



Which SPM method should be used to extract hippocampal measures in early Alzheimer's disease?

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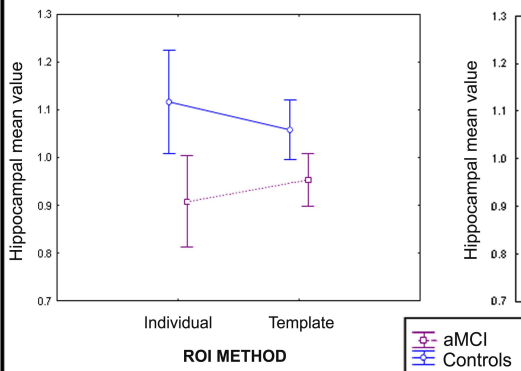
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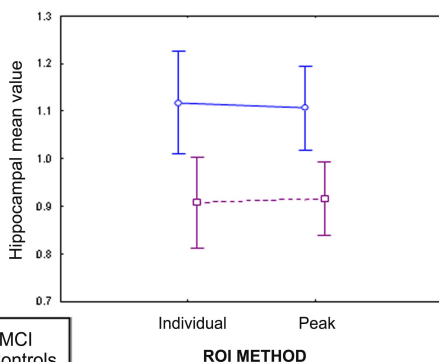
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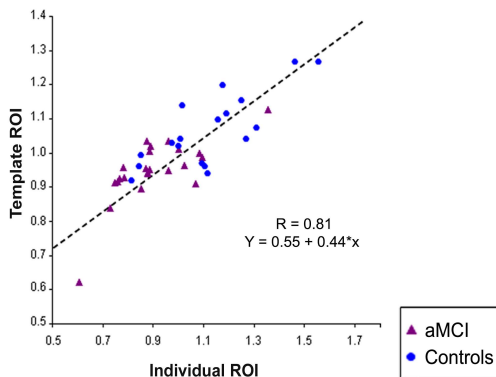
a. Method*Group Interaction with m_modulated MRI
 $F(1, 39)=9.36, p=.004$



b. Method*Group interaction with m_modulated MRI
 $F(1, 39)=0.24; p=.62$



c. Correlation in the left hippocampus between individual-ROI and m_modulated template-ROI



d. Correlation in the left hippocampus between individual-ROI and m_modulated peak values

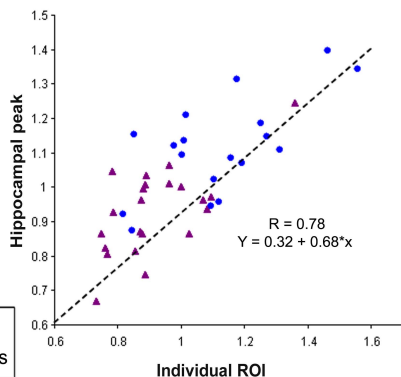


Figure1: ANOVAs (**up**) and Pearson's correlations (**down**) for selected conditions, namely ROI-i versus VBM-derived ROI-t (**a**; **c**) or Hip-peak (**b**; **d**) methods, with m_modulated data in controls (blue) and aMCI patients (purple). All hippocampal measures are centered to zero.

