

Imaging of Cognition, Learning and Memory in Aging

<https://neurodegenerationresearch.eu/survey/imaging-of-cognition-learning-and-memory-in-aging/>

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Country

USA

Title of project or programme

Imaging of Cognition, Learning and Memory in Aging

Source of funding information

NIH (NIA)

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15/09/2004

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10

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Basic Behavioral and Social Science... Behavioral and Social Science... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Neurodegenerative... Neurosciences

Research Abstract

DESCRIPTION (provided by applicant): The proposed research is aimed at better understanding the neural underpinnings of cognitive reserve (CR). We have postulated that CR mediates the relationship between age- or Alzheimer's disease (AD)-related brain pathology and the clinical impact of that pathology. Our working hypothesis has been that CR operates through individual differences in how tasks are processed in the brain and that we can use fMRI-measured task-related activation to understand these processing differences. In both young and old, we have identified individual differences in the efficiency and capacity of brain networks elicited by task performance, and have noted that these individual differences are often related to measured CR. We have also identified situations where older adults use different compensatory neural patterns. We now propose to assess how these possible neural implementations of CR are expressed in the presence of quantifiable measures of age- and AD-related brain changes and pathology. These will include MR measures of brain volume, cortical thickness, white matter hyperintensities, resting cerebral blood flow and default network integrity, as well quantified amyloid burden from 18F-AV-45 PET. These measures will be obtained for 50 young and 150 older healthy participants who will also perform two tasks while being imaged with fMRI. This will allow us to explore the neural implementation of CR and determine how CR maintains performance in the presence of brain changes and pathology. We also propose to follow our elder participants over time to determine whether differential expression of these CR networks in healthy elders is associated with reduced risk of important clinical outcomes including cognitive decline and developing mild cognitive impairment (MCI) or AD. This work will lead to better understanding of how aging and AD pathology impacts on the neural systems that mediate cognitive function and the neural mechanisms that differentiate successful and unsuccessful aging. In turn, it may provide clues for remediating or preventing age-related cognitive changes and delaying the onset of AD.

Lay Summary

This work will lead to better understanding of how aging and AD pathology impacts on the neural systems that mediate cognitive function and the neural mechanisms that differentiate successful and unsuccessful aging. In turn, it may provide clues for remediating or preventing age-related cognitive changes and delaying the onset of AD.

Further information available at:

Types:

Investments > €500k

Member States:

United States of America

Diseases:

Alzheimer's disease & other dementias

Years:

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Database Categories:

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