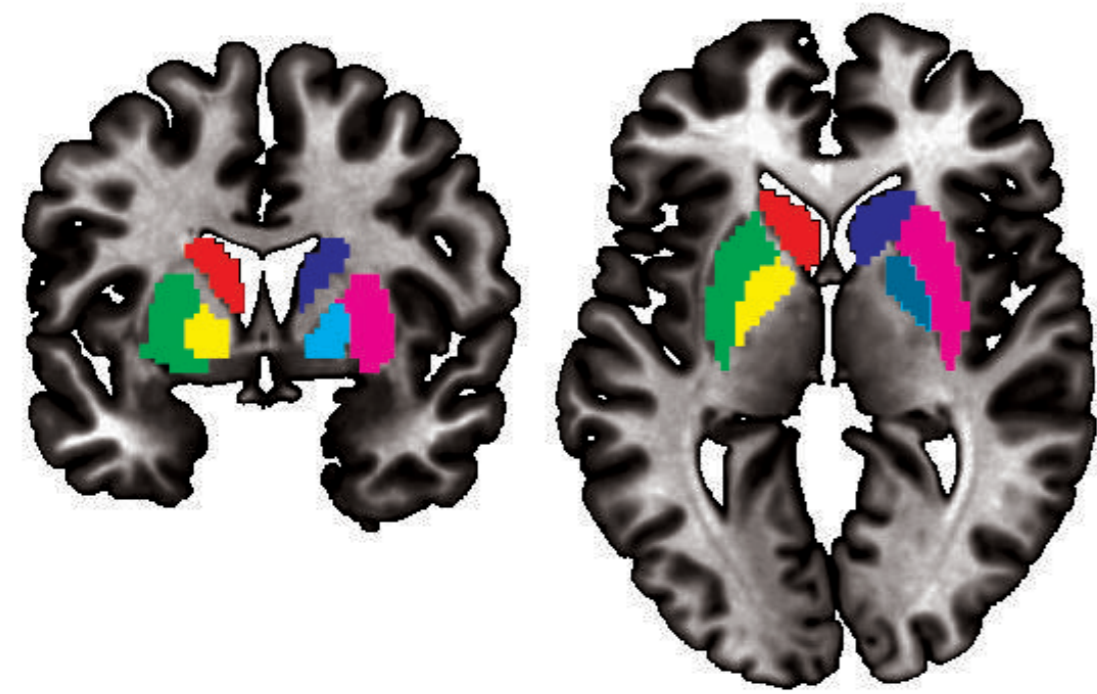
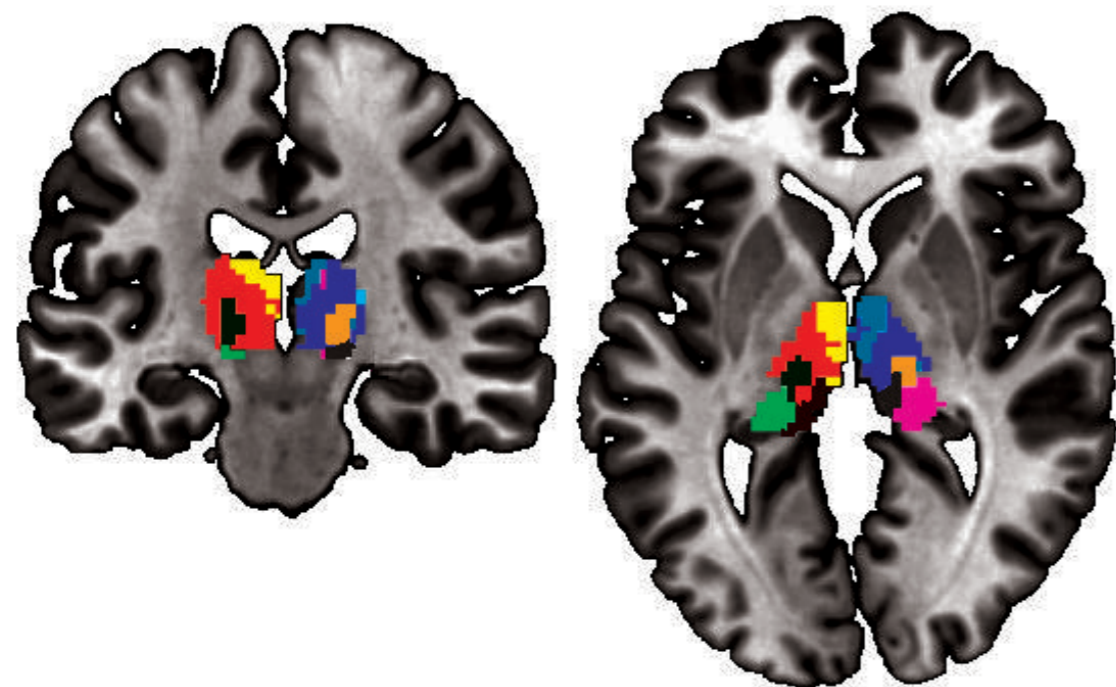
