

Supplementary file 4

Effect sizes and group specificities for functional connectivity analyses (fALFF and seed-based) related to apathy dimensions

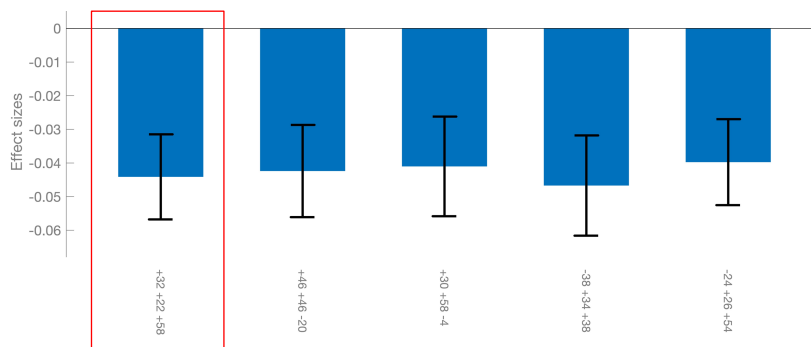
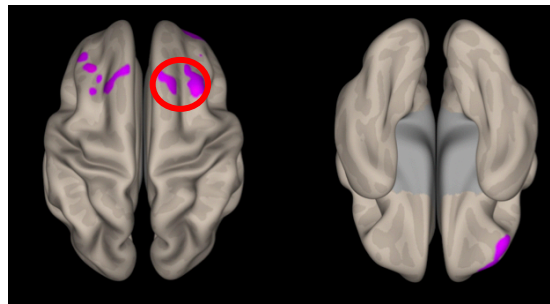
First, for each reported result (fALFF and seed-based), the effect size (i.e., Fisher-transformed correlation coefficient) with confidence interval is displayed for all the identified significant clusters (detailed in Table 3 for fALFF results and in Table 4 for seed-based results). *NB*: clusters in brain stem and in cerebellum are not visible in the figures which show projections onto cortical surface.

Second, for each reported result (fALFF and seed-based), the specificities of the relationship between F1/F2 and functional activity/connectivity within each group (bvFTD and controls) were explored. We could not evidence any significant cluster by testing the difference of effect of F1/F2 between bvFTD and controls, nor by testing the effect of F1/F2 separately within each group (probably due to lack of statistical power). Therefore, to account for the specific characteristics of each group, we show for each reported analysis: 1/ a scatterplot showing the correlation, within the bvFTD group and within the control group, between F1/F2 and the measure of functional activity/connectivity in one significant cluster; 2/ the uncorrected raw T-maps for the test of the effect of F1/F2 separately within each group.

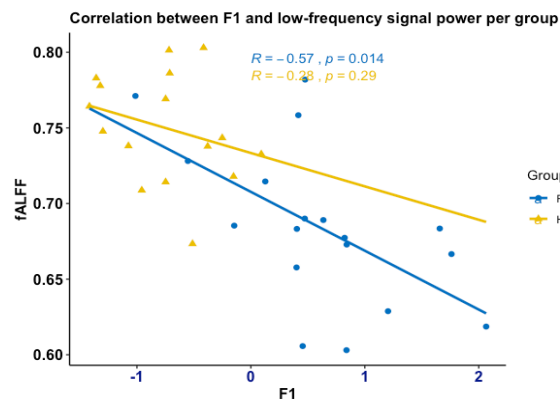
Finally, for each reported result, we tested again the effect of F1/F2 after taking account of the clinical status (bvFTD vs control) in the model (along with age and sex). Results with identified significant clusters are provided in section C/ of this document.

A/ fALFF and apathy

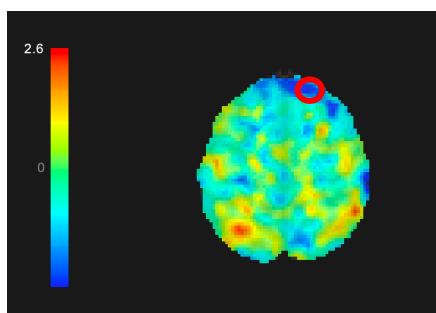
- Effect of F1 on whole-brain low-frequency signal power (fALFF)



