

## Is The Proust Phenomenon Fact or Fiction? A Meta-Analysis of Olfactory Stimulation in Autobiographical Memory Retrieval

Ovidiu I. Bobei<sup>1,2\*</sup>, Dragos Cîrneai<sup>4</sup>, Ioana R. Podina<sup>1,3</sup>

<sup>1</sup>Laboratory of Cognitive Clinical Sciences, University of Bucharest, Bucharest, Romania

<sup>2</sup>Interdisciplinary School of Doctoral Studies, University of Bucharest, Bucharest, Romania

<sup>3</sup>MINDCARE FOR ALL Association, Bucharest, Romania

<sup>4</sup>Faculty of Psychology and Education Sciences, Spiru Haret University, Bucharest, Romania

### Abstract

This is the first meta-analysis investigating the relative efficacy of olfactory stimulation on the quality of evoked memories compared to other modalities of sensory stimulation in order to test the veracity of the Proust phenomenon.

Twenty experimental/quasi-experimental studies were included in this meta-analysis. Olfactory stimulation was compared with a variety of stimulation modalities and four key characteristics of evoked memories (specificity, vividness, emotionality and evocativeness) were assessed in these analyses.

Olfactory stimulation had a greater effect on emotionality  $g = 0.18$  and evocativeness  $g = 0.18$  of retrieved memories compared to other stimulation modalities. These differences tended to decrease with year of publication for both emotionality and evocativeness. Subgroup analyses showed larger effects of olfactory stimulation in contrast to verbal or labelbased stimulation than to auditory or visual stimulation, but these effects varied depending on the outcome analyzed.

Although olfactory stimulation has a significantly greater effect on two characteristics of autobiographical memories analyzed, these results did not fully confirm the Proust phenomenon. Future research is needed to further clarify the conditions under which olfactory stimulation has a more pronounced effect on evoked memories relative to other stimulation modalities.

**Keywords:** autobiographical memory, odor exposure, olfactory stimulation, Proust phenomenon.