

**Appendix 1** to Roy J-C, Desmidt T, Dam S, et al. Connectivity patterns of the core resting-state networks associated with apathy in late-life depression. *J Psychiatry Neurosci* 2023.

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DOI: 10.1503/jpn.230008

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## **1. Supplementary Methods**

### **1.1 Evaluation of apathy**

Apathy was assessed by a trained old-age psychiatrist using three scales.

The clinician-rated version of the Apathy Evaluation Scale, is a semi-structured interview which evaluates apathy from the patient's reported interests, activities and daily routine during the four last weeks. This scale consists of 18 items, each item being scored on a 4-point Likert scale. The items evaluate the cognitive, behavior or emotional dimension of apathy. The total score ranges from 18 to 72, with higher scores indicating more apathy. The AES is only validated from its total score<sup>1</sup>, as a continuous scale, while the use of a threshold for classifying patients performs modestly<sup>2</sup>.

The Apathy Motivation Index is an 18-item self-report questionnaire which assesses apathy in terms of Behavioral Activation (tendency to self-initiate goal-directed behavior), Emotional Sensitivity (affective responses) and Social Motivation (level of engagement in social interactions). It uses a 5-point Likert scale with higher scores indicating more severe apathy.

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The Apathy Diagnostic Criteria of the 2018 international consensus group is a clinician-rated evaluation based on 4 criteria. First, a quantitative reduction of goal-directed activity in comparison to the patient's previous level of functioning must be observed. Second, symptoms must persist for at least four weeks and affect at least two of the three apathy dimensions among a behavior/cognition, emotion or social dimension. Third, apathy should cause identifiable functional impairments. Finally, apathy should not be fully explained by other factors, such as effects of a substance or major changes in the patient's environment.

## **1.2 Connectivity analyses adding the MADRS score as covariate**

As requested by a reviewer, we performed connectivity analyses adding the MADRS total score as covariates and found evidence for multicollinearity. All apathy scores were correlated with depression severity as expected (AMI:  $r= 0.42$ , AES:  $r= 0.3$ ). Adding MADRS led to less robust estimation as the variance of the MADRS estimate was 40% to 70% higher than what could be expected without multicollinearity, and 20% to 60% higher for the apathy estimate (AES, AMI or DCA). To reduce the multicollinearity induced by adding the MADRS, we performed a

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principal component analysis on the MADRS scores. We found a dimension which gets the largest contribution from the lassitude and anhedonia items, together with concentration and vegetative symptoms, and is the third to explain the most of the total variance (13%). We selected this dimension and labeled it an "apathy dimension". As the first and third dimensions relates respectively to mood and apathy, we plotted the correlation of the total items of the MADRS against the first and third principal components to identify the items which were correlated to these dimensions. We found that the lassitude, anhedonia, concentration and tension items had a similar direction of their projection in both dimensions. We thus chose the MADRS without these items as a covariate for depression severity in the subsequent connectivity models. We performed a multiple regression adding the MADRS modified score as covariate and found reduced multicollinearity in the models tested. We then ran TFNBS adding this modified MADRS score, with 1000 permutations instead of 5000 in our original analysis, and found that the brain hubs common to the three scales are comparable between the models with and without the covariates. The connectivity results are presented in **Table S5** and **Figure S6**. As the addition of the modified MADRS score did not provide a significant gain to the original results while being subject to

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a lack of robustness because of the exploratory selection of items and adding small variance to the estimator, we report these results in the **Supplementary Material** but not in the **Main Manuscript**.

## 2. Supplementary Results

### 2.1 Disconnected brain subnetworks between late-life depression and healthy controls

For the DMN intra-network connectivity, the NBS identified four subnetworks associated with the LLD group ( $p_{\text{fwe-corrected}} < 0.001$ ,

**Table S1, Fig. S3**), consisting of 416 regions. Post-hoc analyses suggest that intranetwork connectivity decreases in the LLD group, mainly for prefrontal polar areas (10\_r, 10\_d), frontal dorso-lateral areas (L\_9M, L\_9A), precuneus regions (31pd, 31pv) and in middle and superior temporal regions (TE1\_m, TE1\_a, TE2\_a, TGd, STSva, STSvp). Conversely, parahippocampal and hippocampal regions were hyperconnected (PHA1, PHA2, EC, H).

For the CON intra-network connectivity, the NBS identified one subnetwork associated with the LLD group ( $p_{\text{fwe-corrected}} < 0.0001$ ,

**Table S1, Fig. S3**), comprising 72 regions. Post-hoc analyses

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suggest that, except for six regions, intranetwork connectivity decreases in the LLD group, notably for the middle insula (MI) and related fronto-opercular regions (FOP\_4, FOP\_5), the dorsolatero-prefrontal area B\_46, the dorsofrontal regions 6\_ma and 5\_mv, and the mid-cingulum (33pr).

For the FPN intra-network connectivity, we identified one subnetwork associated with LLD ( $p_{\text{fwe-corrected}} < 0.0001$ , **Table S1**, **Fig. S3**), consisting of 48 regions. Post-hoc analyses suggest that intranetwork connectivity decreases in the LLD group for two main regions: the dorsolateral prefrontal areas p9-46v and IFJp. Conversely, the regions whose connectivity positively correlated with depression were the left anterior insula AVI, the lateral parietal region PFm, the region POS2, and the middle posterior temporal region TE1p.

## **2.2 Assessment of heterogeneity in detected subnetworks between apathy scales**

Connectivity matrices for each resting-state network are presented in **Figure S5**. For the Default-Mode network (DMN), we found a pronounced tendency of hypoconnectivity associated with apathy severity across the three scales. Contrary to the AES,

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the AMI and DCA scores had a subset of regions which connectivity was positively associated with apathy. However, these positive associations were not robust across both scales. Concerning the fronto-parietal network (FPN), we observed a high similarity between the AES and the DCA, with increased connectivity associated with apathy. On the other hand, the AMI scale was more heterogenous, with overall hypoconnected ROIs except between regions L\_s6-8 and L\_i6-8, and L\_a10p and L\_p10p. Both pairs of ROIs are involved in motor control and working memory of spatial information which might be impeded in apathy in LLD. These results suggest that FPN hyperconnectivity might mediates social apathy in LLD. The heterogeneity between the scales also suggests that the third-person observation of apathy provides more concordant results on FPN activity associated with apathy than self-rated AMI. For the Cingulo-opercular network (CON), we observed an increased connectivity for both the AES and the AMI scales, but with larger effect sizes for the AMI scale. This suggests that CON activity is impaired for social oriented-behavior in LLD apathy. As the CON is also implied in interoceptive processing, an alternative explanation would be that, being a self-rated scale, higher AMI scores might be associated with higher self-perception of apathy and thus hyperactivity at rest within the CON.

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**Table S3** reports the percentage of shared regions and shared direction of the effect size in intra-network connectivity between each pair of apathy scale (*i.e.* positive or negative association). We observe that the percentage of shared regions is less than 15% for each pair of scale. When comparing the intersection between the three scales, we have less than 5% of common ROIs between the scales. Concerning the proportion of shared association between apathy and brain regions connectivity, we observe that approximately half of the regions has similar associations with apathy for each scale-to-scale comparison in the DMN and FPN. However, when compared between the three scales of apathy, we observe that less than 20% of the ROIs have similar association with apathy. For the CON, we only found a subnetwork associated with the scores at AES and the AMI. For this scale, 13% of the detected ROIs had the same direction of the associations with apathy.

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## Supplementary Tables

**Table S1: TNFBS identified subnetworks associated with apathy in the depression group**

Brain Networks	Apathy Diagnostic criteria			AMI			AES			Depression		
	Num. Edges	pFWE	Strength pFWE	Num. Edges	pFWE	Strength pFWE	Num. Edges	pFWE	Strength pFWE	Num. Edges	pFWE	Strength pFWE
<b>DMN</b>	154	0.99	***	154	0.99	***	154	0.99	***	416	0.96	***
<b>CON</b>	72	0.98	0.08	72	0.99	***	72	0.99	0.003	72	0.98	***

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FPN	47	0.99	***	48	0.97	***	48	0.96	***	48	0.96	***
Somatotmotor	36	0.92	0.04	35	0.96	0.02	36	0.91	0.04	32	0.98	0.04
Goal-oriented Behavior Network	36	0.9	***	35	0.97	<b>0.001</b>	32	0.99	<b>0.0004</b>			

**AES:** Apathy Evaluation Scale; **AMI:** Apathy Motivation Index; Num. Edges – number of edges in the subnetwork associated with a given variable; pFWE – FWE p-values for the number of edges in the subnetwork; Strength FWE – FWE p-values for the subnetwork strength (i.e. the sum of edges in the subnetwork). Significant p-values ( $p < 0.003$ ) are reported in bold; for  $p << 0.0001$ : \*\*\*.

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**Table S2: Details of the subnetworks identified by threshold-free network-based statistics for each apathy scale**

Network	ROI-ROI	AES – t-value	AMI – t-value	Apathy – t-value	Robust
DMN	L_471.L_p32	-4.82944420351751	-2.83926649703878	-4.00244804165416	1
DMN	R_a24.R_v23ab	-1.50700188189692	1.16700792406012	-1.89196585500644	1
DMN	L_7m.R_10v	-1.63414604241206	1.12866491023762	-0.826729322488005	1
DMN	R_23d.R_8Av	-4.20567151362585	-2.30345153888134	-4.42031101933068	1
DMN	L_Pres.L_TE1m	-4.47781797818824	-2.2059117993882	-1.07210012803776	1
DMN	L_10pp.L_Pres	-5.49245577376437	-3.46900155594774	-4.80596332006686	1
DMN	R_a24.R_s32	-2.27393939460713	0.342344791333879	-2.54561057239904	1
DMN	L_10pp.R_47m	-4.36928851188717	-2.18864843998814	NA	0
DMN	L_p32.R_9a	-3.97097675373597	NA	NA	0
DMN	L_10d.L_25	-3.37592579105133	NA	-2.59972383764973	0
DMN	L_10pp.R_31pd	-3.70548252151471	NA	-2.93078574535711	0
DMN	L_STSva.R_471	-5.41781068452342	NA	NA	0