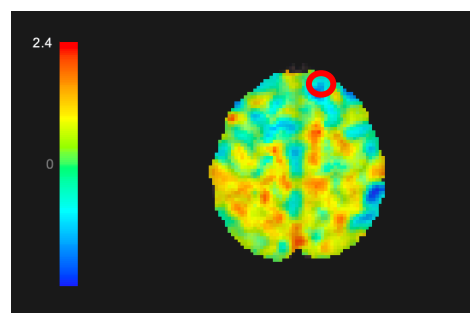
- Correlation between F1 and fALFF in the cluster circled in red in bvFTD patients (in blue) and in controls (in yellow)



- Uncorrected T-maps for the test of the effect of F1 on whole-brain fALFF within bvFTD group (on the left) and within control group (on the right)



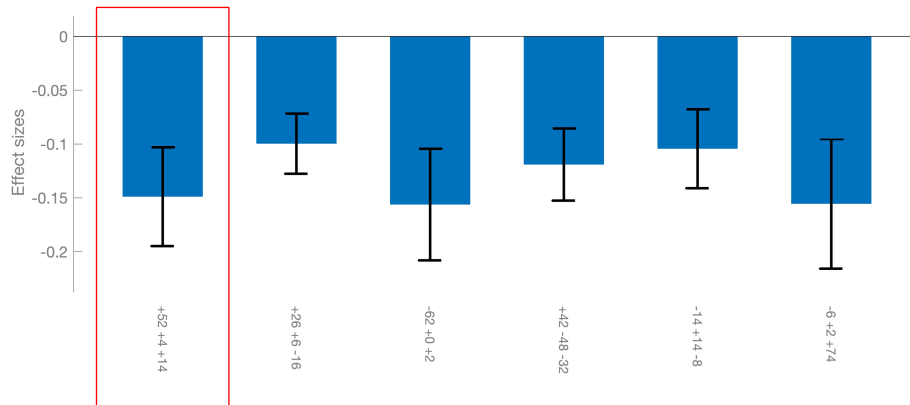
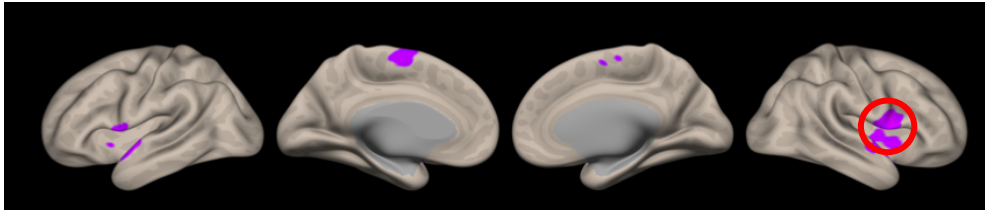
$x, y, z = (32, 22, 58) \text{ mm}$
 $T = -2.98 ; p < .01$



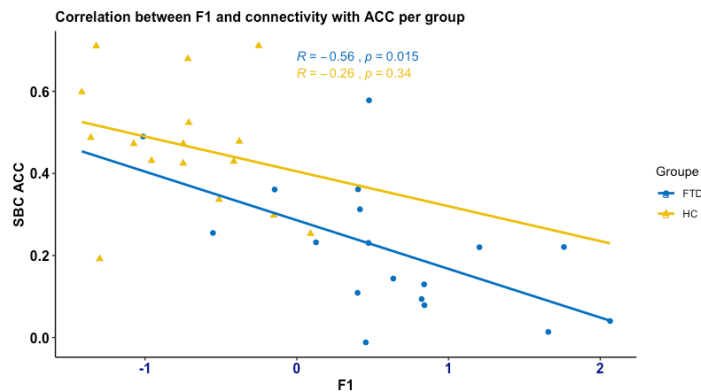
$x, y, z = (32, 22, 58) \text{ mm}$
 $T = -0.80 ; p = .43$

B/ Seed-based connectivity and apathy

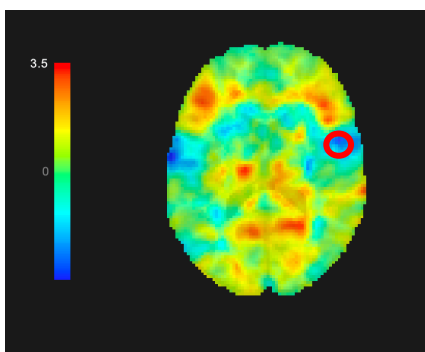
- Effect of F1 on seed-based connectivity of ACC (SN hub)