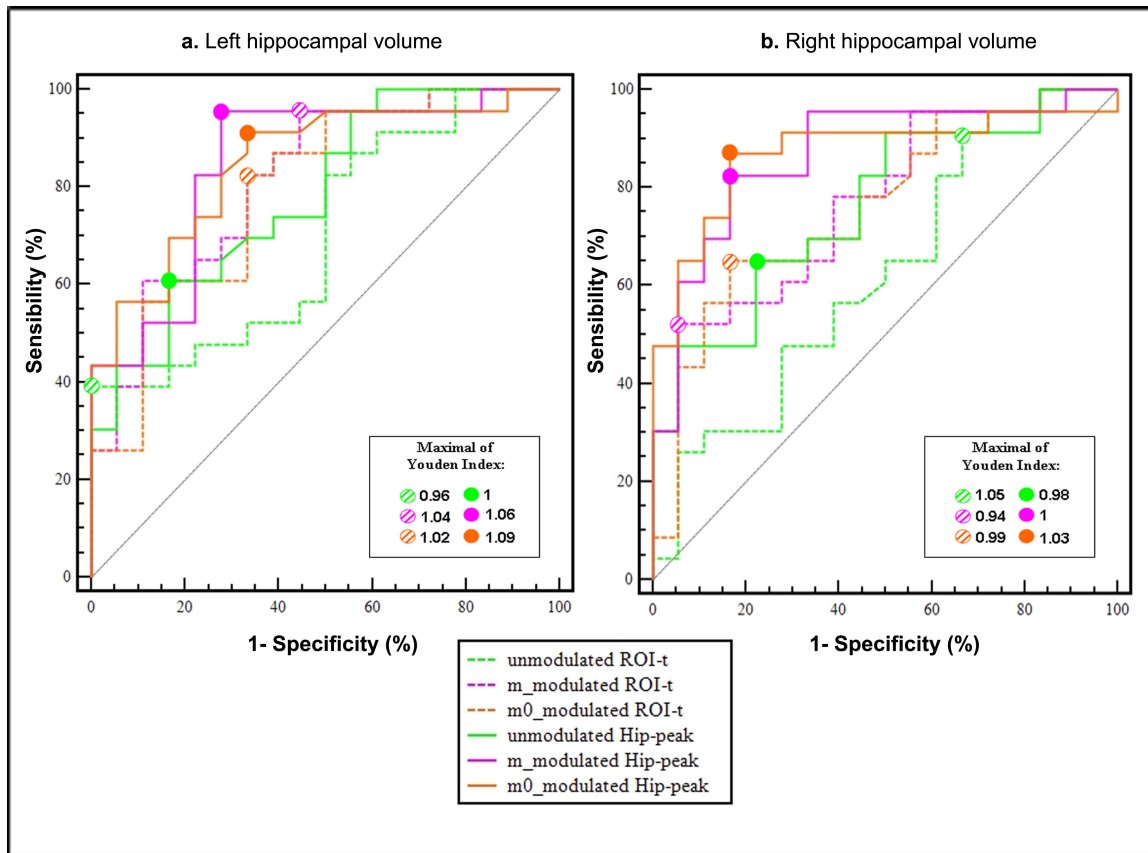
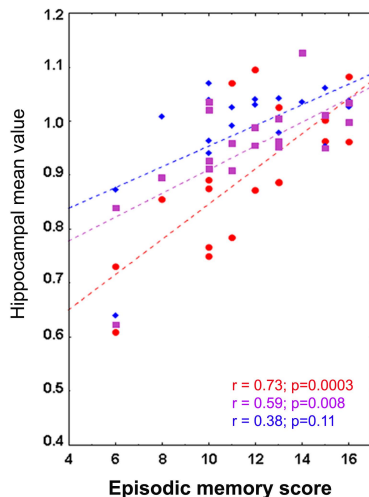
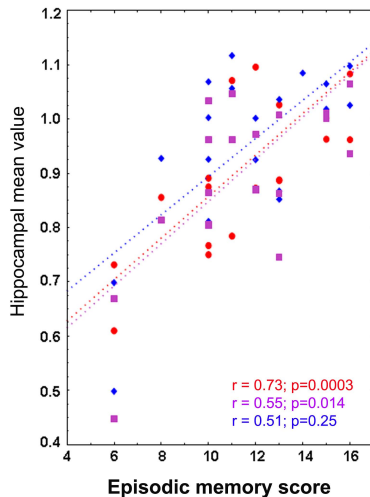


Figure2: Receiver operating characteristic curves of VBM methods for intergroup classification (a) in the left and (b) right hippocampus. The circles indicate the optimum cut-off point for each condition, i.e. the point on the ROC curve the farthest from the diagonal line, corresponding to the maximal of Youden index (J) calculated as followed: $J = \max [Se_i + Sp_i - 1]$ with Se_i = sensitivity and Sp_i = specificity.

Correlations between ROI-i vs. ROI-t values
& patients memory scores



Correlations between ROI-i vs. Hip-peak values
& patients memory scores



ROI-i ● ROI-i
 m_modulated ROI-t ■ m_modulated Hip-peak
 unmodulated ROI-t ◆ unmodulated Hip-peak

Figure 3: Illustrations of Spearman's correlations in 19 aMCI patients between an episodic memory score and left hippocampal measures. The delayed recognition score of a 16 words list verbal memory test (the Encoding-Storage-Retrieval-ESR- test fully described elsewhere (Eustache *et al*, 1998 ; Kalpouzos *et al.*, 2009) has been used here as it is particularly sensitive to AD. For the sake of illustration, hippocampal measures are expressed in arbitrary units.