

OLD FAMILY MYSTERIES

Rebecca Coffey

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Remember that Thanksgiving when Uncle Ed fell down the stairs? Does everyone remember his fall the same way? No. Some say Ed was drunk when he fell. Others say he got drunk later to dull the pain. Some say Ed tumbled down two flights. Aunt Ruth says he only missed a bottom step. Twenty years later, the whole family disagrees about what happened, and they do it loudly every Thanksgiving.

According to researchers at New York University, that family mystery will never be solved. That's because the worst thing you can do to a memory is recall it. In fact, remembering is a "practice makes *imperfect*" kind of thing.

It was standard rat research: Phase I. Rats. A short tone followed by an electric shock. Rats learn that tone means shock.

Phase II: Same rats. Next day. Short tone. Rats still show fear even though they're not shocked. Short-term learning has become long-term memory.

Phase III: Same rats. Same tone. Again no shock. This time inject rats' brains with a drug that blocks protein synthesis. Do it at the very moment that they look fearful.

I know. Poor rats. But why the protein-blocking drug?

It's an axiom of brain biology that memory is encoded indelibly when the chemical bonds between the nerve cells holding it are protein-enriched. The scientists wanted to test that axiom. Are the bonds really indelible? Are the memories? If protein bonds were indelible the drug that blocks protein synthesis would have no effect—because no new protein would be needed. If protein bonds need to be re-made each time a memory is recalled, injecting the drug would interfere with the memory.

Which brings us to Phase IV. Same rats. Same tone. Again no shock. But this time, no fear behavior. Interfering with protein production at the moment of a memory's recall erases the fearful memory. Which, according to the scientists, means:

First, the physical circuitry of a memory changes when a protein is replaced. Memory is no more than circuitry. Change the circuitry, you change the memory.

Second, at the very moment of recall, any long-term memory is lacking its protein-enriched bond. It is extremely labile. Any sort of present sensory input could get wrapped up in the memory.

Now what does all this mean to us bigger rats?

Every time you tell the story of your Uncle Ed's Thanksgiving tumble, the memory itself is changed—and you are open to suggestions from others. Whatever your Aunt Ruth says can get seamlessly recorded in your brain as part of what you think is pristine memory.

Does this rat research shed any light on the argument about true and false accusations? Obviously. Families that have long debated the truth of certain accusations should realize that the more they try to remember what happened the farther they may be from knowing. And the more they talk about the mystery together the muddier things may become.

What about the supposed epidemic of false memories? Sorry. No illumination. This new research says that the worst thing you can do to a memory is to recall it. But the true and false memory debate was mostly about memories that allegedly lie dormant until they are recalled years later for the very first time.

In fact, studies show that about half of such supposedly “iffy” memories can be independently verified.

Truth or lies? Lots of people would like simple answers. But in old family mysteries, it’s actually getting tougher to tell.

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