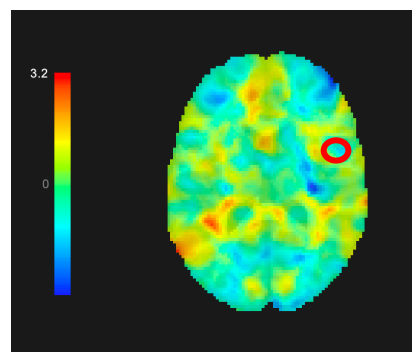
- Correlation between F1 and connectivity with ACC in the cluster circled in red in bvFTD patients (in blue) and in controls (in yellow)



- Uncorrected T-maps for the test of the effect of F1 on seed-based connectivity of ACC within bvFTD group (on the left) and within control group (on the right)

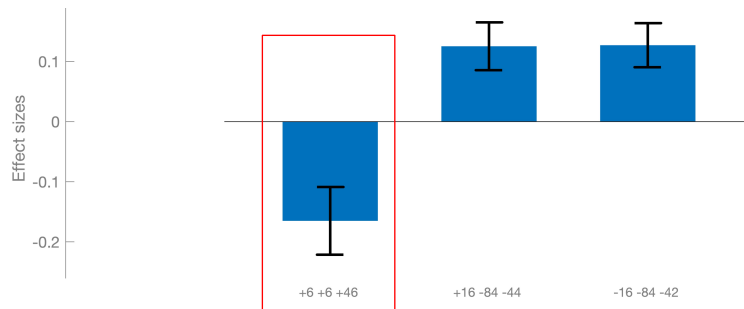
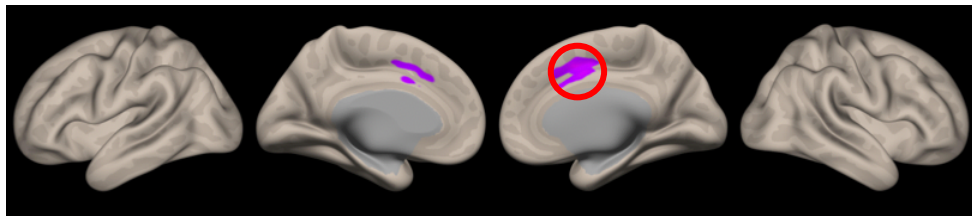


$x, y, z = (52, 4, 14) \text{ mm}$
 $T = -3.70; p < .001$

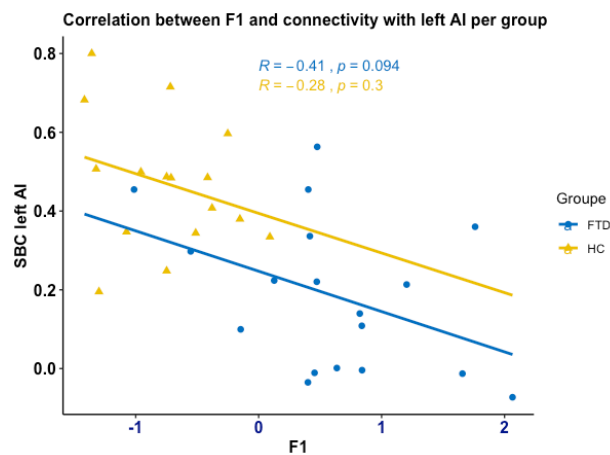


$x, y, z = (52, 4, 14) \text{ mm}$
 $T = -1.74; p = .09$

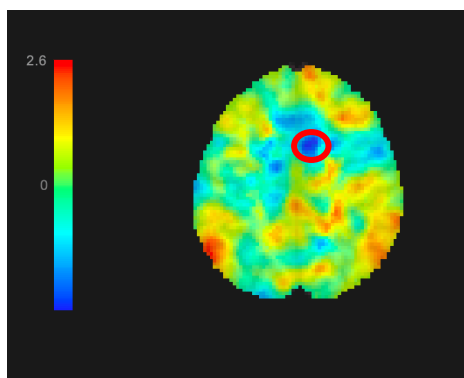
- Effect of F1 on seed-based connectivity of left AI (SN hub)



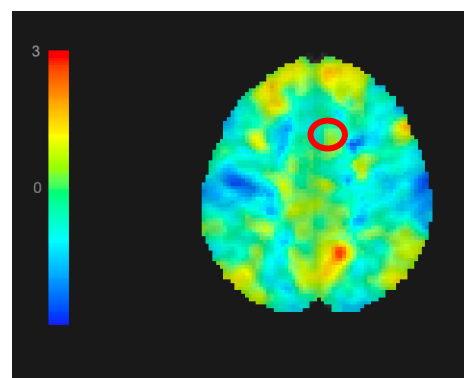
- Correlation between F1 and connectivity with left AI in the cluster circled in red in bvFTD patients (in blue) and in controls (in yellow)