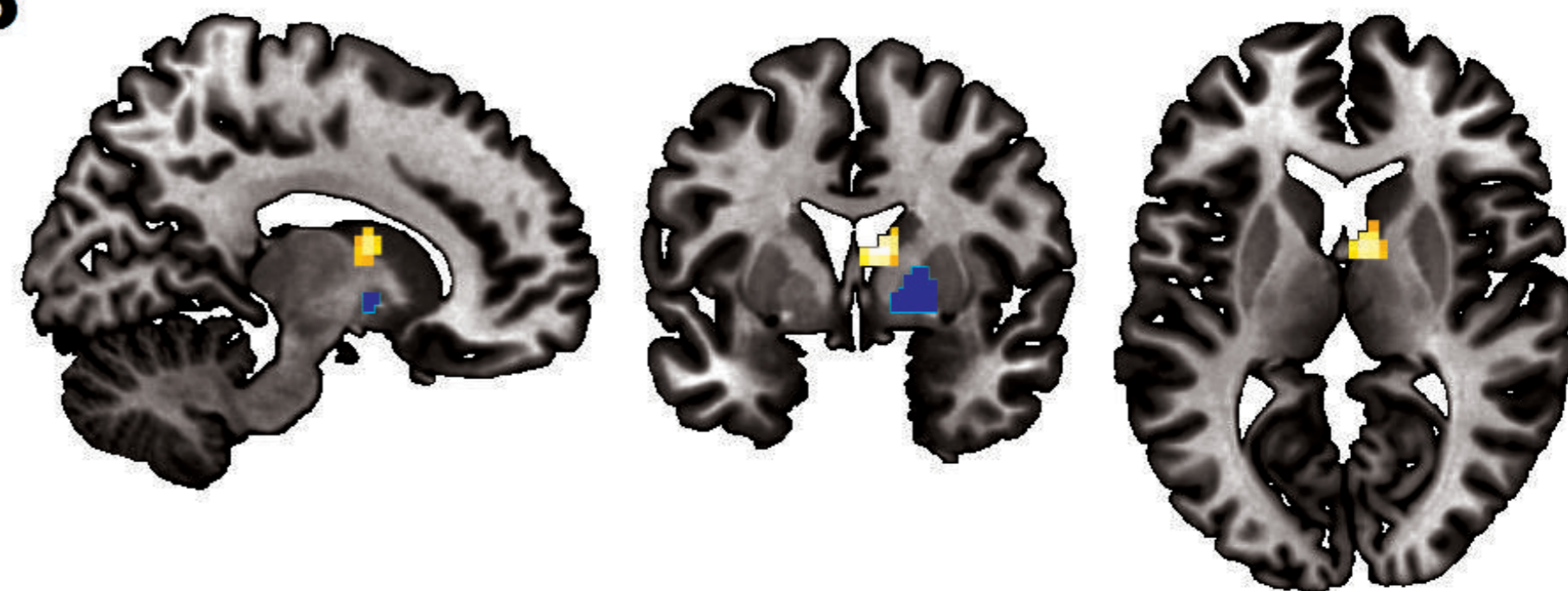