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DMN	L_31pd.R_PGs	-2.89802463649345	NA	NA	0
DMN	L_8Av.R_9a	-5.49342231512277	NA	NA	0
DMN	L_8Ad.R_31pd	-3.26314924825906	-0.899393803448064	NA	0
DMN	L_10v.L_p32	-3.01129135970476	NA	NA	0
DMN	L_8Ad.R_31pv	-2.34112049987339	NA	-1.64203335963524	0
DMN	L_9a.L_d32	-0.29855983336457	NA	NA	0
DMN	R_10d.R_EC	-4.66439061629367	NA	-4.8640632140927	0
DMN	R_d23ab.R_H	-3.01067266783902	NA	NA	0
DMN	R_10d.R_STSvp	-5.41654648683144	NA	NA	0
DMN	L_10v.R_POS1	-2.3495353248658	NA	NA	0
DMN	R_POS1.R_TGd	-6.77388121985433	NA	NA	0
DMN	L_Pres.R_10r	-3.885724887865	NA	-0.359346046207653	0
DMN	L_31a.R_8Av	-7.12267208195225	NA	NA	0
DMN	L_10d.R_STSvp	-6.29675732378252	NA	NA	0
DMN	L_9p.R_TE2a	-4.39505476173305	NA	NA	0
DMN	L_a24.R_9p	-3.80721670464724	NA	NA	0

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DMN	L_p32.R_10v	-4.39312546796959	NA	NA	0
DMN	L_471.L_a24	-4.70601928311307	NA	NA	0
DMN	L_Pres.L_TE1a	-4.16699226655492	NA	-0.65983174252984	0
DMN	L_EC.R_47m	-4.392000259214	-2.05139517148734	NA	0
DMN	L_8BL.R_8Av	-1.13133640931629	NA	NA	0
DMN	R_TGd.R_v23ab	-4.49981391371763	NA	NA	0
DMN	L_47s.L_p32	-3.06951729866767	NA	NA	0
DMN	L_p32.R_10r	-1.54573080531646	NA	NA	0
DMN	L_23d.R_8Av	-6.39933994904788	-4.87141230669227	NA	0
DMN	L_9p.R_STSva	-5.69642958394591	NA	NA	0
DMN	L_TE1m.R_471	-5.97802349477476	NA	NA	0
DMN	L_PGi.L_TE2a	-3.4469247362535	NA	NA	0
DMN	L_25.R_p32	-2.9828145472387	-0.625220331885888	NA	0
DMN	L_PGs.L_TE2a	-3.13776405141029	NA	NA	0
DMN	R_p32.R_PHAl	-4.86246454645284	NA	NA	0
DMN	L_9m.L_d32	1.57085094282896	NA	NA	0

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DMN	L_10pp.L_TE2a	-2.77052013634624	NA	NA	0
DMN	R_p32.R_s32	-3.05231694252842	NA	NA	0
DMN	L_s32.L_TE1a	-2.30200117420255	NA	1.7411570194425	0
DMN	L_10d.R_EC	-5.38196370374481	NA	NA	0
DMN	L_47s.R_25	-3.8020523836881	NA	NA	0
DMN	R_9p.R_STSvp	-4.09153443255741	-1.82811305252346	NA	0
DMN	L_10d.L_H	-5.29152867847983	NA	NA	0
DMN	L_10d.R_TGd	-4.54024262234375	NA	NA	0
DMN	R_a24.R_TGd	-5.35224430516694	-3.2778171478251	NA	0
DMN	R_10v.R_7m	0.260570228810167	NA	-0.198406627569319	0
DMN	L_9p.R_9a	-0.15569317728737	NA	NA	0
DMN	L_10d.R_PGi	-4.0833685030496	NA	NA	0
DMN	R_10v.R_8Av	-4.01974729455019	NA	-4.40351754005615	0
DMN	L_31pd.R_TE1a	-3.64794318586708	NA	NA	0
DMN	L_10v.R_10d	0.52132198516065	NA	NA	0
DMN	L_10d.R_d32	-3.420078100619	NA	NA	0

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DMN	L_10d.L_10v	-1.30726919243075	NA	NA	0
DMN	L_v23ab.R_TGd	-4.02595470452967	NA	NA	0
DMN	L_7m.R_TGd	-3.47655657809244	NA	-2.63834545516295	0
DMN	L_OFC.L_TE2a	-2.46359743716246	0.370354916392149	NA	0
DMN	R_s32.R_TGd	-4.92925957070645	NA	-5.20552076380919	0
DMN	L_10v.R_p32	-3.16662441198082	NA	NA	0
DMN	L_Pres.R_8Ad	-4.92321877864802	NA	NA	0
DMN	L_10v.R_s32	-0.39839681193691	NA	NA	0
DMN	L_v23ab.R_EC	-4.20014846720825	NA	-4.45549864608046	0
DMN	L_8Ad.R_d32	-3.97201632035192	NA	NA	0
DMN	L_8Ad.R_9a	-4.93620925714893	NA	-4.27952724561872	0
DMN	R_8Av.R_8BL	2.39024074240691	NA	NA	0
DMN	L_471.L_Pres	-5.96877288219047	-4.31503710012238	NA	0
DMN	R_10v.R_TE1a	-0.43524814501567	NA	NA	0
DMN	L_10d.R_H	-6.01684816119542	NA	NA	0
DMN	R_10r.R_s32	1.21269326505386	NA	NA	0

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DMN	L_EC.R_POS1	-2.39787521509814	NA	NA	0
DMN	L_47s.L_EC	-4.31170238188549	NA	NA	0
DMN	L_10v.R_10r	1.68085632591856	NA	NA	0
DMN	L_47s.R_EC	-5.41394293074303	NA	NA	0
DMN	L_10pp.L_47m	-2.64391761960352	NA	NA	0
DMN	L_10v.R_a24	-2.66528910983705	NA	NA	0
DMN	L_EC.R_PHA2	-1.78197908944144	NA	2.20838795806594	0
DMN	L_9p.L_PGi	-4.06412217221126	NA	NA	0
DMN	R_10d.R_s32	-2.20176812733064	NA	NA	0
DMN	R_10r.R_a24	0.986561187638412	NA	NA	0
DMN	L_a24.L_TGd	-4.14447298193669	NA	NA	0
DMN	L_p32.R_10d	-1.26151200653861	NA	NA	0
DMN	L_47l.R_7m	-5.42847650719122	NA	NA	0
DMN	L_STSvp.R_47l	-3.55528066564333	NA	NA	0
DMN	L_TE1m.R_TE1a	-1.63435814118937	NA	NA	0

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DMN	L_10pp.R_31pv	-3.85212071047267	NA	NA	0
DMN	L_25.L_47s	-3.09672728117816	NA	NA	0
DMN	L_p32.R_9p	-4.46267408678453	-1.94677344783226	NA	0
DMN	L_a24.L_TE2a	-4.88823523147435	NA	NA	0
DMN	R_d32.R_Pres	-5.43108359057004	NA	-5.69233333645591	0
DMN	R_31a.R_8Av	-4.63164258909673	-2.42959752242515	NA	0
DMN	R_10d.R_a24	-0.15713703103179	2.7444113349927	NA	0
DMN	L_10d.L_9p	-1.62328064351996	NA	NA	0
DMN	L_471.R_23d	-4.81212329775792	NA	NA	0
DMN	L_471.R_a24	-5.1836636038794	NA	NA	0
DMN	R_9m.R_s32	-3.22177574476761	NA	NA	0
DMN	L_10pp.L_10r	-3.33294304247003	NA	NA	0
DMN	L_PGs.L_STSvp	-3.61443873584133	NA	0.10639010299572	0
DMN	L_TE1a.R_TE1a	0.894603342996371	NA	NA	0
DMN	L_d32.L_TE1m	-2.59384498582837	NA	NA	0
DMN	L_EC.R_9a	-6.16618658105896	NA	NA	0

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DMN	L_STSva.L_TE2a	-3.2222959289083	NA	0.509452981766002	0
DMN	L_25.L_OFC	-1.56266881406452	NA	NA	0
DMN	L_OFC.R_31pv	-3.88008004886221	NA	NA	0
DMN	L_OFC.L_STSvp	-3.85609239940048	NA	NA	0
DMN	L_10pp.R_d32	-4.22307534786217	NA	NA	0
DMN	L_8Ad.L_PHA1	-6.16613656016565	NA	NA	0
DMN	L_10v.R_EC	-3.1017411747456	NA	NA	0
DMN	L_9a.R_p32	-5.14580434649325	NA	NA	0
DMN	L_STSvp.L_TE2a	-2.2782550496496	NA	NA	0
DMN	R_10v.R_a24	-3.21632717235238	NA	NA	0
DMN	L_471.L_EC	-4.61843654161786	NA	NA	0
DMN	L_a24.R_s32	-3.54108455422621	-1.16022171835426	NA	0
DMN	L_10v.R_31pv	-0.36030197423021	NA	0.357257666999326	0
DMN	R_10r.R_H	-3.94261906687243	-1.73948608224426	NA	0
DMN	L_7m.L_TGd	-1.77383710766966	NA	NA	0
DMN	L_25.R_10r	-0.86981912531534	NA	NA	0

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DMN	R_7m.R_TGd	-2.94052472104574	NA	NA	0
DMN	L_31pd.R_STSvp	-5.03421007869041	NA	NA	0
DMN	L_H.R_PHA2	-1.43090880834522	NA	NA	0
DMN	L_TE1m.R_8Av	-5.63584161928211	NA	NA	0
DMN	R_9m.R_STSvp	-2.6128054633855	NA	NA	0
DMN	L_STSvp.R_8Av	-6.12171063516755	NA	NA	0
DMN	L_23d.L_d32	-0.85911626397268	NA	0.071717998604833	0
DMN	R_8Ad.R_STSvp	-6.57580537094841	NA	NA	0
DMN	L_9p.R_STSvp	-5.04080716995919	NA	NA	0
DMN	L_PHA1.R_8Av	-7.2429764846049	NA	NA	0
DMN	L_STSvp.R_PHA1	-6.00152816075528	NA	-2.94036320416015	0
DMN	R_H.R_s32	-3.25503394357535	NA	-3.58171459030549	0
DMN	L_OFC.L_TE1m	-2.44048376973196	NA	NA	0
DMN	R_9a.R_EC	-6.5743777894806	NA	-6.76789321595676	0
DMN	L_s32.R_10d	-2.95477314844244	NA	NA	0
DMN	L_p32.R_TGd	-5.63816114837902	NA	NA	0