- Uncorrected T-maps for the test of the effect of F1 on seed-based connectivity of left AI within bvFTD group (on the left) and within control group (on the right)

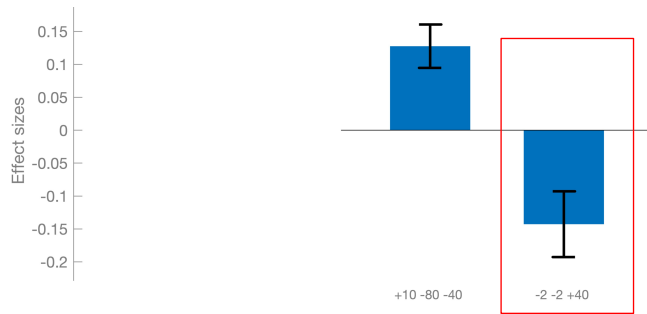
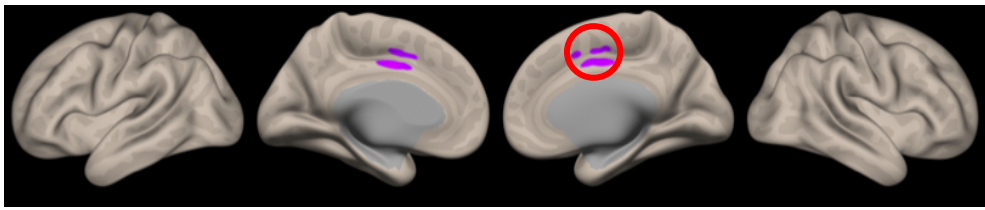


$x,y,z=(6,6,46)mm$
 $T=-2.61 ; p= .01$

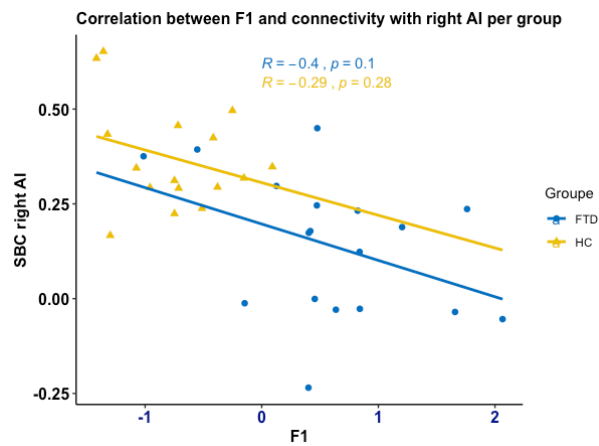


$x,y,z=(6,6,46)mm$
 $T=0.15 ; p= .88$

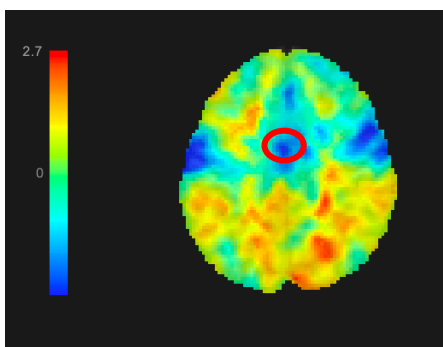
- Effect of F1 on seed-based connectivity of right AI (SN hub)



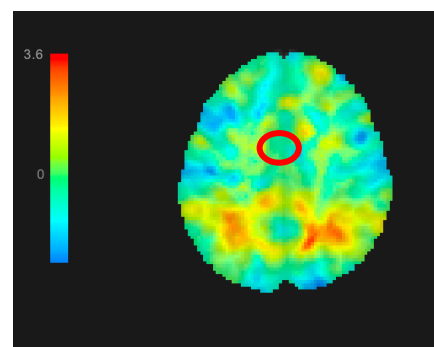
- Correlation between F1 and connectivity with right AI in the cluster circled in red in bvFTD patients (in blue) and in controls (in yellow)



- Uncorrected T-maps for the test of the effect of F1 on seed-based connectivity of right AI within bvFTD group (on the left) and within control group (on the right)

