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Smell-Enhanced Recall Memory in Younger and Older Adults: Evidence from a VR Paradigm

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Abstract

The sense of smell is known to enhance autobiographical memory ("Proust effect"). However, less is known about the effect of visual-olfactory integration on younger and older adults' recall and recognition memory. Using a virtual reality paradigm, we explored the effect of object-associated smells on memory. Participants first searched for objects in a virtual home in either unimodal (visual-only) or bimodal (visual+olfactory) conditions. Next, participants completed a verbal recall task for target objects, followed by a forced-choice scene recognition task. The addition of olfactory cues improved object recall for both age groups similarly, but did not affect scene recognition. A follow-up study explored whether cognitive demands (single vs. dual task) could modulate the effect of olfactory cues on memory. Preliminary results replicated the previous recall benefits across age groups, but no effect of cognitive demand was observed. These outcomes have implications for interventions focused on improving memory across the adult lifespan.

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