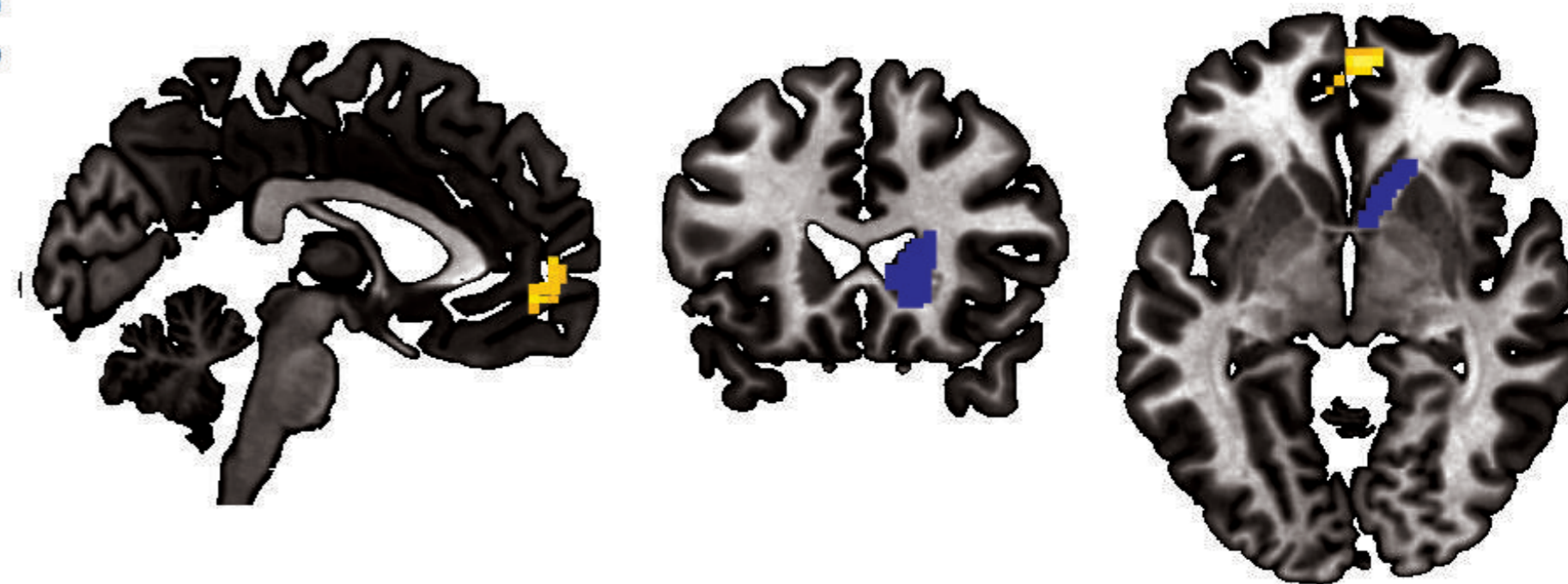
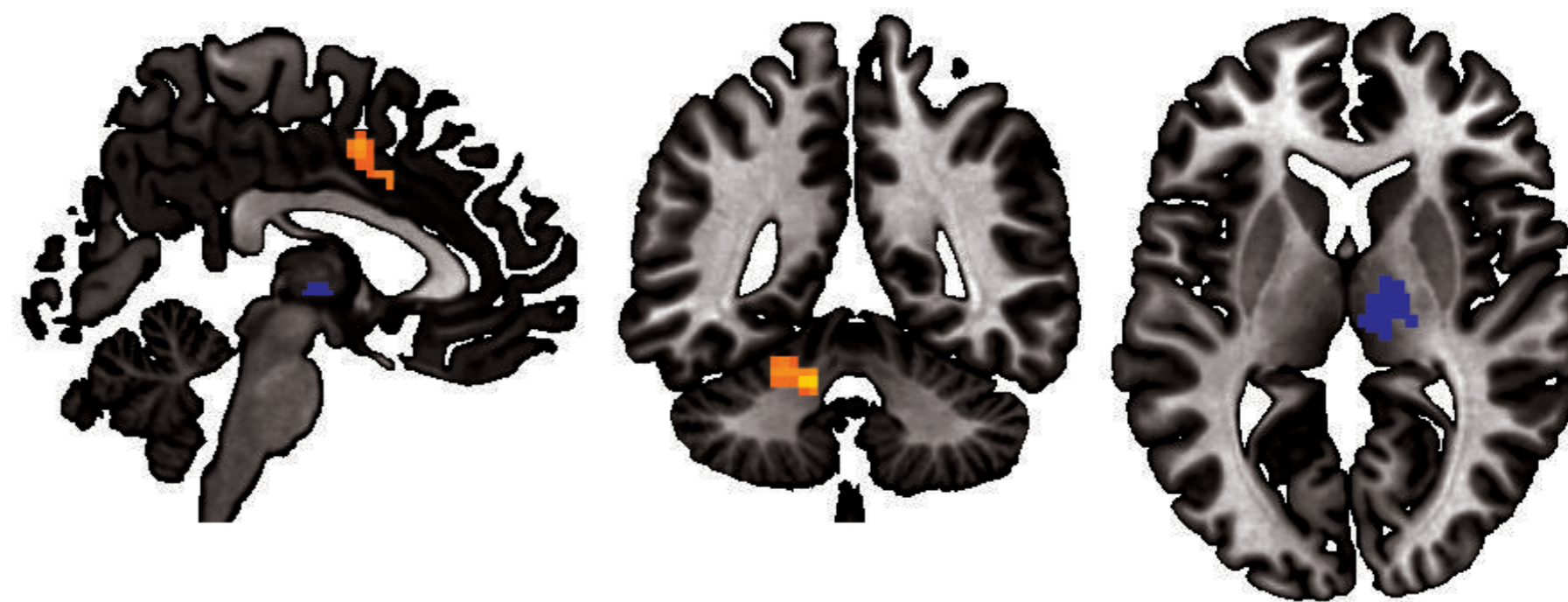