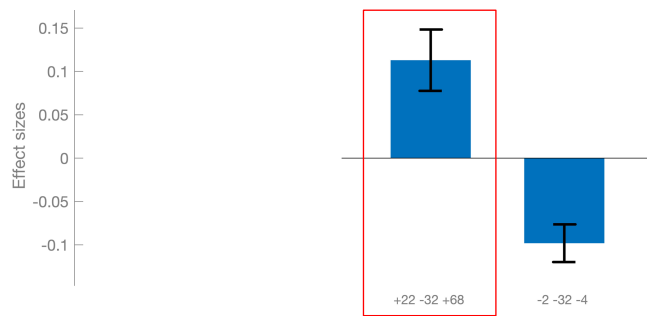
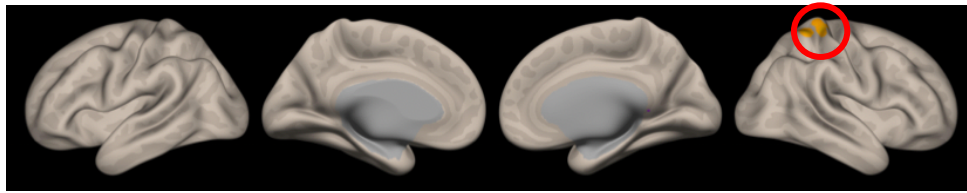


x,y,z=(6,6,46)mm
T=-2.76 ; p< .01

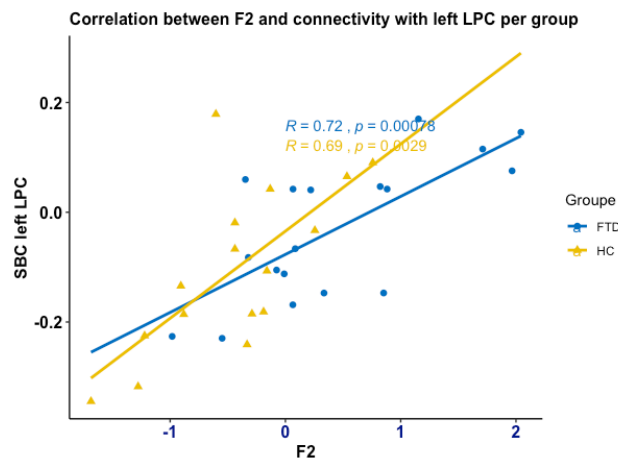


x,y,z=(6,6,46)mm
T=-0.60 ; p= .55

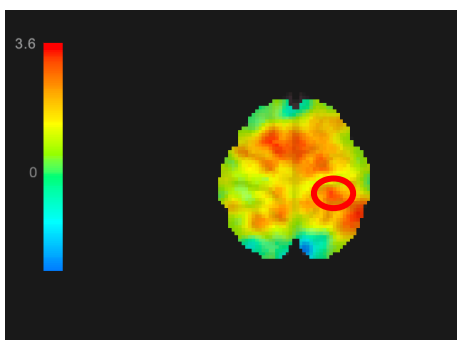
- Effect of F2 on seed-based connectivity of left LPC (DMN hub)



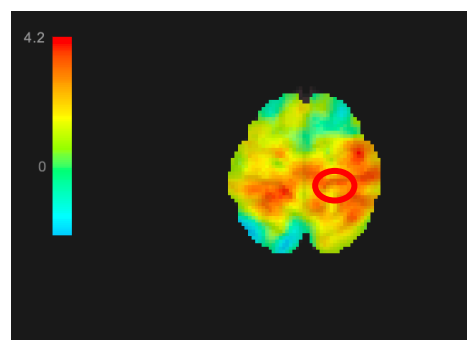
- Correlation between F2 and connectivity with left LPC in the cluster circled in red in bvFTD patients (in blue) and in controls (in yellow)



- Uncorrected T-maps for the test of the effect of F2 on seed-based connectivity of left LPC within bvFTD group (on the left) and within control group (on the right)

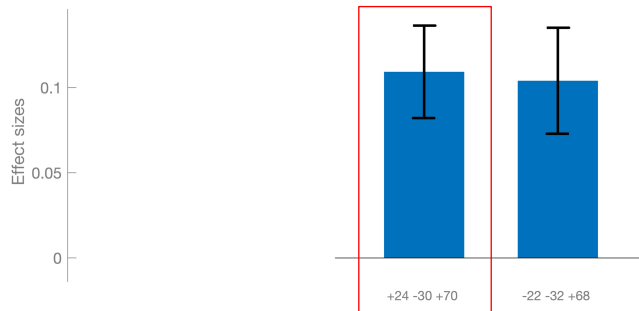
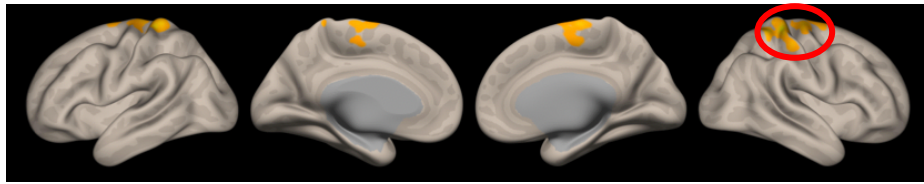


