



## Review

# Autobiographical memory compromise in individuals with alcohol use disorders: Towards implications for psychotherapy research



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## ABSTRACT

It has been found that Autobiographical memory (i.e., memory for personal experiences and facts about the self) are not properly maintained in people with alcohol-use disorders (AUD). The present paper offers a comprehensive overview of findings regarding the consequences of AUD on autobiographical memory. More specifically, we offer a theoretical model (the AMAUD Autobiographical Memory and Alcohol Use Disorders model) according to which chronic alcohol consumption compromises emotion regulation as well as executive control, which maintains the construction of autobiographical memory. Compromises in emotional regulation and executive functioning can be linked to a weak aspiration to construct detailed memories (i.e., autobiographical overgenerality), compromises of subjective reliving, anterograde amnesia, negative self-defining memories, and a difficulty to mentally project oneself forward in time to generate complex autobiographical representations and self-images. By gathering cognitive and clinical aspects of autobiographical decline in AUD, this model constitutes a theoretical foundation that may lead to a better understanding of this decline. Different clinical perspectives are proposed for developing personalized autobiographical memory rehabilitation programs for individuals with AUD.

## 1. Introduction

Alcohol-use disorders (AUD) are characterized by a combination of cognitive, behavioral and physiological symptoms indicating that the person continues to consume alcohol despite significant alcohol-related problems. Among these symptoms, memory compromise has been classically observed in these pathologies, in particular, in working memory tasks (Ambrose et al., 2001; Ellingson et al., 2014; Nigg et al., 2004; Noel et al., 2001, 2002), in episodic memory for verbal or non-verbal stimuli (Pitel et al., 2009, 2007b; Ray et al., 2004), and in source judgment, i.e., the ability to remember the context in which an event occurred (Schwartz et al., 2002; Sullivan et al., 1997). Nevertheless, as D'Argembeau et al. (2006) argued, most of these studies have assessed memory performance in patients with memory of word or picture lists, which differs from memory of personal knowledge (i.e., autobiographical memory) in several ways, including the time-frame and significance of these events for personal goals and emotional salience (Conway et al., 2001; Gilboa, 2004). In this regard, the evaluation of autobiographical memory is particularly interesting because it governs both the phenomenological reliving of memories and perceptual-sensory detail retrieval as well as personal information related to the individual's internal goals (Conway, 2005). Indeed, autobiographical

memory allows the individual to build his sense of identity and continuity through time and can be associated with the construction of the self (Conway, 2005). Several studies performed with individuals experiencing an AUD have also highlighted a compromise of autobiographical memory (Nandrino et al., 2016, 2014).

As various characteristics of autobiographical memory have been identified in detoxified patients or after mid- or long-term abstinence, this review aims at describing the current knowledge about autobiographical compromise in AUD, with a focus on clinical implications and areas for future research. It highlights the overgenerality of autobiographical recall, a compromise of subjective reliving, anterograde amnesia, self-defining memories, and a compromise of future thinking. We provide a comprehensive theoretical framework to provide better insight into the compromise of autobiographical memory and the self in alcohol dependence. Finally, we offer clinical suggestions for the management of autobiographical compromise in AUD. Note that a glossary of the major terms used in this paper is provided in Fig. 1

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Fig. 1. A glossary of the major terms and abbreviations (in alphabetic order).

- AMAUD: autobiographical Memory and Alcohol Use Disorders model
- Auto-noetic consciousness: the subjective experience of specific memories
- Autobiographical memory: memory for personal experiences
- CaRFAX : Capture, Rumination, Functional Avoidance, EXecutive Functioning
- Episodic autobiographical memories: memory for specific personal experiences
- Mental time travel: the ability to project oneself mentally in time
- Overgenerality: difficulty in retrieving specific memories
- Reminiscence bump: memories from adolescence and early adulthood
- Semantic autobiographical memories: memory for general personal experiences