**A**

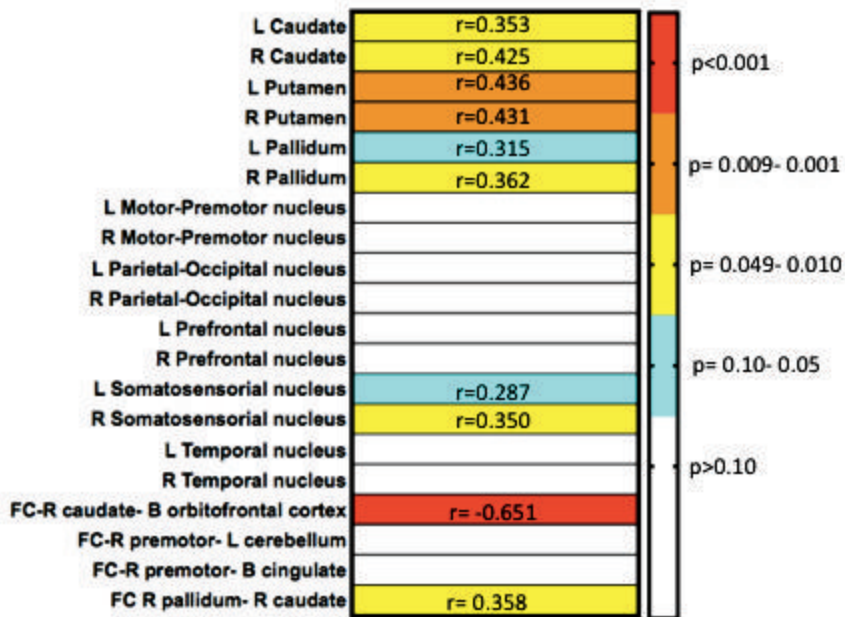
- |   |   |
|---|---|
| <span style="color: red;">■</span> Left Caudate ROI     | <span style="color: darkblue;">■</span> Right Caudate ROI |
| <span style="color: green;">■</span> Left Putamen ROI   | <span style="color: magenta;">■</span> Right Putamen ROI  |
| <span style="color: yellow;">■</span> Left Pallidum ROI | <span style="color: cyan;">■</span> Right Pallidum ROI    |



