groups, response times for incongruent answers were shorter than those for congruent answers (F(1,34) = 15.8, p < .0005). There were no differences between self/others task in response times and discrepancy (F(2,34)<1, n.s.). The fMRI analysis performed on the group of 20 controls showed similar activations during “self” and “other” conditions versus baseline. These included medial-prefrontal cortex bilaterally, left striatum, left lateral prefrontal cortex, left temporal gyrus, and visual posterior regions. Conclusions: The self-appraisal task is a novel and promising fMRI paradigm that can be used to explore the neuro-anatomical correlates of anosognosia. Further results from the comparison between ADs, MCI and controls will be presented and discussed.

P2-415 | EARLY STAGE OF ALZHEIMER’S DISEASE: TRANSIENT OSCILLATIONS AND NEURAL DYNAMICS AS PREDICTIVE MARKERS OF THE PATHOLOGY
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Background: Two to 5 years before Alzheimer’s disease (AD) onset, patients start to complain from small deficits of cognitive abilities; the Mild Cognitive Impairment (MCI). The disease then develops to its first stage (mildAD), and afterwards to more severe forms. There is an urgent need for a better understanding of these early stages of MCI and mildAD of the disease. Despite many studies, AD mechanisms, and their impact on brain dynamics - more specifically electroencephalographic (EEG) oscillations - are still far from being completely understood. Several recent studies have emphasized the importance of brain transient oscillations in the cognitive processes of mental representations. Methods: We have developed and suggested several novel approaches to study such structures in EEG data collected from patients with the early stage of disease (MCI, and mildAD); - Methods to extract transient EEG patterns. These patterns are representative of local organizations in located brain area. Recent studies have shown that such patterns may have a functional role in the formation of mental representations; - Methods to compare the couplings between EEG channels, representative of exchanges of information between different brain areas. Such couplings play a key role in binding tasks (where perceptual features are assembled into mental representations). Results: Local and large scale synchrony is disrupted in EEG signals of patients with MCI or mildAD. Cross-frequency couplings, especially theta-beta interactions, are significantly distorted. Conclusions: Our findings allow both a better understanding of the mechanisms of AD; as well as promising methods which could be used to detect the disease in its most early stages. Neural dynamics of EEG could be used as markers for the pathology.

P2-416 | FRONTAL DYSFUNCTION UNDERLIES DEPRESSION IN MILD COGNITIVE IMPAIRMENT: A FDG-PET STUDY
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Background: Depression is very common in mild cognitive impairment (MCI), a preclinical stage of Alzheimer’s disease (AD), as well as clinically evident AD. Moreover, MCI individuals with depression shows higher conversion rate to clinical AD than those without depression. This study aimed to elucidate the functional neuroanatomical substrate of depression in MCI. Methods: Eighteen MCI with depression (MCI_D) and 18 age- and gender-matched MCI without depression (MCI_ND) patients were recruited from a University Hospital-based cohort. For comparison, 16 cognitively normal (CN) elderly individuals were also included. All subjects underwent FDG-PET scanning and regional cerebral glucose metabolism was compared among the three groups by voxel-based method. The relationship between depression severity, as measured by Hamilton Rating Scale for Depression (HRSD) score, and glucose metabolism was also investigated. Results: MCI_D showed lower glucose metabolism in the right superior frontal gyrus than MCI_ND. There was a significant negative correlation between HRSD score and glucose metabolism in the anterior frontal region for overall MCI subjects. When compared with CN, both MCI_D and MCI_ND showed decreased glucose metabolism in the precuneus, while MCI_D additionally had reduced metabolism in other diffuse brain regions. Conclusions: Given previous observations on depression in AD, our results suggest that functional disruption of the frontal region, known to be associated with primary or other secondary depression, underlies depression in preclinical AD as well as clinically evident AD.

P2-417 | IMPAIRED CROSSMODAL INTEGRATION OF AUDIOVISUAL OBJECTS IS RELATED TO ANTEROMEDIAL TEMPORAL LOBE ATROPHY IN AMNESTIC MCI AND ALZHEIMER PATIENTS
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Background: A primary goal in Alzheimer’s disease (AD) research is the detection of early cognitive changes. Cognitive changes in AD are associated with neurobiological pathologies, which begins in medial perirhinal cortex (PRC) before spreading into anteromedial temporal lobe. Non-human primate and human imaging research implicate the PRC in the crossmodal integration (XMI) of object features. We hypothesized that XMI performance is impaired in patients with AD and presumed pre-AD (amnestic Mild Cognitive Impairment (aMCI)), and that it is associated with decreased integrity of the anteromedial temporal lobe integrity including the PRC. Methods: 15 healthy controls (NC), 12 aMCI and 15 AD patients participated. The behavioral task included a XMI condition, where object pictures were presented together with environmental sounds (e.g. a cat picture and the sound “meow”), and two unimodal baseline conditions - visual and auditory - presenting two parts of a picture and two environmental sounds, respectively. Participants always decided whether the two stimuli “went together”. XMI performance (percent correct) was divided by mean unimodal baseline performance to generate a XMI index for statistical analyses. Participants’ high-resolution anatomic MRI images were processed in SPM8 using the DARTEL method. XMI indices were correlated with voxel signal intensities across modulated gray matter voxels to identify regions where reduced gray matter was associated with reduced XMI indices. Results: Behavioral analyses revealed a trend of a main effect of diagnostic category on XMI indices (F(2, 39) = 2.502, p = .095); AD, but not aMCI, patients showed a selected XMI impairment compared to NCs (t(28) = 1.811, p = .04, one-tailed and p = ns, respectively). Significantly, XMI indices significantly correlated with gray matter volumes in the right hippocampus and PRC, as well as the right middle and superior temporal gyri, the latter regions implicated in environmental sound processing. Conclusions: These findings support the hypothesized role of the PRC and hippocampus in multimodal integration of audiovisual objects. They further indicate that impaired crossmodal integration performance may signal an early stage of AD by serving as a behavioral marker of early neuropathological changes associated with this disease.

P2-418 | DEFICITS IN COGNITIVE FLEXIBILITY ARE ASSOCIATED WITH APOE-E4 ALLELE AND PRECUNEUS VOLUME AND THICKNESS IN NONDEMENTED OLDER ADULTS
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Conclusions: The self-appraisal task is a novel and promising fMRI paradigm that can be used to explore the neuro-anatomical correlates of anosognosia. Further results from the comparison between ADs, MCI and controls will be presented and discussed.

Conclusions: Our findings allow both a better understanding of the mechanisms of AD; as well as promising methods which could be used to detect the disease in its most early stages. Neural dynamics of EEG could be used as markers for the pathology.

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