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## Disease recognition is related to specific autobiographical memory deficits in alcohol-dependence

Marie Poncin<sup>a,b,c,1</sup>, Aurore Neumann<sup>d,1</sup>, Olivier Luminet<sup>b,e</sup>, Noémie Vande Weghe<sup>b,d</sup>, Pierre Philippot<sup>a,b</sup>, Philippe de Timary<sup>a,c,d,\*</sup>

<sup>a</sup> Laboratory for Experimental Psychopathology, Psychological Sciences Research Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium

<sup>b</sup> Psychological Sciences Research Institute, Université Catholique de Louvain, Louvain-la-Neuve, Belgium

<sup>c</sup> Institute of Neuroscience, Université Catholique de Louvain, Brussels, Belgium

<sup>d</sup> Department of Adult Psychiatry, Hôpital universitaire Saint-Luc, Brussels, Belgium

<sup>e</sup> The Belgian Fund for Scientific Research (FRS-FNRS), Brussels, Belgium

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### ABSTRACT

The particularly high treatment gap in alcohol-dependence suggests the existence of important barriers to treatment decision and in particular difficulties in problem recognition. This study tested the relation between problem recognition and self-related memories. Forty-one recently detoxified alcohol-dependent individuals (AD) were compared to twenty alcoholic subjects that were abstinent for 6 months or more (recruited among alcoholics-anonymous (AA)), and to twenty controls on autobiographical memories elicited by pictures depicting or not alcohol using the autobiographical memory test. Autonoetic consciousness was measured with the Remember/Know paradigm. We tested whether memories performances were related with data obtained on the readiness to change questionnaire (RCQ) or with consciousness of the severity of drinking. AD subjects provided less specific memories than control and AA subjects, and fewer Remember responses than controls. The deficits in AD subjects were not specific for memories elicited by pictures depicting alcohol, suggesting a global deficit. Autobiographical memories specificity was negatively correlated to scores of consciousness of the severity of drinking but not to RCQ. Our results support potential recovery of autobiographical memory with abstinence. AD's deficits in autobiographical memory were related to capacities to recognize the severity and therefore may be a barrier to treatment decision.

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### 1. Introduction

Alcohol-dependence is the third cause of death worldwide (Hall, 2012). However, curing alcohol-dependent subjects remains an important challenge for clinicians. The first difficulty in the treatment of these patients is their access to treatment. The treatment gap for this pathology that has been estimated between 80 and 92% (Kessler et al., 2005; Kohn et al., 2004) is the largest among psychiatric disorders (Kohn et al., 2004). Furthermore, the period between the beginning of problematic drinking and first primary cares often exceeds ten years (Saunders et al., 2006). Saunders et al. (2006) have identified four different steps before a treatment is effectively sought by alcohol-dependent (AD) subjects: (1) Problem recognition; (2) decision that change is needed; (3) decision that professional help is needed; and (4) Actual

professional help seeking. At each step, barriers may hinder progression in the decision to seek treatment. Among these barriers, problem recognition induces the most important delay and is highly related to poor opinion towards the self (Self-Stigma) (Saunders et al., 2006). However, the identity of the processes that are involved in recognition deficits has not been investigated thoroughly. Prochaska and DiClemente (1983) also insisted on the importance of disease recognition and developed the concept of readiness for change to describe the ability of individuals to change their habits. This concept has been extensively used both in clinical and research contexts in the domain of alcohol dependence (Heather et al., 1993; Rollnick et al., 1992). Prochaska and DiClemente (1983) described four steps in the evolution of an individual towards a change in habit. The two initial steps, precontemplation and contemplation, precisely refer to the difficulty of the individual to recognize his drinking problem.

Le Berre et al. (2012) have recently tested the relation between readiness for change and cognition in AD subjects and found that subjects at precontemplation and contemplation stages of change presented with deficits in executive functions and episodic

\* Correspondence to: Department of Adult Psychiatry, Cliniques Universitaires St. Luc, Avenue Hippocrate 10, B-1200 Brussels, Belgium. Fax: +32 27 64 89 21.

E-mail address: [philippe.detimary@uclouvain.be](mailto:philippe.detimary@uclouvain.be) (P. de Timary).

<sup>1</sup> Both authors equally contributed to this publication

memory. The proposal of Saunders that Self-Stigma interferes with the recognition of the disease suggests that the latter could be related to specific cognitive processes involving the Self, and in particular autobiographical memory. This is congruent with Conway's model of autobiographical memory in which accessibility to autobiographical knowledge might be limited to protect the Self from painful emotions and threatening information (Conway, 2001, 2005), which in turn might lead to a tendency for less specific memories, yielding an overgenerality bias. In AD individuals, deficits in autobiographic memories have been described and have been shown to improve after prolonged abstinence (D'Argembeau et al., 2006; Pitel et al., 2009).