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DMN	L_31pv.L_STSvp	-2.91420668318667	NA	-2.02152019979055	0
DMN	L_PGi.R_TGd	-6.01910620345987	-4.37893655951403	NA	0
DMN	L_PGi.R_PGi	-2.36003054887692	NA	NA	0
DMN	L_471.R_EC	-5.48698574201617	NA	NA	0
DMN	L_47m.R_10pp	-3.50667451319376	-1.18090704823785	NA	0
DMN	L_8BL.L_PGi	-4.71480322983432	NA	NA	0
DMN	L_H.R_47m	-3.91334641880485	NA	NA	0
DMN	L_8Av.R_8Av	-0.81160271778129	NA	NA	0
DMN	R_9p.R_TE2a	-3.17353413774334	NA	NA	0
DMN	L_TE1m.R_PGi	-4.27513627750847	NA	NA	0
DMN	L_31pd.R_471	-6.78176624872666	NA	NA	0
DMN	L_25.R_s32	-0.13203124709256	NA	0.731207917176484	0
DMN	L_31a.L_STSvp	-3.20910705232596	NA	-2.34767735992826	0
DMN	R_10d.R_H	-4.76213856965678	NA	NA	0
DMN	L_STSva.L_TGd	NA	3.52408179743974	NA	0
DMN	L_v23ab.R_31a	NA	-1.42571457762353	NA	0

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DMN	L_PGs.R_p32	NA	-1.03446159066219	NA	0
DMN	L_PGi.R_p32	NA	-2.79600861312439	NA	0
DMN	L_8Ad.R_PHA1	NA	-5.26218847512138	NA	0
DMN	R_PHA2.R_STSva	NA	-1.06555419419622	NA	0
DMN	L_TGd.R_31pd	NA	0.860700730160926	NA	0
DMN	R_9p.R_p32	NA	-0.616055273692027	NA	0
DMN	L_7m.L_PGs	NA	4.42672403438557	2.00820539995973	0
DMN	R_PHA1.R_STSva	NA	-0.575283108080287	NA	0
DMN	R_8BL.R_PHA2	NA	-4.86677630811345	-6.70123277653991	0
DMN	L_OFC.L_v23ab	NA	-1.77667822111331	NA	0
DMN	L_d32.R_d32	NA	3.77834743705297	5.28595821934102	0
DMN	L_PGs.R_7m	NA	0.598423006736202	NA	0
DMN	L_10r.L_8Av	NA	-2.68420250054162	NA	0
DMN	L_PGs.R_s32	NA	-2.53626051959496	NA	0
DMN	L_25.R_a24	NA	-0.441699211142847	NA	0
DMN	L_10pp.L_POS1	NA	-3.52708109039548	NA	0

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DMN	R_31a.R_v23ab	NA	0.638220207683	NA	0
DMN	R_31a.R_7m	NA	0.185083147933187	NA	0
DMN	L_Pres.L_TE2a	NA	-4.30339598581312	-3.04236971304721	0
DMN	L_31pv.R_PHA2	NA	-0.472098881780156	NA	0
DMN	R_31pd.R_8Av	NA	-1.25269957326958	-3.76889063483837	0
DMN	L_TE1m.R_TE2a	NA	-0.452065453476917	0.861894983324418	0
DMN	L_9m.L_EC	NA	-1.34017390661651	NA	0
DMN	L_9m.L_OFC	NA	0.0790362052432161	NA	0
DMN	L_47s.L_TE1a	NA	-0.569584392780288	NA	0
DMN	R_STSva.R_TE2a	NA	-2.22787431442264	NA	0
DMN	R_31a.R_POS1	NA	0.634323535547493	-2.16378197494106	0
DMN	L_PHA2.R_7m	NA	-2.37162276530468	NA	0
DMN	R_47m.R_EC	NA	-1.8261674130327	-4.65865662882107	0
DMN	L_31pv.R_8BL	NA	-3.07611989580658	NA	0
DMN	L_8Av.L_9a	NA	-0.140001679262775	NA	0
DMN	L_PHA2.L_POS1	NA	1.68517976408361	NA	0

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DMN	R_7m.R_p32	NA	0.377336824017487	NA	0
DMN	L_a24.L_EC	NA	-3.1562168828713	NA	0
DMN	L_8Ad.R_7m	NA	-0.202257390620921	-1.92342669957284	0
DMN	L_PHA1.R_TE1a	NA	-1.40130574599755	NA	0
DMN	R_a24.R_STSva	NA	-4.67154037295742	NA	0
DMN	L_PGs.R_TE1a	NA	-2.14464840220922	NA	0
DMN	L_31pd.R_31pv	NA	3.43511468456606	NA	0
DMN	R_7m.R_a24	NA	-0.592476933373439	NA	0
DMN	L_471.L_d23ab	NA	-3.34988038526246	NA	0
DMN	R_9a.R_9p	NA	4.77491265356016	NA	0
DMN	L_31pv.L_471	NA	-3.27767126610309	NA	0
DMN	L_10pp.L_7m	NA	-0.830456539477627	NA	0
DMN	L_d23ab.L_TE2a	NA	-0.299751203984819	NA	0
DMN	R_9a.R_p32	NA	-1.13454341314706	NA	0
DMN	L_EC.L_TE1m	NA	-0.48384090300982	NA	0
DMN	L_47s.L_9m	NA	0.89782654758606	NA	0

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DMN	L_s32.R_47m	NA	-1.59855720017549	-0.368100944883878	0
DMN	L_25.L_s32	NA	4.71565707350504	NA	0
DMN	L_POS1.R_v23ab	NA	5.6651463299163	NA	0
DMN	R_8Ad.R_d32	NA	0.559870365374497	NA	0
DMN	L_d32.L_PGi	NA	-4.83290570257984	NA	0
DMN	L_7m.L_PHA2	NA	-1.69464227796663	NA	0
DMN	L_TE2a.R_EC	NA	-2.65625335517527	NA	0
DMN	L_31pv.L_8BL	NA	-1.90579261319658	NA	0
DMN	R_8BL.R_9p	NA	6.9157032905575	NA	0
DMN	R_8Av.R_PHA1	NA	-6.28723752164449	NA	0
DMN	L_9a.R_a24	NA	-2.57612446570855	NA	0
DMN	L_8Ad.L_9m	NA	-0.407139320061892	NA	0
DMN	R_d32.R_v23ab	NA	-0.919646057280199	NA	0
DMN	L_8Av.R_a24	NA	-2.54783409068669	NA	0
DMN	L_TE1m.R_EC	NA	-2.18226204105156	-1.28440537286983	0
DMN	L_Pres.R_Pres	NA	2.9710729971349	NA	0

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DMN	L_TGd.R_10pp	NA	-1.82092578118177	NA	0
DMN	L_31pv.R_10pp	NA	-2.709169269476	NA	0
DMN	R_31pd.R_a24	NA	-0.68682346937811	NA	0
DMN	R_9a.R_a24	NA	-1.12860208031603	NA	0
DMN	R_31pv.R_8Av	NA	0.513509726634986	-2.36804536513707	0
DMN	R_8Ad.R_9a	NA	0.420498502071326	NA	0
DMN	L_47m.R_TGd	NA	-1.49322013338685	NA	0
DMN	L_47s.R_8BL	NA	-1.73566034799954	NA	0
DMN	L_31pd.R_OFC	NA	-4.3682583890192	NA	0
DMN	L_8Av.R_10r	NA	-4.12586736851966	NA	0
DMN	L_OFC.L_POS1	NA	-3.68011517687921	NA	0
DMN	L_PHA2.R_v23ab	NA	-1.82626536454109	NA	0
DMN	R_31pd.R_8Ad	NA	0.409617211693508	NA	0
DMN	L_STSva.R_8BL	NA	-2.87829519519515	NA	0
DMN	L_10d.R_PGs	NA	-0.234817966287118	NA	0
DMN	R_9a.R_TE1a	NA	0.421175797301082	NA	0

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DMN	R_9p.R_d32	NA	0.957083453288236	NA	0
DMN	R_7m.R_8Ad	NA	2.00612686511202	NA	0
DMN	R_471.R_Pres	NA	-3.00081602359216	NA	0
DMN	L_POS1.R_STSvp	NA	-6.75318838792411	-6.02288657891724	0
DMN	R_d32.R_s32	NA	-3.37010545763365	-5.69623877772648	0
DMN	L_31pd.R_8BL	NA	-3.90224375104217	NA	0
DMN	R_31pv.R_8Ad	NA	2.18365429008802	NA	0
DMN	R_OFC.R_POS1	NA	-5.08966737367966	NA	0
DMN	L_9m.R_a24	NA	1.48341188936906	NA	0
DMN	R_47m.R_8BL	NA	-1.27560403094346	NA	0
DMN	R_d32.R_p32	NA	-0.653898079673551	NA	0
DMN	L_31pd.R_31pd	NA	5.2715341329675	NA	0
DMN	L_TE2a.R_s32	NA	-2.56280220185509	NA	0
DMN	L_8Ad.R_TE2a	NA	-2.55464340587324	NA	0
DMN	L_471.R_471	NA	2.21198997201542	NA	0
DMN	L_31pd.L_8BL	NA	-1.3735546009079	-2.56376462807847	0

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DMN	L_TE1a.L_TGd	NA	6.97504405124111	NA	0
DMN	R_31pv.R_s32	NA	1.12235263042722	-2.04730225948571	0
DMN	L_9m.R_10v	NA	2.94032568514601	NA	0
DMN	L_47m.L_OFC	NA	-0.518998105721412	NA	0
DMN	L_POS1.R_31a	NA	-1.0671341076894	NA	0
DMN	L_EC.R_9m	NA	-2.74062941264936	NA	0
DMN	L_EC.R_23d	NA	-3.08466755757383	-1.72375548492618	0
DMN	R_d32.R_PHA2	NA	-3.88145759100461	NA	0
DMN	L_OFC.R_47s	NA	-0.802703192214196	NA	0
DMN	R_d32.R_PGi	NA	-1.15045257292097	NA	0
DMN	R_9a.R_s32	NA	-3.0314634228189	-5.12897720020026	0
DMN	R_9p.R_a24	NA	-0.733868139912377	NA	0
DMN	L_TE2a.R_10v	NA	-1.89871501008486	NA	0
DMN	L_TGd.R_8Av	NA	-5.32863499611065	NA	0
DMN	L_PreS.R_s32	NA	-1.89402002777494	NA	0
DMN	R_a24.R_d32	NA	-0.292456492016571	NA	0

