Abstract

The novel Spontaneous Retrieval Deficit (SRD) hypothesis predicts that people in the earliest stages of Alzheimer's Disease (AD) are particularly affected in spontaneous retrieval (e.g., mind-wandering) rather than deliberate retrieval measured by most of the currently used neuropsychological tests. The purpose of this Ph.D. was to test the robustness of the spontaneous retrieval deficit in groups with an elevated risk of developing AD, and to investigate whether the deficit can be detected even in groups that are selected according to noncognitive criteria, i.e., people with periodontal disease. In Study 1, 27 individuals with amnestic Mild Cognitive Impairment (aMCI) and 27 healthy controls were compared on mind-wandering while performing a novel task during which they were exposed to either highly meaningful or unmeaningful pictures. In line with the SRD hypothesis, a substantial reduction in mind-wandering was found among aMCI individuals. Importantly, the reduction was found with exposure to highly meaningful stimuli, but not to unmeaningful stimuli, supporting our expectation that the deficit is particularly pronounced in bottom-up and stimulus-dependent spontaneous processing. Study 2 investigated, for the first time, the relationship between spontaneous retrieval and periodontitis. Sixty community-dwelling dementia-free older adults varying in periodontal health completed a battery of neuropsychological tests and the same task as in Study 1, during which mind-wandering was evaluated. Periodontal health was assessed subjectively, and objectively, in terms of periodontitis-related changes in periodontal tissue, and periodontitis bacteria. In line with predictions, the objective and subjective symptoms of poorer periodontal health were associated with less mind-wandering, further supporting the SRD hypothesis. The findings from the Ph.D. research allow us to clarify the SRD hypothesis by showing which specific type of spontaneous retrieval best demonstrates very subtle signs of cognitive change, and show that these signs can be detected even before the prodromal stage of AD.