Supplementary Table 1. Overview of neuroimaging studies relating memory and perceptual functions to the transentorhinal cortex

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| **Functions** | **Reference** | **Population** | **Neuroimaging modality** | **Task** | **Neuroimaging analytic method** | **MTL regions** | **Other brain regions** | **Effect size for MTL or PrC/ErC** |
| Context-free memory | Gour et al. (2011) | Mixed group of MCI, AD and SCD | Resting-state fMRI | DMS48 | Correlation between score and mean functional connectivity within an anterior temporal network (ATN) | ATN: anterior superior, middle and inferiortemporal gyrus (BA 38, 20 and 21), PrC (BA 35) and ErC (BA 28; BA 34) and uncus. | No | Rho = .73 |
|  | Bastin et al. (2020) | MCI and AD | SV2A-PET | DMS48 | Correlation between score and distribution volume of tracer in ROIs | Parahippocampal gyrus | No | Rho = .46 |
|  | Barbeau et al. (2012) | MCI | SPECT | Semantic memory composite score | Whole-brain correlation between score and cerebral blood flow | PrC/Erc (BA 38, BA 28), Hippocampus | No | T = 3.83 for PrC/ErC |
|  | Joubert et al. (2010) | MCI and AD | Anatomical MRI | Semantic memory composite score | Whole-brain correlation between score and gray matter density | No | Anterior temporal, inferior prefrontal | - |
|  | Venneri et al. (2008) | AD | Anatomical MRI | Lexical word attributes during semantic verbal fluency | Whole-brain correlation between score and gray matter density | PrC/ErC (BA28, BA 35) | Amygdala, superior and inferior temporal, posterior cingulate gyrus | - |
|  | Venneri et al. (2019) | HC and MCI | Anatomical MRI | Semantic verbal fluency | Correlation between score and ROI volumes | PrC (BA 35), hippocampus | No (tested ROIs: temporal pole and orbitofrontal) | Rho = .23 |
|  | Wright et al. (2022) | Mild MCI | Anatomical MRI | Difference between phonemic and semantic verbal fluency | Whole-brain correlation between score and gray matter density | Uncus, anterior parahippocampal gyrus/PrC (BA 36, 35), hippocampus | Inferior and middle temporal | - |
|  | Frick et al. (unpublished) | AD | Anatomical MRI | Sensitivity to conceptual similarity during conceptual matching | Regression between score and volume of MTL ROIs | BA 35, BA 36 | NA | β = .03 |
|  | Besson et al. (2020) | MCI | Anatomical MRI | Familiarity for entities | Regression between score and volumes of ROIs | alErC | No (tested ROIs: BA 35, BA36, hippocampus) | T = 2.81 |
|  | Westerberg et al. (2013) | MCI and AD | Anatomical MRI | Forced-choice recognition of objects | Regression between score and volumes of ROIs | PrC, ErC | Hippocampus, parahippocampal cortex | r = .62 |
|  | Duke et al. (2017) | Young adults | fMRI | Frequency judgments | Whole-brain activity as a function of perceived recent exposure | PrC | No | - |
|  | Yang et al. (2022) | Young adults | fMRI | Frequency judgments | Whole-brain activity as a function of perceived or actual recent exposure | PrC | No | - |
| Conjunctive binding in memory | Valdes Hernandez et al. (2020) | MCI | Anatomical MRI | Conjunctive STM binding | Correlation between score and ROI volumes | Parahippocampal gyrus | No (tested ROIs: hippocampus, globus pallidus, thalamus) | r = -0.63 |
|  | Parra et al. (2014) | Young adults | fMRI | Conjunctive STM binding | Whole-brain fMRI contrast binding > fixation | Not significant | Fusiform, postcentral, middle frontal, superior and middle parietal | - |
|  | Norton et al. (2020) | PSEN1 mutation carriers | 18FFlortaucipir (tau) PET | Conjunctive STM binding | Correlation between score and SUVR in ROI | ErC (for single feature memory) | Inferior temporal (for single feature memory) | r = − .48 |
|  | Yeung et al. (2017) | Older adults with varying stages of cognitive decline | Anatomical MRI | Fixation to conjunctive objects | Regression between score and volume of MTL ROIs | alErC | NA | β = .66 |
|  | Bastin et al. (2014) | AD | FDG-PET | Memory for unitized object-color pairs | Whole-brain correlation between score and metabolism | Fusiform/parahippocampal | Amygdala, superior frontal, cingulate, precentral | - |
|  | Delhaye et al. (2019 Hippocampus) | MCI | Anatomical MRI | Memory for new compound words | Regression between score and volume of rhinal ROIs | PrC (BA 35, BA 36) | No | r = .87 |
|  | Kivisaari et al. (2013) | HC, MCI and AD | Anatomical MRI | False recognitions of living things | Whole-brain correlation between score and gray matter density | PrC, hippocampus | amygdala | - |
|  | Maass et al. (2019) | HC, MCI and AD | 18F-flortaucipir (tau) PET | Correct rejection of objects lures in memory | Correlation between score and SUVR in ROIs | Anterior-temporal ROI: amygdala,fusiform gyrus (which includes PrC or BA 36)and inferior temporal gyrus. | No (tested ROI: posterior-medial regions including Parahippocampal cortex, retrosplenial cortex and precuneus | rho = -0.29 |
| Discrimination of objects | Kivisaari et al. (2012) | HC, MCI and AD | Anatomical MRI | Index of living versus non-living things naming | Regression between score and cortical thickness in MTL ROIs | Medial PrC | NA | β = .50 |
|  | Devlin & Price (2007) | Healthy adults between 18 and 65 years old | H2 15O PET | Oddity judgments with objects | Correlation between score and cerebral blood flow in PrC ROI | PrC | NA | T = 3.09 |
|  | O’Neil et al. (2009) | Young adults | fMRI | Oddity judgments with faces | Whole-brain fMRI contrast perception > baseline | PrC | Posterior ventral visual stream | T = 4.20 |
|  | Delhaye et al. (2019) | AD | Anatomical MRI | Perception of fragmented objects | Regression between score and volumes of ROIs | PrC (BA 35) | No (tested ROIs: hippocampus, posterior cingulate cortex) | β = .71 |
|  | Gellersen et al. (2023) | Older adults with varying stages of cognitive decline | Anatomical MRI | Oddity judgments with objects | Regression between score and cortical thickness in MTL ROIs | ErC | PrC | β= 0.22 |

Note. HC, Healthy controls; MCI, patients with Mild Cognitive Impairment; AD, patients with probable Alzheimer’s disease; SCD, individuals with Subjective Cognitive Decline. PrC, perirhinal cortex, ErC, entorhinal cortex; alErC, anterolateral entorhinal cortex; SV2A, synaptic vesicle protein 2A; ROI, region of interest; SPECT, single-photon emission computed tomography; STM, short-term memory; SUVR, standard uptake volume ratio; FDG-PET, 18F-2-fluoro-2-deoxy-D-glucose PET.

Involvement of other brain regions: “No” indicates that other brain regions were tested but were not found significant; “NA” means that the analysis did not consider other brain regions.