims virtual world video game. They made scenes -- like a junkyard, or a hedge garden -- that later spatially mapped to previously witnessed, but thematically unrelated scenes.

Credit: Anne Cleary/Colorado State University

Most people can relate to the prickly, unsettling experience of déjà vu: When you're in a new situation, but you feel like you've been there before.

For some, that eerie feeling has an added twist: In that moment, they feel like they know what's going to happen next. Say you're walking up a stairwell for the first time, but it feels familiar, like a dream state - so much so that you think, "At the top of the stairs, there will be a Picasso on the left."

Anne Cleary, a cognitive psychologist at Colorado State University, has spent the last several years establishing [déjà vu](#) as a memory phenomenon - a trick of the brain akin to when a word is on the tip of your tongue, but you just can't retrieve it.

Building on previous experiments, Cleary has now shown that the prescient feeling that sometimes accompanies déjà vu is just that - a feeling. But it sure feels real.

A professor in CSU's Department of Psychology, Cleary has a new paper in *Psychological Science*, co-authored by former graduate student Alexander Claxton, detailing how they recreated déjà vu in human subjects in order to examine the feeling of premonition during the déjà vu state. According to their results, participants were no more likely to actually be able to tell the future than if they were blindly guessing. But during déjà vu, they felt like they could - which seems to mirror real life.

Cleary is one of just a handful of déjà vu researchers in the world. Ever since she read Alan S. Brown's book, *The Déjà Vu Experience*, she's been fascinated by the phenomenon and wanted to experimentally unmask why it occurs.

Déjà vu has a supernatural reputation. Is it recall of a past life, people

have asked? Scientists, though, tend to attack questions through a more logical lens.

Cleary and others have shown that *déjà vu* is likely a memory phenomenon. It can occur when someone encounters a scenario that's similar to an actual memory, but they fail to recall the memory. For example, Cleary and collaborators have shown that *déjà vu* can be prompted by a scene that is spatially similar to a prior one.

"We cannot consciously remember the prior scene, but our brains recognize the similarity," Cleary said. "That information comes through as the unsettling feeling that we've been there before, but we can't pin down when or why."

Cleary has also studied the phenomenon known as "tip of the tongue" - that sensation when a word is just out of reach of recall. Both tip of the tongue and *déjà vu* are examples of what researchers call "metamemory" phenomena. They reflect a degree of subjective awareness of our own memories. Another example is the memory process known as familiarity, Cleary says - like when you see a familiar face out of context and can't place it.

"My working hypothesis is that *déjà vu* is a particular manifestation of familiarity," Cleary said. "You have familiarity in a situation when you feel you shouldn't have it, and that's why it's so jarring, so striking."

Since she began publicizing her results about *déjà vu* as a memory phenomenon more than 10 years ago, people around the world started responding. You're wrong, they argued. It's not just a memory. I also feel that I know what's going to happen next.

Cleary herself doesn't relate to this feeling, but she felt the need to suss out the claims. She read a study from the 1950s by neurologist Wilder

Penfield, in which he stimulated parts of patients' brains and had them talk about what they were experiencing. In at least one case, when a patient reported feeling déjà vu upon stimulation, Penfield documented concurrent feelings of premonition. Hmm, Cleary thought. There's something to this.

Her hypothesis: If déjà vu is a memory phenomenon, is the feeling of prediction also a memory phenomenon? Cleary was further motivated by a recent shift in memory research, asserting that human [memory](#) is adapted for being able to predict the future, for survival purposes, rather than simply recollecting the past.

In previously published research, Cleary and her research group created virtual reality scenarios using the Sims virtual world video game. They made scenes - like a junkyard, or a hedge garden - that later spatially mapped to previously witnessed, but thematically unrelated scenes.

While immersed in a virtual reality test scene, participants were asked to report whether they were experiencing déjà vu. Subjects were more likely to report déjà vu among scenes that spatially mapped onto earlier witnessed scenes. These foundational studies mirrored the real-life experience of "feeling like you've been there before," but being unable to recall why.

In her most recent experiments, Cleary created dynamic video scenes in which the participant was moved through a series of turns. Later, they were moved through scenes spatially mapped to the previous ones, to induce the déjà vu, but at the last moment, they were asked what the final turn should be. In those moments, the researchers asked the participants if they were experiencing déjà vu, and whether they felt they knew what the direction of the next turn should be.

Cleary and her team were intrigued to note that about half the

respondents felt a strong premonition during déjà vu. But they were no more likely to actually recall the correct answer - the turn they had previously seen in a spatially mapped, different scene - than if they were to choose randomly. In other words, participants who had the feeling of prediction were pretty confident they were right, but they usually weren't.

Conclusion: no, déjà vu doesn't help us predict the future. But it can manifest as a feeling that we can.

Cleary and her lab are conducting follow-up experiments now that even further probe this feeling of prediction. They wonder whether it's the familiarity process that drives the feeling. They want to know whether people experience hindsight bias - that is, whether people will be convinced they knew what was going to happen, after the fact.

"I think the reason people come up with psychic theories about déjà vu is that they are these mysterious, subjective experiences," Cleary said. "Even scientists who don't believe in past lives have whispered to me, 'Do you have an explanation for why I have this?' People look for explanations in different places. If you're a scientist, you're looking for the logical reason for why you just had this really weird experience."

More information: Anne M. Cleary et al, Déjà Vu: An Illusion of Prediction, *Psychological Science* (2018). [DOI: 10.1177/0956797617743018](https://doi.org/10.1177/0956797617743018)

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