- |  |   |
|--|---|
| <span style="color: red;">■</span> Left Motor/Premotor ROI       | <span style="color: darkblue;">■</span> Right Motor/Premotor ROI    |
| <span style="color: green;">■</span> Left Parietal/Occipital ROI | <span style="color: magenta;">■</span> Right Parietal/Occipital ROI |
| <span style="color: yellow;">■</span> Left Prefrontal ROI        | <span style="color: cyan;">■</span> Right Prefrontal ROI            |
| <span style="color: darkgreen;">■</span> Left Somatosensory ROI  | <span style="color: orange;">■</span> Right Somatosensory ROI       |
| <span style="color: brown;">■</span> Left Temporal ROI           | <span style="color: black;">■</span> Right Temporal ROI             |

**B****C****D**





Global Z score

## **Linear discriminant analysis**

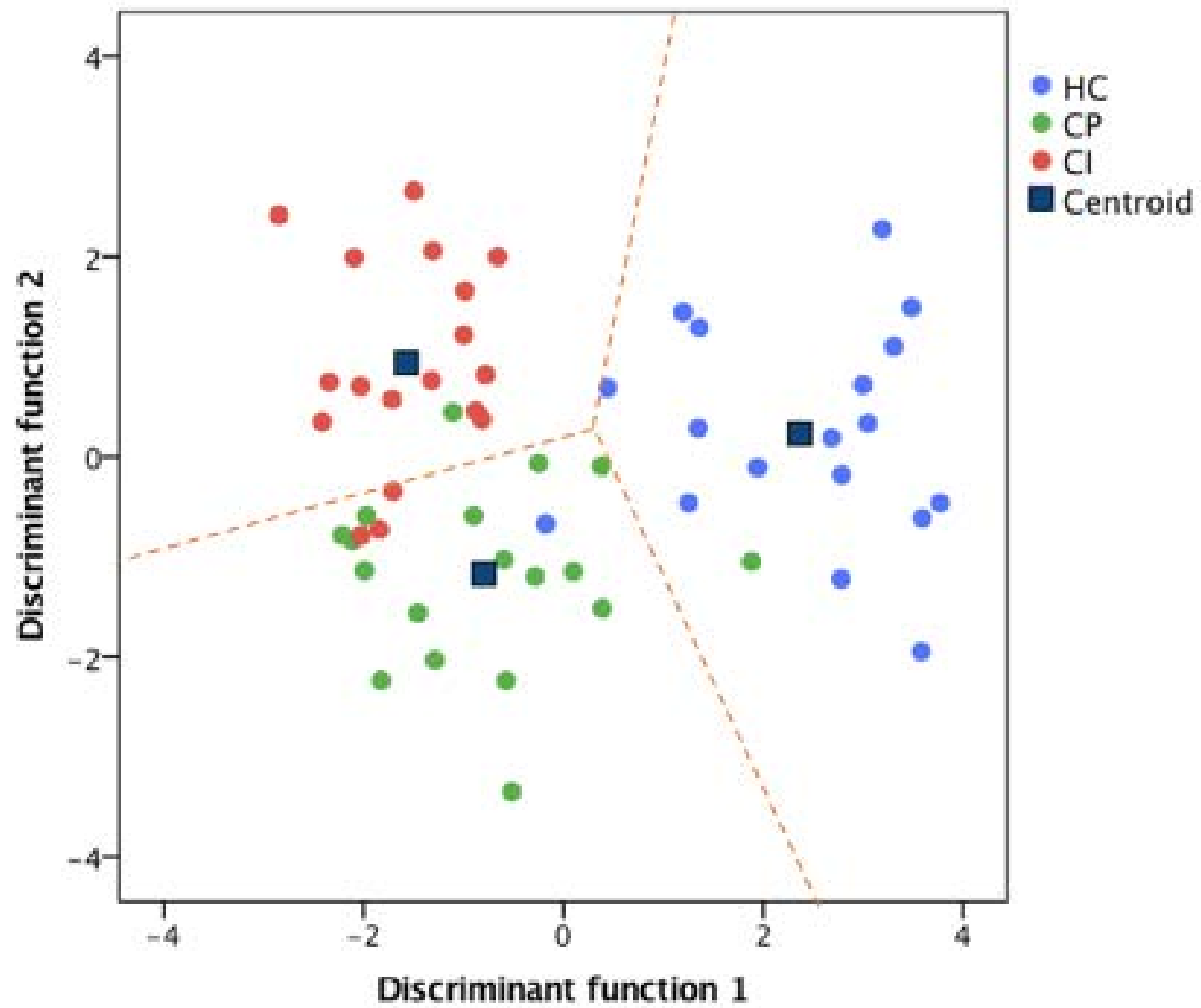
We used a linear discriminant function analysis [1] to unravel the architecture of the differences among groups HC, CP and CI. More specifically, a forward stepwise approach was taken to step-by-step build a statistical model that would hierarchically reveal how much each one of the included 20 predictors (i.e., the neuroanatomical and neurofunctional indices included in Table 2 of the main text) was able to discriminate groups HC, CP and CI.