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DMN	R_47m.R_TGd	NA	-0.906572957697238	NA	0
DMN	L_PHA1.R_8BL	NA	-4.17637703769073	NA	0
DMN	L_9m.L_TGd	NA	1.48931552461916	NA	0
DMN	L_PHA2.R_POS1	NA	0.977785379296041	NA	0
DMN	R_23d.R_a24	NA	-0.423955010230622	NA	0
DMN	R_31a.R_PGs	NA	2.50518034750619	NA	0
DMN	L_PGs.R_10r	NA	-1.64323574174547	NA	0
DMN	L_POS1.R_OFC	NA	-5.28814497747735	NA	0
DMN	L_PHA2.R_TE2a	NA	-6.20234633296064	NA	0
DMN	L_PGs.L_TE1m	NA	2.55883613913438	NA	0
DMN	L_31pd.L_POS1	NA	-0.135910714785771	NA	0
DMN	R_9m.R_a24	NA	1.16339051797151	NA	0
DMN	R_8Ad.R_a24	NA	-0.323272645343505	-3.06639642461209	0
DMN	L_47l.R_47m	NA	-3.36710556593061	NA	0
DMN	L_8Ad.L_8Av	NA	5.37682710765535	2.86463973436623	0
DMN	L_d23ab.R_10d	NA	0.0136377334578433	1.37548217916307	0

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DMN	L_7m.R_PHA2	NA	-1.13927049015068	NA	0
DMN	R_d23ab.R_s32	NA	NA	-2.31194473452499	0
DMN	L_10v.R_v23ab	NA	NA	0.425200541146697	0
DMN	L_471.L_PGs	NA	NA	-4.6325105861091	0
DMN	L_PHA1.R_25	NA	NA	-0.66167501331085	0
DMN	L_PGs.L_TGd	NA	NA	-1.02639986757158	0
DMN	L_10v.R_7m	NA	NA	0.684052358874007	0
DMN	R_23d.R_H	NA	NA	-4.25910816723243	0
DMN	L_10pp.R_H	NA	NA	-5.14435078588963	0
DMN	L_STSva.L_TE1a	NA	NA	7.13448787149234	0
DMN	R_7m.R_8Av	NA	NA	-3.51092569170573	0
DMN	L_s32.R_TGd	NA	NA	-1.65504223834999	0
DMN	L_v23ab.R_10v	NA	NA	2.4304153935613	0
DMN	L_31pv.L_9p	NA	NA	-3.68537239274893	0
DMN	L_31a.L_TE2a	NA	NA	-2.96385452580935	0
DMN	L_9p.R_PGs	NA	NA	-1.51151270930472	0

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DMN	R_7m.R_d32	NA	NA	-3.02428599355842	0
DMN	L_31pd.L_31pv	NA	NA	5.53129414495352	0
DMN	L_8BL.R_31pv	NA	NA	-0.765897422622891	0
DMN	L_31a.R_PGs	NA	NA	-2.00003429600711	0
DMN	L_471.L_8Ad	NA	NA	-5.47343493741299	0
DMN	L_31a.L_471	NA	NA	-5.09568417694716	0
DMN	L_10v.R_31pd	NA	NA	-0.325245641256422	0
DMN	L_10pp.R_7m	NA	NA	-2.88796444525251	0
DMN	L_10pp.R_d23ab	NA	NA	-3.90790812524959	0
DMN	L_a24.R_v23ab	NA	NA	1.33717693219287	0
DMN	L_10d.R_8Ad	NA	NA	-1.50585569357293	0
DMN	L_25.R_10v	NA	NA	-0.275407339294504	0
DMN	R_8Av.R_TGd	NA	NA	-4.51483253471582	0
DMN	L_47m.L_p32	NA	NA	-3.12073216006733	0
DMN	L_8BL.L_PHA1	NA	NA	-3.188757791934	0
DMN	L_10v.L_v23ab	NA	NA	1.46190830419876	0

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DMN	L_471.R_31a	NA	NA	-5.47567809712989	0
DMN	R_25.R_PGs	NA	NA	-2.51843504382388	0
DMN	L_p32.R_47s	NA	NA	-0.272980512788929	0
DMN	L_8Av.L_d32	NA	NA	-1.84146194044872	0
DMN	L_10pp.R_Pres	NA	NA	-4.56759745995818	0
DMN	L_31pd.L_STSvp	NA	NA	-0.617186056631377	0
DMN	L_a24.L_v23ab	NA	NA	1.32454862671064	0
DMN	R_23d.R_PHA2	NA	NA	-5.48699504632495	0
DMN	L_10d.R_a24	NA	NA	0.553538498389725	0
DMN	R_10pp.R_H	NA	NA	-5.53933516931354	0
DMN	L_10r.R_a24	NA	NA	1.28042976132325	0
DMN	L_10v.R_d23ab	NA	NA	-0.603934308938053	0
DMN	L_31pv.R_PGs	NA	NA	0.729776406077422	0
DMN	R_s32.R_TE2a	NA	NA	-4.83416898550782	0
DMN	L_8Ad.R_v23ab	NA	NA	-1.33728074889727	0
DMN	L_v23ab.R_8Ad	NA	NA		0

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DMN	L_9p.L_PGs	NA	NA	-1.29574603956694	0
DMN	R_10v.R_OFC	NA	NA	-0.767389484148815	0
DMN	L_8Av.R_Pres	NA	NA	-4.53676743952609	0
DMN	L_8BL.R_Pres	NA	NA	-2.73469645878403	0
DMN	L_9p.L_d23ab	NA	NA	-0.997932496691612	0
DMN	L_EC.L_H	NA	NA	6.83422167906657	0
DMN	L_7m.R_OFC	NA	NA	-4.41415825162935	0
DMN	L_POS1.L_STSva	NA	NA	-0.303614780951604	0
DMN	L_7m.R_8Av	NA	NA	-5.57203111074789	0
DMN	L_23d.R_25	NA	NA	-5.00301843341337	0
DMN	R_31pv.R_7m	NA	NA	5.96420350609609	0
DMN	L_8Av.L_TE1a	NA	NA	-0.631606825780548	0
DMN	L_23d.R_s32	NA	NA	-5.54491984967177	0
DMN	L_10d.L_10r	NA	NA	0.565553206784326	0
DMN	L_v23ab.R_a24	NA	NA	-2.88783771276924	0
DMN	L_25.L_PGi	NA	NA	-3.20478090253812	0

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DMN	L_PHA2.L_Pres	NA	NA	1.47676040381304	0
DMN	L_10v.R_H	NA	NA	-2.72457328340185	0
DMN	R_9p.R_Pres	NA	NA	-4.8696768304881	0
DMN	L_d32.L_p32	NA	NA	2.33720170421282	0
DMN	L_10d.R_v23ab	NA	NA	-1.20956606072275	0
DMN	L_8Ad.L_v23ab	NA	NA	-1.35018752257464	0
DMN	R_31a.R_8BL	NA	NA	-4.46006802608394	0
DMN	R_8Av.R_s32	NA	NA	-4.91670769093812	0
DMN	L_10pp.R_OFC	NA	NA	0.0428196580862288	0
DMN	R_8Av.R_TE1a	NA	NA	-2.32302070216979	0
DMN	R_31pd.R_9a	NA	NA	-2.61247725371141	0
DMN	R_10r.R_9p	NA	NA	-2.14344189074424	0
DMN	L_8BL.R_31a	NA	NA	-1.15848113363424	0
DMN	L_EC.R_10pp	NA	NA	-0.964645785014979	0
DMN	R_7m.R_9a	NA	NA	-2.74689574768628	0
DMN	L_H.R_7m	NA	NA	0.305258535319598	0

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DMN	R_31pd.R_s32	NA	NA	-3.28705747234035	0
DMN	L_TE2a.R_31a	NA	NA	-2.56005833482812	0
DMN	L_EC.L_PHA2	NA	NA	1.07363996864865	0
DMN	L_d23ab.R_7m	NA	NA	4.60522235863745	0
DMN	L_PGs.R_Pres	NA	NA	0.711990229975926	0
DMN	R_23d.R_PHA1	NA	NA	-5.41732117903671	0
DMN	L_TGd.R_a24	NA	NA	-2.12272045332442	0
DMN	R_7m.R_s32	NA	NA	-2.83482133880975	0
DMN	L_POS1.R_23d	NA	NA	-2.30467447247203	0
DMN	R_9a.R_v23ab	NA	NA	-4.20297469529356	0
DMN	L_8BL.R_7m	NA	NA	-0.515797985657576	0
DMN	L_8Ad.L_8BL	NA	NA	2.30331209012524	0
DMN	L_d23ab.R_8Av	NA	NA	-1.60721955329203	0
DMN	L_PHA2.R_23d	NA	NA	-3.31899738056532	0
DMN	R_9a.R_d23ab	NA	NA	-3.60012592988973	0
DMN	R_10d.R_d32	NA	NA	-0.905697271724643	0

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DMN	L_v23ab.R_9a	NA	NA	-4.55315478180213	0
DMN	R_31pv.R_9a	NA	NA	-2.65694894354516	0
DMN	L_47s.L_PHA2	NA	NA	-4.52988369677519	0
DMN	L_10d.L_v23ab	NA	NA	0.546892966570164	0
DMN	R_8Av.R_d23ab	NA	NA	-2.65776594987438	0
DMN	R_10v.R_s32	NA	NA	-1.02001759715364	0
CON	L_p24.L_PF	2.03873673703376	4.85438518945062		1
CON	L_PF.R_MI	2.84146150620993	5.45579337342869		1
CON	R_a24pr.R_a32pr	6.83505649499147	9.96405726857474		1
CON	R_a32pr.R_PFop	0.151154521097793	2.84622217099082		1
CON	R_FOP5.R_PI	0.0247448372788317	2.76624481368041		1
CON	R_6r.R_p32pr	2.08848622955863	4.85940336018075		1
CON	L_23c.R_p24	0.567395640420133	3.13603397487006		1
CON	L_PF.R_p24	0.494201126362454	3.1783139942571		1
CON	R_a24pr.R_FOP3	2.04380657983145	4.80362940550681		1
CON	L_946d.R_MI	0.520797167794932	2.75495283732703		1

