

## **The effects of dispositional and state mindfulness on prospective memory: a virtual reality study**

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Background and objectives: Mindfulness meditation has been shown having a benefic influence on different cognitive functions. Beyond the effect of practice, mindfulness has been also conceptualized as a personality trait. One of the most robust findings is its enhancement of attentional performances. Efficient attentional abilities support the functioning of virtually all higher-level cognitive functions. A direct link between attention and memory has been reported, and recent works support the idea that mindfulness could improve memory performances. Even if memory is classically conceptualized as past-orientated, recent theoretical frameworks underline its commonalities with prospection mechanisms, being mostly future-oriented. Prospective memory is defined as the encoding of intentions that must be executed at a given place or time in the future, and is therefore pivotal in real-life adaptive behavior. The retrieval and execution of those actions necessitate attentional resources. The aim of this study was to investigate the effects of dispositional and state mindfulness on prospective memory employing an ecologically valid task via virtual reality. Methods: Sixty-seven adults participated in our study. In a first phase, they were asked to learn associations between an actions and a time-based (call a friend after 4 m) or an event-based cue (take some money at the post office). The two groups were paired for demographic, mood and cognitive function variables. Then, participants were, in a double-blind protocol, randomly assigned to either a 15 minutes mindfulness meditation session, or a mind wandering exercise (control condition). Finally, subject had to execute the actions encoded in the first phase during the navigation in a virtual town. Trait mindfulness was assessed with standardized measures. Results: We did not report any difference between the two groups on the prospective memory scores. However, the performance for time-based actions was positively correlated with dispositional mindfulness, regardless of the group. Discussion and conclusion: The present study is the first to investigate the link between mindfulness and prospective memory. Our results suggest that dispositional mindfulness, but not a single mindfulness session modulates prospective memory abilities. Further studies are needed to investigate the potential impact of long-term meditation on prospective memory.