



**Ruprecht-Karls-Universität Heidelberg  
Medizinische Fakultät Mannheim  
Dissertations-Kurzfassung**

**Association between tactile processing, memory performance and the organization of somatosensory cortex in participants with mild cognitive impairment**

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Aging is often characterized by cognitive decline and sensory functions may play an important part in the brain changes associated with it. In this study we examined the role of the organization of somatosensory cortex in the association between sensory changes and mild cognitive impairment (MCI).

In this study we examined 34 individuals with mild cognitive impairment and assessed sensory function using peripheral tactile sensitivity. Cognitive function was assessed using associative memory performance (PAL) and pattern recognition memory (PRM). We employed magnetic resonance imaging to assess the cortical representation of the fingertips in primary somatosensory cortex in different Brodmann areas. Peripheral tactile sensitivity and central fingertip representation (both fingertip cortical distance and size) were associated with PAL and PRM memory in our MCI participants. In addition, mediation analyses showed that the size of the cortical representation of the fingertip mediated the association between tactile sensitivity and PRM performance, and showed a trend towards significance in mediating the association between tactile sensitivity and PAL performance.

In this study we observed a close association between cortical changes, tactile sensitivity and memory decline in individuals with mild cognitive impairment. These data suggest that interventions aimed at improving tactile sensitivity might be useful in improving the cortical representation of sensory processes and thus might lead to improved memory function. This might be a promising strategy for treatment of cognitive decline leading to dementia.