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CON	L_33pr.L_6ma	0.409471068337271	3.04453763256844		1
CON	L_PFop.R_a32pr	-0.230898597265024	2.40909389225611		1
CON	R_a24pr.R_FOP5	3.53789359198781	6.39110257650263		1
CON	L_43.L_FOP5	2.907424332292	6.25183800951066		1
CON	L_33pr.L_PF	3.19259328747827	6.19173351008777		1
CON	L_a32pr.R_FOP3	0.843828714785872	3.64034815394076		1
CON	R_5mv.R_p32pr	2.00345924913321	NA		0
CON	R_a32pr.R_FOP3	0.406305213801178	NA		0
CON	R_6ma.R_PFcm	0.174862487350881	NA		0
CON	L_23c.L_a24pr	3.77346905878377	NA		0
CON	L_23c.R_5mv	5.03260509838393	NA		0
CON	R_6ma.R_p24pr	0.900272373923133	NA		0
CON	L_43.R_p24	-0.0352859605592809	NA		0
CON	L_23c.R_FOP4	2.05663378372261	NA		0
CON	R_46.R_FOP3	1.13617340828553	NA		0
CON	L_p24pr.R_946d	0.80444942995329	NA		0

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CON	L_PI.R_PoI2	1.66282905417036	NA		0
CON	L_a24pr.L_p24pr	6.16456666960042	NA		0
CON	L_FOP1.R_p24	0.478828388106227	NA		0
CON	L_46.R_p24pr	0.801890268699289	NA		0
CON	R_6ma.R_p32pr	2.74256078208088	NA		0
CON	R_MI.R_PoI1	4.71758579036451	NA		0
CON	L_a24pr.L_FEF	0.480389512273757	NA		0
CON	L_23c.R_PoI2	2.24399465819778	NA		0
CON	L_PFcm.R_PFop	4.30318012447218	NA		0
CON	R_a24pr.R_p24	5.3522617788518	NA		0
CON	L_6r.R_PFop	2.44770159498179	NA		0
CON	L_33pr.L_946d	1.97945708818743	NA		0
CON	L_FEF.R_7Am	1.04239430772269	NA		0
CON	L_p24pr.R_PI	1.22593806767259	NA		0
CON	L_FOP3.R_PFcm	4.0046134041081	NA		0
CON	L_a24pr.R_946d	2.99368628442998	NA		0

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CON	L_5mv.R_p24pr	3.58096544319889	NA		0
CON	L_6ma.R_p24pr	-0.141309507721515	NA		0
CON	L_PFop.R_PI	0.91838063404406	NA		0
CON	L_5mv.R_p32pr	1.78267682610414	NA		0
CON	L_7Am.R_PI	-1.37438880046458	NA		0
CON	L_5mv.R_PoI2	2.96237307777832	NA		0
CON	L_46.L_PFcm	-1.11160616515458	NA		0
CON	R_43.R_46	0.810450002469112	NA		0
CON	L_946d.L_a32pr	5.50491827277477	NA		0
CON	L_23c.R_FOP1	1.95086660662894	NA		0
CON	R_46.R_a32pr	3.09258880448272	NA		0
CON	L_5mv.R_PoI1	3.25952433378354	NA		0
CON	L_23c.R_p32pr	1.41165143213058	NA		0
CON	L_p24pr.R_PoI2	4.23538228761781	NA		0
CON	L_23c.L_FOP1	2.10424484173383	NA		0
CON	L_PI.R_46	-0.407133736220873	NA		0

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CON	L_a24pr.R_7Am	-0.486502273438562	NA		0
CON	R_FOP3.R_p32pr	1.94694049646075	NA		0
CON	L_PF.R_FOP3	3.35052828274873	NA		0
CON	R_46.R_p24	2.65376093958039	NA		0
CON	R_5mv.R_a24pr	1.86670754574116	NA		0
CON	L_FOP3.R_FOP3	5.67345205253831	NA		0
CON	L_a32pr.L_p32pr	4.51637966544446	NA		0
CON	L_6ma.R_SCEF	2.86767398436377	NA		0
CON	R_5mv.R_p24	-0.0441002203430249	NA		0
CON	L_PoI2.R_46	-0.648438928097675	NA		0
CON	L_PF.R_a32pr	-1.0633000991545	NA		0
CON	L_5mv.R_PI	0.0989663215244913	NA		0
CON	L_5mv.R_p24	-0.471056743238599	NA		0
CON	L_23c.R_MI	1.70083760590408	NA		0
CON	L_23c.L_33pr	NA	5.22899876732189		0
CON	L_43.L_FOP4	NA	10.3650875715893		0

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CON	L_46.R_FOP4	NA	1.56007318077147		0
CON	L_a24pr.R_46	NA	6.21629065506233		0
CON	L_a32pr.R_46	NA	5.96617029984771		0
CON	R_6ma.R_7Am	NA	4.56400378138229		0
CON	R_946d.R_PFop	NA	3.79255459200074		0
CON	L_6ma.R_FOP3	NA	2.76290343814925		0
CON	L_33pr.L_6r	NA	4.47333775401273		0
CON	R_a24pr.R_PFop	NA	4.50883288559158		0
CON	R_p32pr.R_PF	NA	4.21560011953827		0
CON	L_23c.L_7Am	NA	6.23383481505764		0
CON	L_PFop.R_46	NA	3.55739203735363		0
CON	L_46.L_7Am	NA	2.42249388867514		0
CON	L_PoI1.R_46	NA	3.5678028658617		0
CON	R_946d.R_p24pr	NA	3.70596929755736		0
CON	R_FEF.R_p32pr	NA	4.76315529893219		0
CON	R_a32pr.R_p24pr	NA	3.73706647442564		0

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CON	L_43.R_a32pr	NA	1.89244841238975		0
CON	R_946d.R_a32pr	NA	8.34396774524427		0
CON	R_p24pr.R_p32pr	NA	6.9284967716611		0
CON	R_46.R_a24pr	NA	6.89373738850125		0
CON	L_43.R_46	NA	2.34187330834419		0
CON	L_23c.L_FOP3	NA	4.92916497029391		0
CON	L_PFop.R_6ma	NA	3.00157290106641		0
CON	L_PFop.R_946d	NA	4.49379478961213		0
CON	L_7Am.R_PF	NA	1.73365669093694		0
CON	L_46.R_MI	NA	2.336135436169		0
CON	L_6r.R_p24	NA	2.84133226393714		0
CON	L_946d.R_p24	NA	7.43315147892294		0
CON	L_946d.R_a32pr	NA	5.65815183311023		0
CON	L_p24.L_PFop	NA	5.11387663973596		0
CON	L_p24.R_PF	NA	3.71113001908188		0
CON	L_FOP3.R_a32pr	NA	3.52461053390871		0

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CON	R_46.R_PFop	NA	4.24777615323344		0
CON	R_p24.R_PFop	NA	4.39158385087507		0
CON	L_946d.R_FOP4	NA	5.02367613537899		0
CON	R_6r.R_a32pr	NA	3.21962314540229		0
CON	L_6ma.L_PF	NA	3.87685786040353		0
CON	L_PFop.R_p24	NA	3.99025986349006		0
CON	L_46.R_7Am	NA	1.89991722749855		0
CON	R_p24.R_PF	NA	2.76653972073799		0
CON	R_43.R_p24	NA	2.69090718502726		0
CON	L_FOP5.L_PFcm	NA	4.47402733626255		0
CON	L_a24pr.R_6ma	NA	5.2948338334435		0
CON	R_46.R_PI	NA	3.98512786660384		0
CON	L_p24.R_PFop	NA	5.39215500345775		0
CON	R_FOP1.R_PoI2	NA	8.43520645438037		0
CON	R_946d.R_a24pr	NA	7.03092900766951		0
CON	L_FOP4.R_p24	NA	4.49600933774848		0

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CON	R_FOP1.R_p24	NA	1.8881494625486		0
CON	R_FEF.R_FOP4	NA	4.92072921076706		0
CON	R_FEF.R_SCEF	NA	7.82733598409615		0
CON	L_7Am.L_p24pr	NA	3.40830552783318		0
CON	R_46.R_FEF	NA	2.74477599102214		0
CON	L_a24pr.R_p24pr	NA	9.04704301305782		0
FPN	L_IFJp.R_IP2	2.20867432521626	6.30291955677746	6.83851294196427	1
FPN	L_PFm.R_a47r	-1.57943663379676	2.13824220484535	2.72837707907194	1
FPN	L_IFSa.R_s68	0.150187651050559	4.21316754260558	4.74930732643251	1
FPN	R_a10p.R_p10p	6.70455953685539	10.6279259074413	11.5273177678159	1
FPN	L_p47r.R_s68	-1.2293446560806	2.77829544741801	3.33032869420186	1
FPN	L_111.L_131	5.99172898667323	NA	NA	0
FPN	R_a47r.R_p47r	6.96593279980765	NA	NA	0
FPN	L_TE1p.R_111	0.0478335995724925	NA	NA	0
FPN	L_a946v.R_POS2	-1.8739776821079	NA	NA	0
FPN	L_PFm.R_PFm	4.43925616492134	NA	NA	0

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FPN	L_POS2.R_p10p	0.198317444515647	NA	NA	0
FPN	L_8BM.R_131	-1.32591167174789	2.10325828972222	NA	0
FPN	L_i68.R_8BM	-0.0828074025481539	NA	NA	0
FPN	R_a10p.R_TE1p	-0.29911456057338	NA	NA	0
FPN	L_a47r.L_RSC	-1.61851933956021	NA	NA	0
FPN	L_p47r.R_POS2	-2.44211638594324	NA	1.97619690305132	0
FPN	L_IP2.R_8BM	-1.53836365308005	NA	NA	0
FPN	L_a946v.L_s68	1.98852006554889	NA	NA	0
FPN	L_IP2.R_PFM	-1.39719852313241	NA	NA	0
FPN	L_AV1.R_8C	2.21977927237866	NA	NA	0
FPN	R_IFJp.R_s68	0.365956437064276	NA	4.81744645090567	0
FPN	L_p946v.R_a10p	-0.41682885701524	NA	3.72259917473315	0
FPN	L_IFSa.R_i68	-0.255995667781283	3.78872372046283	NA	0
FPN	R_IP2.R_s68	0.60588797808797	NA	NA	0
FPN	L_TE1p.R_a10p	-1.99915808949674	NA	NA	0
FPN	L_7Pm.L_s68	3.14795636217519	NA	NA	0