In addition, the recollection is attended by a subjective state of consciousness, namely auto-noetic and noetic consciousness (Tulving, 1985). Auto-noetic consciousness describes a state where people can mentally place themselves in the past with their thoughts and feelings of the original event. This differs from noetic consciousness that is based on feelings of familiarity and the activation of the general knowledge about a situation (Tulving, 1985; Luminet et al., 2006). Auto-noetic consciousness is related to introspection abilities, which allow thinking about one's own thoughts, feelings, actions, and social relations. Such conscious recollection offers a rich source of information to decide for appropriate behaviors in self-engaging situations (Neumann, 2014) and hence facilitates self-regulation of emotion and behavior necessary for the achievement of personally relevant goals (Levine, 2000). Impairments of auto-noetic consciousness have been observed in AD subjects with the Remember/Know/Guess paradigm (Pitel et al., 2007).

Because deficits in auto-noetic consciousness and autobiographical memory might impair realistic Self-appraisal (Conway, 2001, 2005; Neumann, 2014), we hypothesize that such deficits predict difficulties in recognizing the severity of problems related to drinking in AD subjects. We first assessed readiness to change using the RCQ Questionnaire (Prochaska and DiClemente, 1983, 1986) as well as how AD subjects evaluate the importance and the consequences of their drinking problem with nine specific questions. To assess the coherence of these evaluations, these were compared with objective markers of alcohol dependence severity (severity of liver disease, duration of dependence).

Autobiographical memory was tested by the recall of events evoked by pictures that were presented twice at a 48 h interval and auto-noetic consciousness with the remember-know-guess procedure. Because autobiographical memory abilities may improve after a period of abstinence (Pitel et al., 2009), we tested whether these deficits were also observed in long term abstinent AD subjects recruited among a self-help group of alcoholic-anonymous (AA).

Our first hypothesis was that AD subjects present deficits in autobiographical memory and auto-noetic consciousness and that these impairments are reduced after abstinence (AA group). Our second hypothesis was that AD subjects would evidence more impairment for autobiographical memories of events directly related to alcohol experiences. To test this second hypothesis, subjects were asked to describe and recall experiences evoked by alcohol-related pictures. Our third and main hypothesis was that AD subjects with impairment in autobiographical memory and auto-noetic awareness also present with a decrease in readiness to change and with a tendency to describe their alcohol drinking problem and consequences as less important.

## 2. Method

### 2.1. Participants

Three groups of participants took part in this study (81 in total). The first group was composed of 41 inpatients (28 men) presenting an Axis-1 diagnosis of alcohol-dependence (DSM-IV), and recruited during detoxification process at the Unité Intégrée d'Hépatologie, Department of Adult Psychiatry and Gastroenterology at the Academic Hospital Saint-Luc for which admission is totally voluntary. Exclusion criteria were the existence of other types of substance dependence (excepted tobacco) or any other DSM-IV Axis-1 disorder, as evaluated by a psychiatrist (PdT). All consecutive inpatients that responded to the criteria were proposed to enter the study on the day 14 of abstinence. Only four patients (10%) refused to enter the study. First testing of AD subjects occurred after 15 days of abstinence. The second group was composed of 20 subjects (13 men) recruited among groups of AA in Brussels, following a direct contact with organizers of the AA group of Academic Hospital Saint-Luc and communication of this information to other groups in Brussels. All of them had been abstinent for six months or more ( $M=129.1$  months,  $SD=129.9$ ) at time of testing. A group of 20 controls [C] (12 men) was selected to observe WHO criteria for normal alcohol drinking (less than 14 units/week for women and less than 21 units/week for men) (World Health Organization, 2000). All participants were provided explanations concerning study's aims and procedure and gave written informed consent. The protocol was approved by the hospital's Ethical Committee.

### 2.2. Procedure

Participants were tested twice within a 48 h interval.

During the first session, after collecting socio-demographic data, a first set of 30 pictures was presented. The series were presented in two different orders (A and B). For each photo, the participants realized three tasks: 1- to briefly describe the picture; 2- to express their emotional reaction to the picture on a 7-point Likert scale (unpleasantness (1) to pleasantness (7)); 3- to recall a specific autobiographical memory evoked by the photo. This memory retrieval task was based on the Autobiographical Memory Test of Williams and Broadbent (1986). Autobiographical memories were categorized into four types of recalling: 1- specific (personally experienced event that lasted a maximum of one day and had occurred at a particular time), 2- categorical (repeated events), 3-extended (event that lasted more than 24 h), 4-omission (no personal memories). Participants were asked to retrieve specific autobiographical memories. The experimenter hence explained the definition of specific memories and gave several examples. This first session lasted approximately 1 h.

During the second session, we used the Remember/Know procedure to operationally define auto-noetic (Remembering) and noetic (Knowing) consciousness during retrieval. Participants were presented with a second series of pictures that comprised the 30 pictures of the first series mixed with 58 distractors. Participants had to report whether they recognized or not the picture. When the picture was recognized, they had to indicate one of three subjective state of consciousness associated with the recognition of the photo and to recall the memory associated to the picture: 1-Remember (conscious recollection of the memory associated with the picture), 2-Know (feelings of familiarity), 3-Guess (uncertain assumption). The whole task lasted approximately 30 min.

### 2.3. Materials

The first series of 30 pictures was constructed for testing at

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