

Subjective Time as a Marker of the Present Consciousness

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Abstract : Subjective time plays an important role in consciousness processes and self-awareness at the moment. The concept of intrinsic neural timescales (INT) explains the difference in perceiving various time intervals. The capacity to experience the present builds on the fundamental properties of temporal cognition. The challenge that both philosophy and neuroscience try to answer is how the brain differentiates the present from the past and future. In our work, we analyze papers which describe mechanisms involved in the perception of 'present' and 'non-present', i.e., future and past moments. Taking into account that we perceive time intervals even during rest or relaxation, we suppose that the default-mode network activity can code time features, including the present moment. We can compare some results of time perceptual studies, where brain activity was shown in states with different flows of time, including resting states and during "mental time travel". According to the concept of mental traveling, we employ a range of scenarios which demand episodic memory. However, some papers show that the hippocampal region does not activate during time traveling. It is a controversial result that is further complicated by the phenomenological aspect that includes a holistic set of information about the individual's past and future.

Keywords : temporal consciousness, time perception, memory, present

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