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FPN	R_131.R_IP1	1.05288772978221	NA	NA	0
FPN	L_a47r.R_i68	0.609009166047295	NA	NA	0
FPN	L_131.R_TE1p	0.950518479655122	4.76138588804002	NA	0
FPN	R_8C.R_PFm	3.96136413961684	NA	NA	0
FPN	L_i68.L_s68	7.81000483598545	11.7670592813385	NA	0
FPN	L_7Pm.R_111	-2.64785954081147	0.811813525961701	NA	0
FPN	L_7Pm.L_i68	2.38779729346939	NA	6.96219362830374	0
FPN	L_AVI.R_p946v	1.17674069916636	NA	NA	0
FPN	L_a47r.R_s68	-0.224227540508492	3.60069154026258	NA	0
FPN	L_PFm.R_p47r	-2.70787382229719	NA	NA	0
FPN	L_111.R_AVI	-1.35296403634389	NA	NA	0
FPN	L_PFm.R_TE1p	0.102629088349399	NA	NA	0
FPN	L_p10p.R_TE1p	-2.25751397125318	NA	NA	0
FPN	L_a47r.L_s68	0.57603741768041	NA	NA	0
FPN	L_8BM.R_a47r	0.387852633329833	NA	NA	0
FPN	L_8BM.R_s68	1.68961001885687	5.49822238541639	NA	0

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FPN	L_TE1p.R_a47r	-0.0817582721610546	NA	NA	0
FPN	L_IFJp.L_p10p	-1.53556193949842	NA	NA	0
FPN	L_IFJp.R_p946v	-0.137732355674804	NA	4.3239177085145	0
FPN	R_IP1.R_s68	1.46723241279372	NA	NA	0
FPN	L_TE1p.R_8C	-0.486752789241054	NA	NA	0
FPN	L_PFm.R_111	-1.01854853710094	NA	NA	0
FPN	R_a10p.R_RSC	NA	4.48550613277032	NA	0
FPN	R_131.R_a47r	NA	6.93918980767228	NA	0
FPN	R_111.R_a47r	NA	8.48367381535614	NA	0
FPN	L_IFSa.R_IP1	NA	3.56784053642227	3.91066218797233	0
FPN	L_p10p.R_s68	NA	4.99588011254824	NA	0
FPN	L_a946v.R_s68	NA	4.39952854753342	NA	0
FPN	L_a10p.R_s68	NA	3.611835678116	NA	0
FPN	L_TE1p.R_IP2	NA	5.79341257830071	NA	0
FPN	L_i68.R_s68	NA	8.29847361443632	NA	0
FPN	L_7Pm.R_7Pm	NA	13.5473535326311	NA	0

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FPN	L_8C.R_IP2	NA	5.83155701534688	6.76838224996292	0
FPN	L_p47r.R_TE1p	NA	3.47476840485881	NA	0
FPN	R_111.R_RSC	NA	2.3573329967476	NA	0
FPN	L_AVI.R_IP1	NA	3.35620614239664	NA	0
FPN	R_131.R_IFJp	NA	6.16540850963446	NA	0
FPN	L_p47r.R_p47r	NA	8.14696049457939	NA	0
FPN	L_i68.R_7Pm	NA	3.93003184200411	4.70302297450225	0
FPN	L_IP1.L_PFm	NA	5.50642738391302	NA	0
FPN	L_a10p.R_RSC	NA	2.80995028348612	NA	0
FPN	R_i68.R_p946v	NA	5.28708190637514	NA	0
FPN	L_a10p.L_s68	NA	4.45315250073318	NA	0
FPN	L_i68.L_IFSa	NA	7.5405039321992	NA	0
FPN	L_7Pm.R_IP1	NA	4.96918255937304	5.46729276917345	0
FPN	L_p10p.R_131	NA	1.63071670804844	NA	0
FPN	R_a47r.R_s68	NA	7.11061869633917	NA	0
FPN	L_IP1.R_IP2	NA	8.53760540022713	NA	0

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FPN	L_131.R_IP2	NA	3.83039014111335	NA	0
FPN	L_POS2.R_a946v	NA	3.07807633918253	NA	0
FPN	L_a47r.R_p47r	NA	6.82864677630205	7.39578126025241	0
FPN	L_POS2.R_p47r	NA	1.00985294496187	NA	0
FPN	L_131.L_TE1p	NA	6.60064551431416	NA	0
FPN	L_8C.R_a10p	NA	4.13538062265309	4.82411617853997	0
FPN	L_p946v.R_IP2	NA	6.28523852356659	7.23865796468342	0
FPN	L_IFSa.R_7Pm	NA	0.904603020730623	1.30226883818962	0
FPN	L_p47r.R_RSC	NA	1.46378006823071	NA	0
FPN	L_p10p.L_s68	NA	7.86816982123474	NA	0
FPN	L_i68.L_p47r	NA	NA	7.28383182666547	0
FPN	L_a946v.R_a10p	NA	NA	4.07839813541172	0
FPN	R_IFSa.R_s68	NA	NA	5.70897274500998	0
FPN	L_p47r.R_111	NA	NA	5.10366884032307	0
FPN	R_a47r.R_PFm	NA	NA	9.23536971132976	0
FPN	L_IFSa.R_a946v	NA	NA	5.2293781199338	0

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FPN	L_POS2.R_111	NA	NA	2.92841005929712	0
FPN	R_111.R_POS2	NA	NA	4.41116583131065	0
FPN	L_p47r.L_s68	NA	NA	4.41606746932947	0
FPN	L_IFJp.R_111	NA	NA	3.93421753414702	0
FPN	L_111.L_p946v	NA	NA	9.6643755455747	0
FPN	L_IFJp.R_8BM	NA	NA	3.4997703855336	0
FPN	L_i68.R_PFm	NA	NA	3.30914687926837	0
FPN	R_AVG.R_s68	NA	NA	4.90498655344756	0
FPN	L_IFSa.R_RSC	NA	NA	2.47854695808793	0
FPN	L_p47r.R_7Pm	NA	NA	0.792431715112975	0
FPN	R_p946v.R_RSC	NA	NA	1.51593808205053	0
FPN	R_7Pm.R_IP1	NA	NA	6.79507620162726	0
FPN	L_a47r.R_7Pm	NA	NA	2.43188785486572	0
FPN	L_7Pm.R_IP2	NA	NA	4.63186893029109	0
FPN	R_a10p.R_a47r	NA	NA	9.95451554745035	0
FPN	L_8C.R_s68	NA	NA	3.9120183110975	0

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FPN	L_s68.R_8C	NA	NA	4.2315492838997	0
FPN	R_p47r.R_s68	NA	NA	7.3708974219176	0
FPN	L_p47r.L_RSC	NA	NA	2.51781768511677	0
FPN	L_7Pm.L_p47r	NA	NA	3.1014182927058	0
FPN	L_IFJp.R_s68	NA	NA	2.96213188110461	0
FPN	L_7Pm.R_IFSa	NA	NA	0.206045539854026	0
FPN	L_a47r.R_p946v	NA	NA	6.88739295050551	0
GOB	R_10d.R_a24	-1.44676980033711	3.10831038881584		1
GOB	L_9m.L_a24pr	-4.87454105870723	-1.14011699424175		1
GOB	L_p24.R_s32	-6.27461214552417	-2.81063929204922		1
GOB	L_25.R_p32	-3.66080381181566	0.270864079797339		1
GOB	L_a24pr.R_d32	-2.91739174505174	1.4847384667437		1
GOB	R_a24.R_s32	-3.10537110981179	1.08561606429484		1
GOB	L_p24pr.R_10v	-5.98904242747586	-2.47936980148259		1
GOB	L_10v.R_a24	-3.41200963276137	NA		0
GOB	L_25.R_s32	-1.42709839084063	NA		0

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GOB	L_p32.R_10d	-2.31209280452767	NA		0
GOB	L_25.R_10r	-2.00518539697379	NA		0
GOB	R_d32.R_p32pr	-3.88835863081902	NA		0
GOB	L_10d.L_10v	-2.34794543288093	NA		0
GOB	L_10d.L_25	-3.9688225645232	NA		0
GOB	R_10v.R_a24	-3.84377051312747	NA		0
GOB	L_10v.R_10d	-0.915169386408506	NA		0
GOB	L_10d.R_d32	-4.00341770657584	NA		0
GOB	R_p32.R_s32	-3.71526178381284	NA		0
GOB	L_10v.R_p32	-3.80482636564572	NA		0
GOB	L_p32.R_10v	-4.76584015348897	NA		0
GOB	L_10v.R_s32	-1.63580671536442	NA		0
GOB	L_24dv.R_10v	-5.83415663240509	NA		0
GOB	L_p32.R_10r	-2.53478986871369	NA		0
GOB	R_10r.R_a24	-0.550635425313885	NA		0
GOB	L_10pp.R_d32	-4.63259892287634	NA		0

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GOB	R_10d.R_p32pr	-5.75686202741962	NA		0
GOB	L_9m.L_d32	-0.0928204824796145	NA		0
GOB	L_10v.R_10r	-0.0066267614307086	NA		0
GOB	R_9m.R_p32pr	-5.13698364111737	NA		0
GOB	L_24dd.L_a24pr	-3.047160973907283	NA		0
GOB	L_10v.L_p32	-3.683116560166	NA		0
GOB	R_10d.R_s32	-3.04882196735475	NA		0
GOB	R_a32pr.R_s32	NA	-2.38528201771417		0
GOB	L_10pp.L_pOFC	NA	0.888668105980399		0
GOB	R_10pp.R_p24pr	NA	-1.66569960867415		0
GOB	R_a32pr.R_p32	NA	0.383714995397212		0
GOB	L_25.R_24dv	NA	-4.04672480181972		0
GOB	R_10pp.R_pOFC	NA	0.827749962315972		0
GOB	L_d32.R_a32pr	NA	4.32236810311955		0
GOB	L_p32pr.R_24dd	NA	2.59670719599868		0
GOB	R_a24.R_p24	NA	3.70938129874718		0

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GOB	R_a24pr.R_d32	NA	3.2255060403678		0
GOB	R_a32pr.R_p24pr	NA	-0.51280464877512		0
GOB	L_a32pr.R_d32	NA	3.2758740399137		0
GOB	R_p24.R_s32	NA	-1.69452550930791		0
GOB	R_9m.R_a24	NA	1.77698930531778		0
GOB	L_9m.R_a24	NA	2.04646785634296		0
GOB	L_10v.R_pOFC	NA	1.15195719436362		0
GOB	L_a24pr.L_d32	NA	2.54642023937465		0
GOB	R_a24.R_d32	NA	0.551072607777688		0
GOB	R_24dv.R_p24	NA	-1.75300581084209		0
GOB	R_24dv.R_9m	NA	-3.20186508692621		0
GOB	R_d32.R_s32	NA	-2.04050551151099		0
GOB	L_10pp.L_24dd	NA	-2.58584363657064		0
GOB	L_10pp.L_p24pr	NA	-2.50326606950547		0
GOB	L_a24pr.R_p24pr	NA	4.40421440048269		0
GOB	L_a24.R_s32	NA	-0.17964145298116		0

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GOB	L_p24pr.R_10pp	NA	-2.41427639322638		0
GOB	R_9m.R_p24pr	NA	-0.78381906464378		0
GOB	L_p32pr.R_9m	NA	-2.8884461894497		0

We report the detailed inter-region connectivity of the subnetworks significantly associated with each apathy scale. The effect size of the association between the inter-region correlations and the apathy scales are presented only for interpretation purposes (t-values). When pairs of regions were common to all the significant scales of apathy, they were deemed robust regions associated with apathy and are reported in the main results (value of the column *join* equals to 1).