$x, y, z = (22, -32, 68) \text{ mm}$
 $T = 3.43; p < .01$

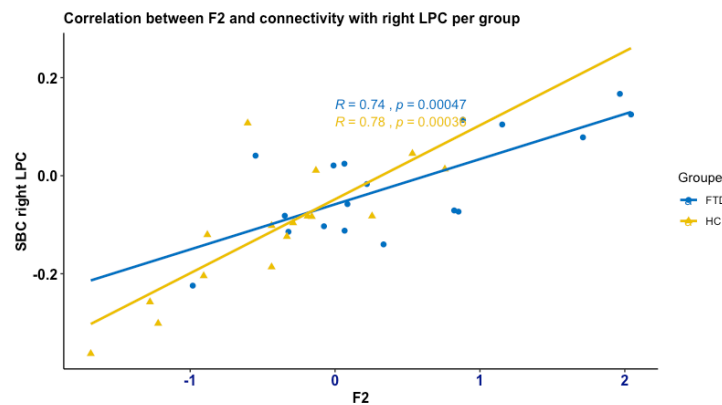


$x, y, z = (22, -32, 68) \text{ mm}$
 $T = 2.91; p < .01$

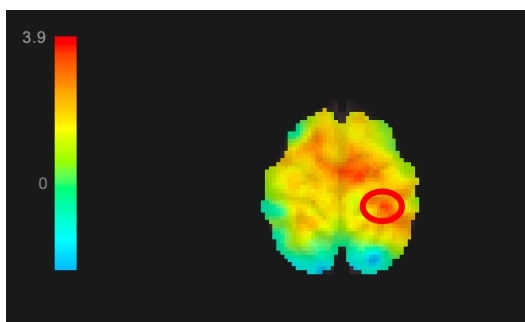
- Effect of F2 on seed-based connectivity of right LPC (DMN hub)



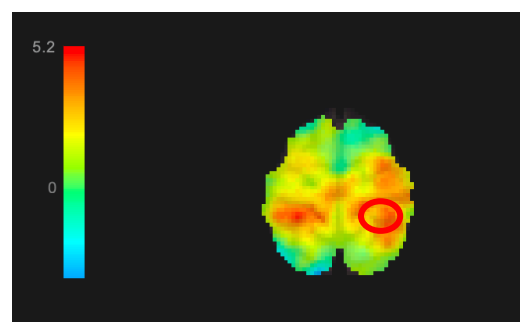
- Correlation between F2 and connectivity with right LPC in the cluster circled in red in bvFTD patients (in blue) and in controls (in yellow)



- Uncorrected T-maps for the test of the effect of F2 on seed-based connectivity of right LPC within bvFTD group (on the left) and within control group (on the right)



$x,y,z=(24,-30,70)$ mm
 $T=3.91$; $p < .001$

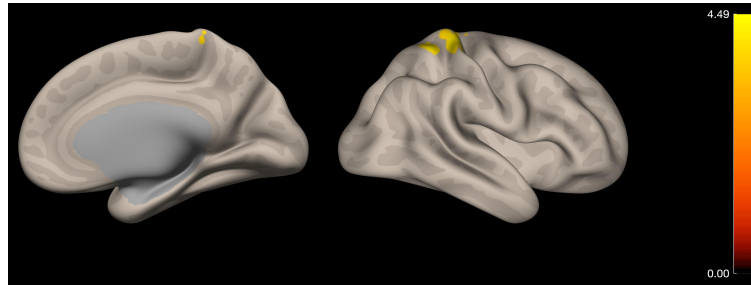


$x,y,z=(24,-30,70)$ mm
 $T=4.08$; $p < .001$

C/ Effect of apathy dimensions on connectivity controlling for clinical status

We found significant clusters for:

- The effect of F2 on the seed-based connectivity of left LPC



- The effect of F2 on the seed-based connectivity of right LPC

