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Money Incentives Can Prop Up the Brain to Remember Things

Scientists discover what happens in the brain prior to storing some information

It's common knowledge that it's easier to remember what interests you - i.e. things that you have an incentive to memorize. But what if this incentive would come in the form of money? Would that also work? A team of Stanford scientists has shown that apparently yes! And in the process they have discovered how the brain prepares for storing information. "Rather than simply reacting to the world, we preferentially remember what we care about or are excited by," said R. Alison Adcock, a visiting researcher at Stanford and post-doctoral fellow at the University of California-San Francisco. "This is important because it suggests the brain prepares to store important information." Adcock and her colleagues examined the link between the brain's reward circuits, which drive motivation, and its memory system, which facilitates learning. By using the brain scanning imaging technique called functional magnetic resonance imaging, or fMRI, and observing the brain activity researchers were able to predict whether they would remember something - even before the participants were told what to remember. "We investigated which areas of the brain are active before a learner ever sees the item to be remembered," said Brian Knutson, an assistant professor of psychology at Stanford. "So we can predict what they will remember before they even see it." For the study, subjects were given a list of pictures to remember for a test the following day. Prior to seeing the images, the subjects were told how much money they would get for recognizing each of them correctly. The next day, subjects were better able to recall the more valuable pictures. "The data hint that getting people excited should enhance learning - even if the excitement is not strictly related to the material being learned," Adcock said. She remarked the use in advertising of potential rewards often displayed alongside a product. Marketing experts think that these only draw attention to the product, but it now seems that in fact they play a much more important role: they can also ensure that consumers remember more about it. "We could make use of similar principles in education," she added. "Many prior imaging studies have examined motivation or memory," said co-author John D.E. Gabrieli of the Massachusetts Institute of Technology. "But this shows how motivation can set up the brain to learn." Adcock and Knutson said they are planning future studies that will continue to explore how positive emotions affect memories and why people have difficulty unlearning troublesome behavior, such as addiction. Aside from monetary incentives for learning, "intangible incentives," such as social approval or internal drive, will also be examined as potential motivators for learning, Knutson said. "We see many things, but only remember a few things," Gabrieli explained. "The more we understand the motivation to learn in the brain, the more we might be able to figure out how we can harness that motivation."