**AES:** Apathy Evaluation Scale; t-value **AMI:** Apathy Motivation Index; **Apathy:** Diagnostic criteria of apathy;

**Robust:** ROI-to-ROI correlations found across all significant subnetworks for each network (1 = True, 0 = False); **ROI-to-ROI:** Pairs of regions of interest.

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**Table S3: Proportion of shared and different components identified by TFNBS between apathy scale**

RSN	Comparison	Percentage of shared regions	Percentage of different regions	Percentage of shared direction of the effect	Percentage of different direction of the effect
DMN	AES-AMI	6.35	93.64	44.19	55.81
	AES-DCA	9.06	90.93	53.38	46.61
	AMI-DCA	7.84	92.15	49.22	50.78
	<b>Total</b>	1.85	98.15	15.62	84.38
FPN	AES-AMI	11.88	88.12	44.87	55.13
	AES-DCA	9.71	90.29	41.25	58.75
	AMI-DCA	13	87	63.77	36.23
	<b>Total</b>	4.63	95.37	16.49	83.5
CON	AES-AMI	14.28	85.71	13.27	86.7

For each resting-state network intranetwork connectivity, we report the proportion of shared regions detected by TFNBS and the proportion of shared direction of the association between each apathy scale combination taken two-by-two and all together. **AES:** Apathy Evaluation Scale; **AMI:** Apathy Motivation Index; **DCA:** Diagnostic criteria of apathy; **RSN:** Resting-state Network.

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**Table S4:** Proportion of shared components identified by TFNBS with and without modified MADRS as covariate

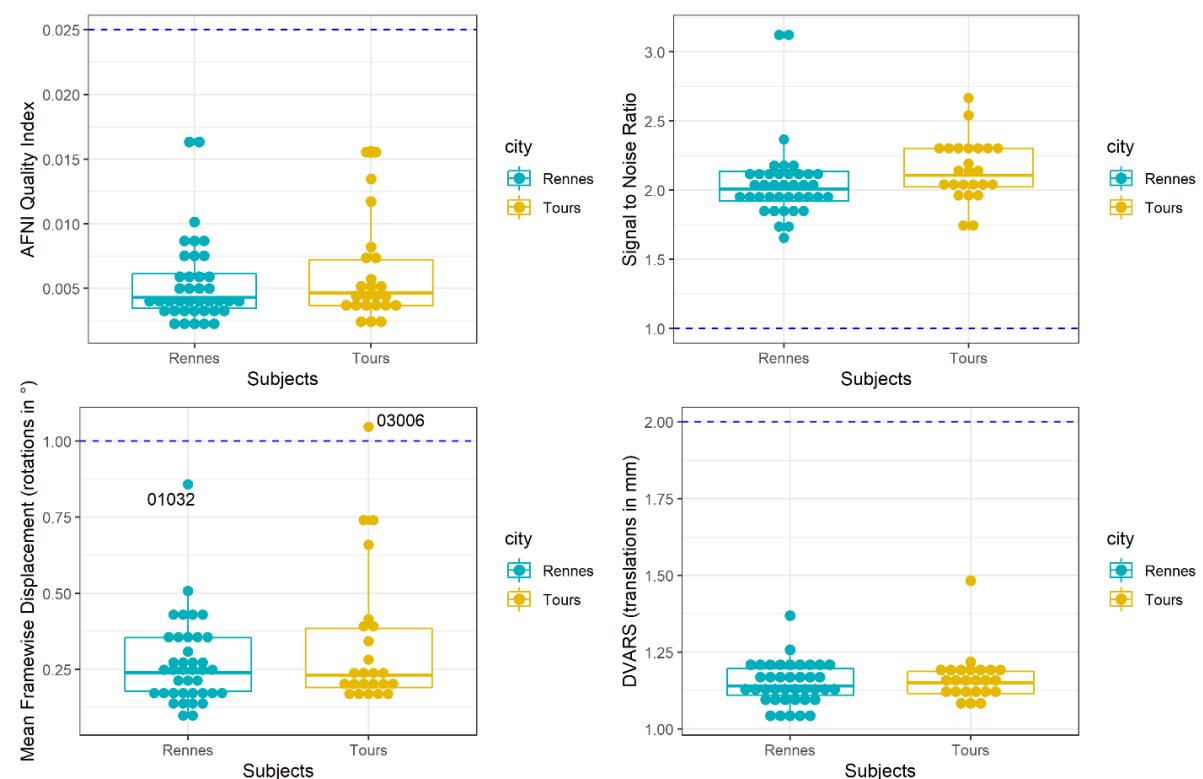
RSN	Scale	Percentage of shared regions	Percentage of similar effect
DMN	AES	99.22	99.19
	AMI	99.03	98.93
	DCA	98.79	97.01
FPN	AES	99.58	99.15
	AMI	99.15	99.15
	DCA	98.52	97.56
CON	AES	99.44	99.37
	AMI	99.16	99.16

For each resting-state network intranetwork connectivity, we report the proportion of shared regions detected by TFNBS and the proportion of shared direction of the association between the results with the MADRS as covariate and without the MADRS as a covariate. **AES**: Apathy Evaluation Scale; **AMI**: Apathy Motivation Index; **DCA**: Diagnostic criteria of apathy; **RSN**: Resting-state Network.

DOI: 10.1503/jpn.230008

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## Figures



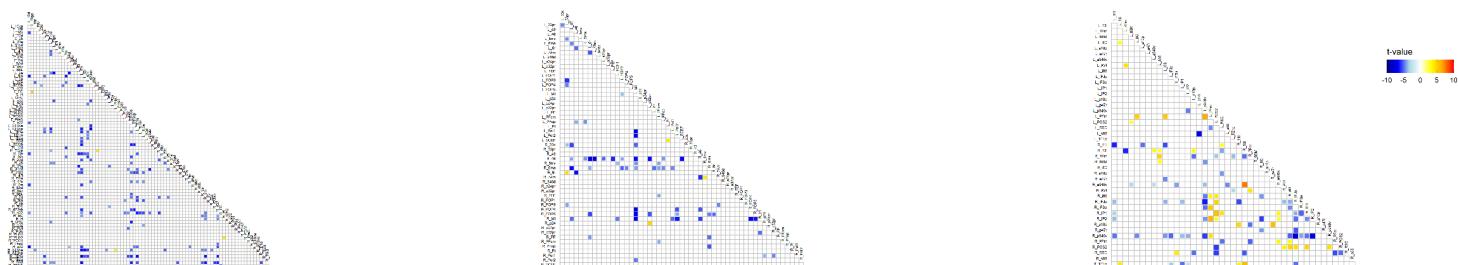
**Fig S1. Quality control of fMRI data**

Quality control results are summarized in Figure S1. Overall, participants had high quality fMRI data. Exclusion criteria were specified as an “aqi” index  $> 0.025$ , a signal to noise ratio  $> 1$ , a root-mean-square head motion less than 2mm for translations and less than  $1^\circ$  for rotation. The “aqi” index is AFNI’s mean quality index computed by the **3dTqual** routine. With these criteria, one LLD participant (03006) was removed for excessive head motion.

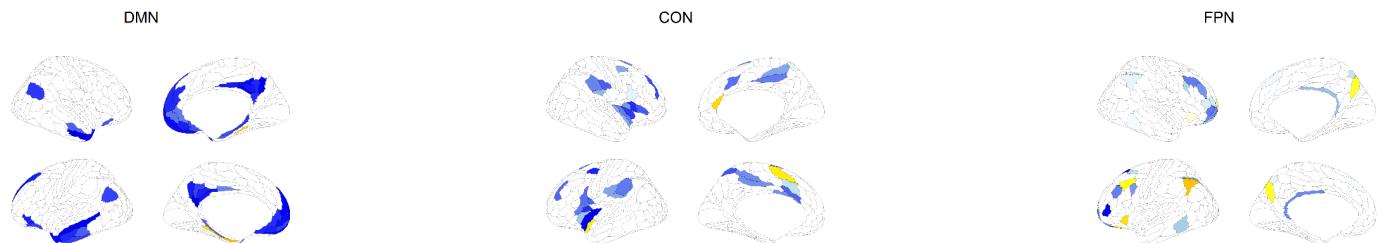
DOI: 10.1503/jpn.230008

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A.



B.



**Fig S2. Subnetworks associated with late life depression**

**A.** Brain regions whose connectivity is significantly modified in late-life depression for each resting-state network. For interpretation purposes, the effect size of the association between ROI-to-ROI connectivity and the depression group is represented in color. **B.** The same brain regions are represented on the Glasser atlas (except for L\_10pp). For interpretation purposes, the marginal mean effect of each ROI associated with the depression group is represented in color). Brain regions belonging to the network are delimited in red.

