Medical Xpress

Social pressure falsifies memory: study

June 30 2011

How easy is it to falsify memory? New research at the Weizmann Institute shows that a bit of social pressure may be all that is needed. The study, which appears Friday in *Science*, reveals a unique pattern of brain activity when false memories are formed – one that hints at a surprising connection between our social selves and memory.

The experiment, conducted by Prof. Yadin Dudai and research student Micah Edelson of the Institute's Neurobiology Department with Prof. Raymond Dolan and Dr. Tali Sharot of University College London, took place in four stages. In the first, volunteers watched a documentary film in small groups. Three days later, they returned to the lab individually to take a memory test, answering questions about the film. They were also asked how confident they were in their answers.

They were later invited back to the lab to retake the test while being scanned in a functional MRI (fMRI) that revealed their brain activity. This time, the subjects were also given a "lifeline": the supposed answers of the others in their film viewing group (along with social-media-style photos). Planted among these were false answers to questions the volunteers had previously answered correctly and confidently. The participants conformed to the group on these "planted" responses, giving incorrect answers nearly 70% of the time.

But were they simply conforming to perceived social demands, or had their memory of the film actually undergone a change? To find out, the researchers invited the subjects back to the lab to take the memory test once again, telling them that the answers they had previously been fed

were not those of their fellow film watchers, but random computer generations. Some of the responses reverted back to the original, correct ones, but close to half remained erroneous, implying that the subjects were relying on false memories implanted in the earlier session.

An analysis of the fMRI data showed differences in brain activity between the persistent false memories and the temporary errors of social compliance. The most outstanding feature of the false memories was a strong co-activation and connectivity between two brain areas: the hippocampus and the amygdala. The hippocampus is known to play a role in long-term memory formation, while the amygdala, sometimes known as the emotion center of the brain, plays a role in social interaction. The scientists think that the amygdala may act as a gateway connecting the social and memory processing parts of our brain; its "stamp" may be needed for some types of memories, giving them approval to be uploaded to the memory banks. Thus social reinforcement could act on the amygdala to persuade our brains to replace a strong memory with a false one.

Provided by Weizmann Institute of Science

Citation: Social pressure falsifies memory: study (2011, June 30) retrieved 12 October 2024 from https://medicalxpress.com/news/2011-06-social-pressure-falsifies-memory.html

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