After six iterations, the resulting model explained 100% variance and two discriminant functions (DF) were obtained. As observed in Figure in Supplemental Digital Content 2, DF1 distinguished HC from the two patient subgroups (explained 79.2% variance; eigenvalue: 3.065), while DF2 separated CP from CI (explained 20.8% variance; eigenvalue: 0.804). The two functions achieved statistical significance [Wilks' lambda (12)= 0.136,  $p < 0.000$  and Wilks' lambda(5)= 0.554,  $p < 0.000$ , respectively] and their associated canonical correlations were high [0.868 and 0.668, respectively]. These findings hence indicate that the discriminating capabilities of both were more than adequate. Although classification was not the main objective of this analysis, it should be noted that using these two DF group membership was correctly predicted in 88.9% (HC:17/18, 94.4%; CP: 16/18, 88.9%; CI: 15/18, 83.3%) of cases.

The interpretation of a discriminant model can be conducted by addressing the so-called standardized coefficients, whose statistical significance is similar to those of the  $\beta$  values in multiple regression equations. However, the values of standard coefficients can be misleading (i.e. when two predictor variables are highly correlated, their contribution is split between them, and their coefficients are smaller than they would look if considered independently; [1]). Therefore, because the total structure coefficients also provided the best guide of the meaning of the discriminant functions and quantified the similarity between these functions and each single variable [1], we report both the standardized and total structure coefficients (see Table, Supplemental Digital Content 3), but mainly based our conclusions of this discriminant analysis (see the main text) by dealing with the second.

## References

1. Klecka W. *Discriminant Analysis. Quantitative Applications in the Social Sciences (Book 19)*. SAGE Publications; 1980.



**Supplemental Digital Content 3: The standardized and total structure coefficients for each variable included in the obtained discriminant functions.** The highest total structure coefficients of each function are highlighted in bold, and also correspond to the first two entries of the stepwise discriminating model. Note that despite there being no strict correspondence between these two sets of coefficients, both indicated the GM volume of the left parietal-occipital nucleus of the thalamus and the FC, between the caudate and the orbitofrontal cortex, as the most relevant variables of the obtained discriminant functions.

	<b>DF1</b>		<b>DF2</b>	
	Standardized coefficients	Total structure coefficients	Standardized coefficients	Total structure coefficients
L caudate GM volume	-0.683	0.183	-0.258	-0.384
L putamen GM volume	1.081	0.464	-0.120	-0.415
Thalamic L parietal-occipital GM volume	0.871	<b>0.603</b>	0.633	0.162
Thalamic R temporal GM volume	-0.560	0.230	-0.481	-0.211
FC R caudate-bilateral orbitofrontal cortex	-0.052	-0.192	0.836	<b>0.772</b>
FC R premotor- L cerebellum	-0.527	0.207	-0.19	-0.199

Abbreviations: L: left; R: right, FC: functional connectivity.