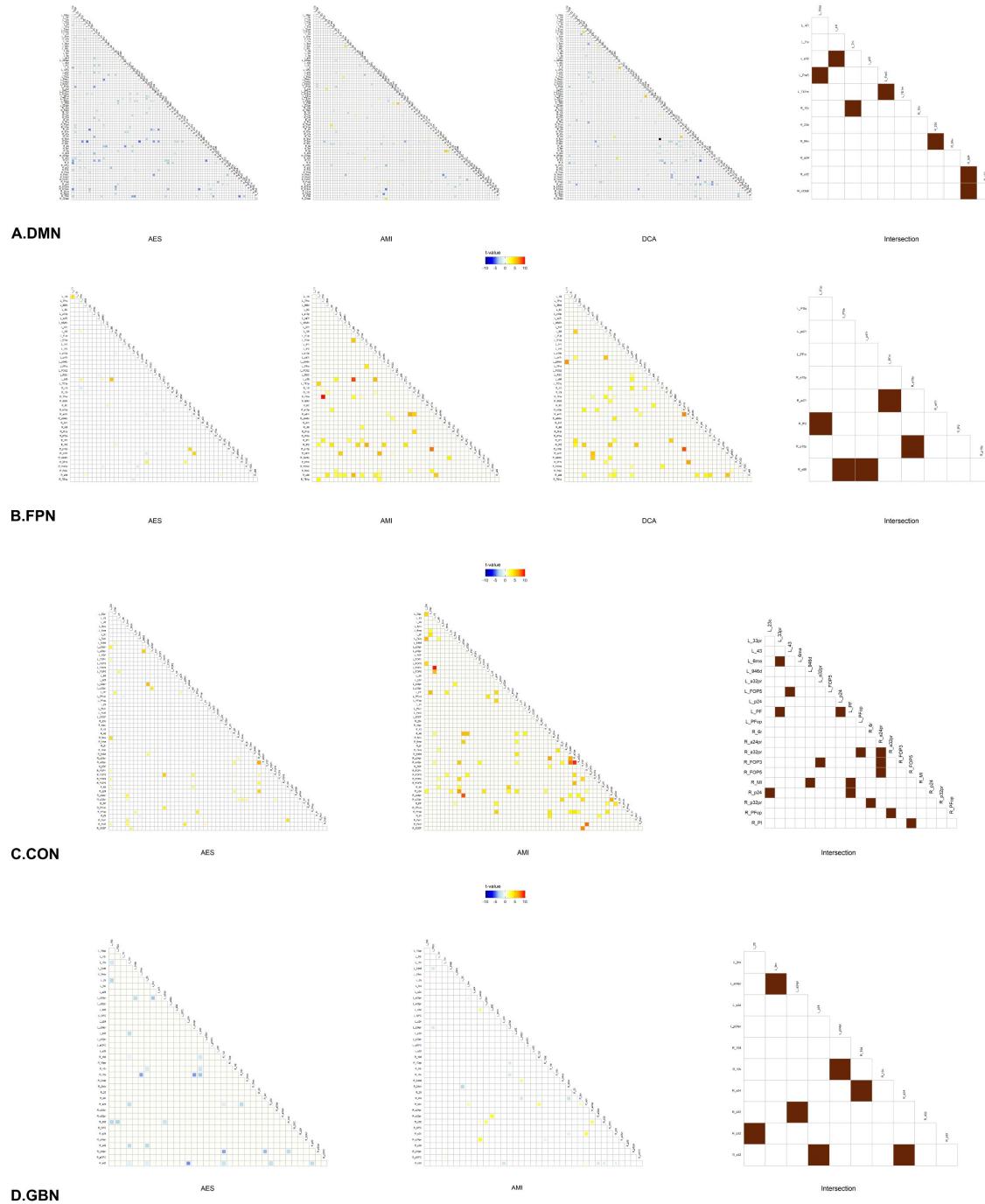
**Acronyms:** CON: cingulo-opercular network, DMN: default-mode network, FPN: fronto-parietal network.

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**Fig S3. Subnetworks associated with apathy for each apathy scale**

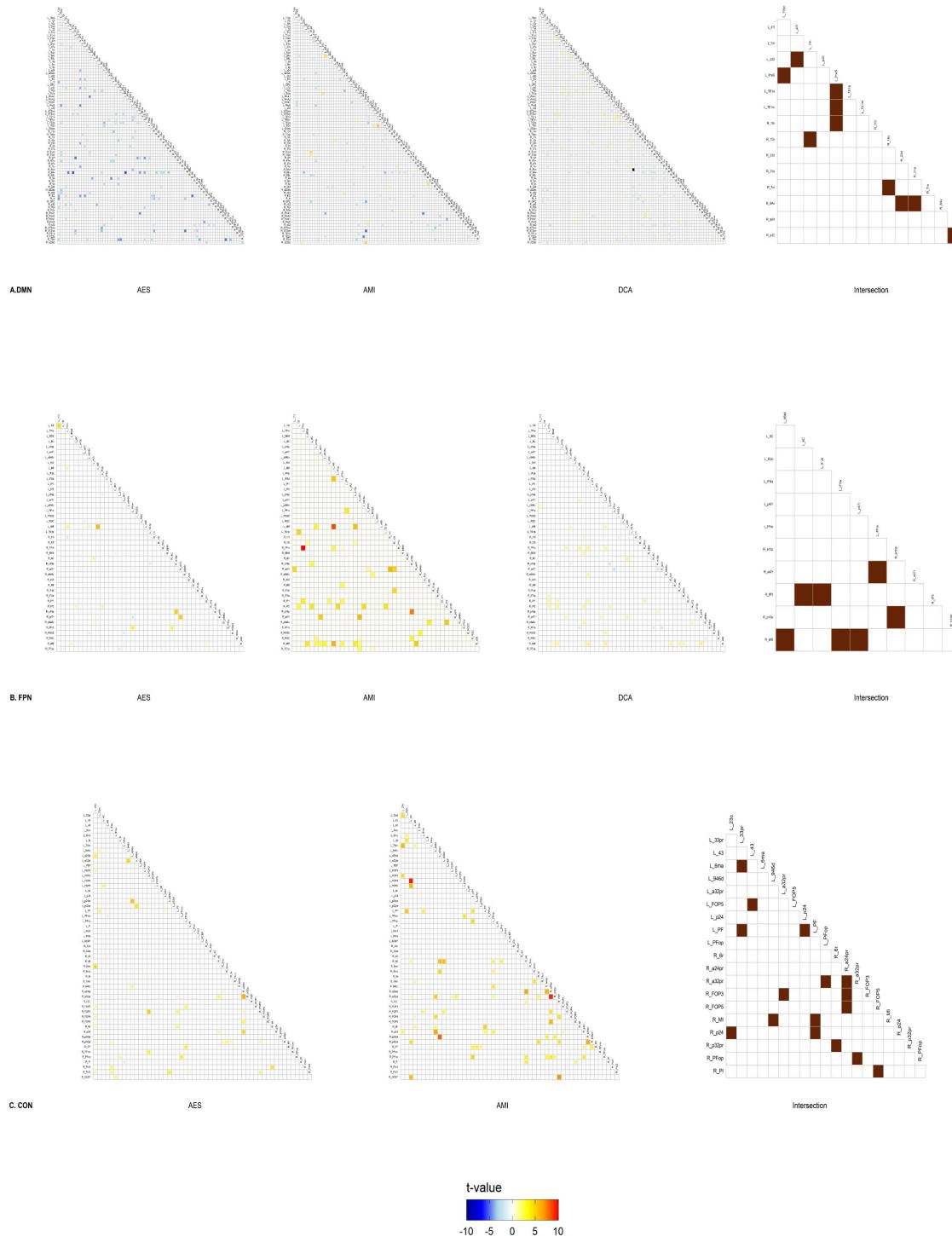
Brain regions whose connectivity is significantly associated with apathy for each resting-state network: **A.** for the DMN, **B.** for the FPN, **C.** for the CON and **D.** for the GOB goal network. Connectivity matrices are reported for each scale as well as the intersection between the scales. **Acronyms:** AES: Apathy Evaluation Scale, AMI: Apathy Motivation Index, CON: cingulo-opercular network, DCA: 2018 Diagnostic Criteria for Apathy, DMN: default-mode network, FPN: fronto-parietal network.

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**Fig S4. Subnetworks associated with apathy with MADRS as covariate**

Brain regions whose connectivity is significantly modified in late-life depression for each resting-state network adding the modified MADRS as covariates; **A.** for the DMN, **B.** for the FPN and **C.** for the CON. Connectivity matrices are reported for each scale as well as the intersection between the scales. **Acronyms:** AES: Apathy Evaluation Scale, AMI: Apathy Motivation Index, CON: cingulo-opercular network, DCA: 2018 Diagnostic Criteria for Apathy, DMN: default-mode network, FPN: fronto-parietal network.

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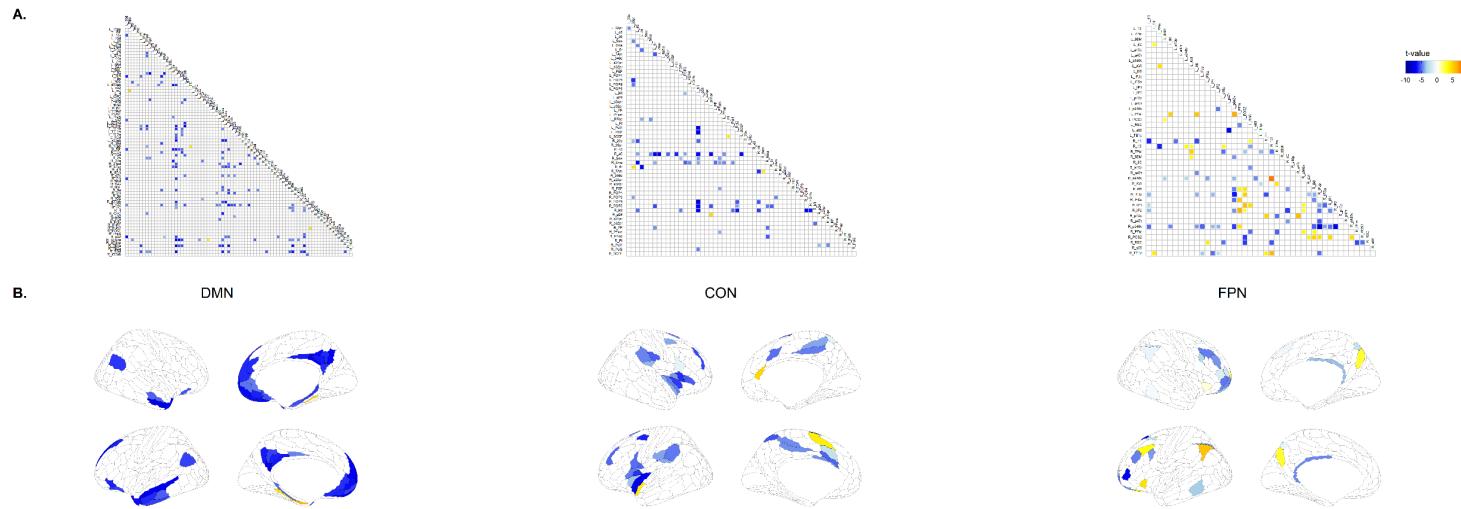
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