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Alcohol dependence damages both episodic memory and awareness of memory

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Alcohol dependence (AD) has negative effects on cognitive processes such as memory. Metamemory refers to the subjective knowledge that people have of their own cognitive processing abilities, such as their monitoring and control of memory. A new study has found that AD has a negative impact on both episodic memory as well as metamemory.

Results will be published in the November 2010 issue of *Alcoholism: Clinical & Experimental Research* and are currently available at Early View.

"Memory refers to the faculty to encode, store and retrieve information," explained Anne-Pascale Le Berre, "which is not a single memory but several memory systems." Le Berre is a doctoral student in neuropsychology at Inserm-EPHE at the Université de Caen/Basse-Normandie in France as well as corresponding author for the study. "In this study, we investigated episodic memory, which is the memory system in charge of the encoding, storage and retrieval of personally experienced events and which is known to be impaired in chronic alcoholism."

Le Berre and her colleagues also tested metamemory in AD patients. "Metamemorial knowledge enables us to adapt our behavior in everyday life and to use our memory skills as efficiently as possible," said Le Berre. "Metamemory can refer to the knowledge someone has about memory processing in general, and their own memory functioning in particular," she said. "For example, if someone often forgets to buy

things in the supermarket, he or she can write down a shopping list. This knowledge enables people to anticipate and implement appropriate strategies when performing a memory task. Metamemory can also refer to activity during a memory task. For example, a student first studies for an exam, and then evaluates his or her level of knowledge. If confident, he or she can stop studying, but if not, they can study more or adjust their learning strategy."

The study authors assessed metamemorial activity by administering a "feeling-of-knowing" (FOK) measure to 28 AD patients and 28 non-AD "controls." An FOK measure refers to a comparison between predictions about future memory performance during a memory task and actual memory performance. The subjective Metamemory in Adulthood (MIA) questionnaire was also completed by patients and controls. In addition, episodic memory and executive functioning were evaluated.

"Regarding the FOK measure, alcoholic patients did not predict accurately their future memory performance," said Le Berre. "They had a tendency to overestimate their memory capacities, believing themselves capable of recognizing the correct word when in fact they subsequently failed to do so. The results also showed a subjective overestimation of mnemonic abilities in the AD subgroup when using the MIA questionnaire: patients with chronic alcoholism believed their memory was as effective as the healthy controls despite their well-established episodic memory impairments."

"Traditional declarative (explicit) memory studies typically assess ability to remember new information presented on a test or memory for events encountered during one's life," noted Edith V. Sullivan, a professor in the department of psychiatry and behavioral sciences at Stanford University School of Medicine.

"The present study went a step further, adding to the traditional memory

test battery an assessment of the FOK phenomenon," she said. "While it is striking that the alcoholic group had deficits in memory for new information, FOK analysis indicated that they were fundamentally unaware of their deficit. The over-estimation by the alcoholics of their memory ability was related to low performance on tests of executive function, which could either inhibit awareness or impair ability to retrieve information. In either case, there was a disconnection between feeling of knowing and accuracy of this knowledge."

"This overestimation of episodic memory abilities in alcoholics has unquestionable clinical implications," said Le Berre. "For example, after being physically weaned off alcohol, patients suffering from chronic alcoholism often undergo cognitive-behavioral treatment involving methods during which they are taught to anticipate risky situations, that is, situations with a high risk of relapse. If however they overestimate their memory abilities, they will benefit only partially from their clinical treatment, since they will labor under the illusion that they have sufficiently consolidated this important clinical information for everyday life, whereas the reality is actually very different.

Sullivan agreed. "A recognition of this type of impairment could be quite useful in therapeutic and rehabilitation efforts," she said, "in that clinicians need to be apprised of the possibility that alcoholics are compromised in their ability of self-assessment of memory function. Whether this FOK over-estimation generalizes to other cognitive abilities has yet to be determined but has the patina of being analogous to denial of problems with alcohol consumption that so often characterize recovering alcoholics and impede treatment success."

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