## 2. Autobiographical memory: memory of the identity and self

### 2.1. Semantic and episodic autobiographical memory

Autobiographical memory refers to memory of personal experiences and facts about the self (Conway, 2005; Rubin, 2005). It allows us to define ourselves, construct our life story, and attribute meaning to our past, present and future experiences. Autobiographical memory encompasses knowledge with different levels of specificity ranging from general knowledge about ourselves to highly contextual-specific personal events (Conway, 2005; Conway and Pleydell-Pearce, 2000; Kopelman, 1994). It can hence be divided into two major components: a semantic component and an episodic one. While the semantic component encompasses generic representations that cover long lifetime periods (e.g., “when I was child”) and general events referring to thematic events that occur repeatedly (e.g., “I used to go to school by walking through the fields”), the episodic component encompasses memories of specific personal experiences that occurred at a particular time and place (e.g., “that day when I arrived late, wet and sick at school because of a storm”). The dissociation between semantic and episodic autobiographical components is essential in describing the subjective experience of autobiographical retrieval. Semantic autobiographical knowledge triggers a state of noetic consciousness by which awareness of the past is limited to feelings of knowing or familiarity, whereas episodic events trigger a state of auto-noetic consciousness. Auto-noetic consciousness refers to the phenomenological sense of experiencing oneself being present at the time when the to-be-remembered episode originally took place (Tulving, 2002). As we emphasize below, an important characteristic of autobiographical retrieval in alcohol dependence is retrieval of semantic memories at the expense of episodic ones.

### 2.2. Temporal distribution of autobiographical memory

Besides the dissociation between semantic and episodic autobiographical components and the subjective experience that characterizes each of them, another core characteristic of autobiographical memory is its uneven temporal distribution. This distribution refers to three distinct features: childhood amnesia, the reminiscence bump, and the recency effect (Conway and Pleydell-Pearce, 2000; Janssen et al., 2012; Rubin and Wenzel, 1996). Childhood amnesia refers to a near

complete extinction of memories from the earliest years of life, the reminiscence bump refers to a substantial increase in memories of events that occurred between the ages of 18 and 30 years, and the recency effect refers to preferential recall of recent events. Regardless of the clinical status (e.g., alcohol disorders, Alzheimer’s disease, schizophrenia or healthy populations), the reminiscence bump has been extensively studied as it covers many important/significant events in people’s lives (e.g., first date, marriage, first childbirth). Indeed, it has been argued that the reminiscence bump is the result of many first-time experiences and that these turning points are used later in life as milestones when people experience similar events (Pillemer, 2001). Hence, it can be seen as a frame containing self-defining memories. i.e., events that are vivid and emotion-laden with a large impact on the sense of identity (Blagov and Singer, 2004). As we emphasize below, self-defining memories can provide a window into how individuals with alcohol dependence construct their life stories. Another issue related to the temporal distribution of autobiographical memory, and which we will underline below, is anterograde amnesia, i.e., a difficulty to form new memories in alcohol dependence.

### 2.3. Past and future autobiographical thinking

Recent research has established important links between the ability to remember past autobiographical memories and the ability to imagine scenarios that one might plausibly experience in the future. Both remembering the past and imagining the future emerge approximately at the same time of development (Suddendorf, 2010) and decline in parallel in normal aging (Addis et al., 2008) and amnesia (El Haj et al., 2015a,b; Hassabis et al., 2007; Klein et al., 2002). In psychiatric disorders, patients with autobiographical compromise tend to show a corresponding deficit in projecting themselves into the future, an observation that has been reported for depression (Williams et al., 1996) and schizophrenia (D’Argembeau et al., 2008). The relationship between past and future thinking can be attributed to the fact that both abilities are inherently linked through mental time travel. Mental time travel, a concept intimately linked with auto-noetic consciousness, refers to the ability to project oneself mentally backwards through time to relive one’s personal past or forward through time to pre-experience possible future events (Tulving, 1985, 2002; Wheeler et al., 1997). Bearing in mind the relationship between past and future thinking, the present paper highlights the potential compromise of the ability to

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