Supplementary Tables & Figures

Supplementary Table 1. Cognitive Performance: Control versus Bipolar group

Task	Outcome measure	Control group n = 49 Mean ± SD	Bipolar group n = 35 Mean ± SD	Statistical comparison Test stat (F, U)	p-value
Full-scale IQ	IQ score	114.47 ± 15.60	106.43 ± 18.00	3.14	0.08
Intra/Extra Dimensional Shift	Total errors adjusted	26.98 ± 29.97	39.86 ± 41.37	619.00	0.03*
Paired Associates Learning	First trial memory score[1]	19.92 ± 3.37	17.97 ± 4.85	4.61	0.04*
	Total errors adjusted[1]	14.29 ± 18.00	26.55 ± 30.59	4.79	0.03*
Delayed Match to Sample	Percent correct	90.97 ± 6.73	86.86 ± 8.12	6.15	0.02*
Spatial Recognition Memory	Percent correct	79.08 ± 11.21	74.71 ± 11.82	2.08	0.15
	Mean correct latency (ms)	2554 ± 769	2852 ± 895	2.36	0.13
Reading the Mind in the Eyes	Total correct	26.49 ± 3.80	23.83 ± 4.49	5.91	0.02*
Response Time Factor	z-score (ms)	-0.12 ± 0.91	0.16 ± 1.11	1.01	0.32

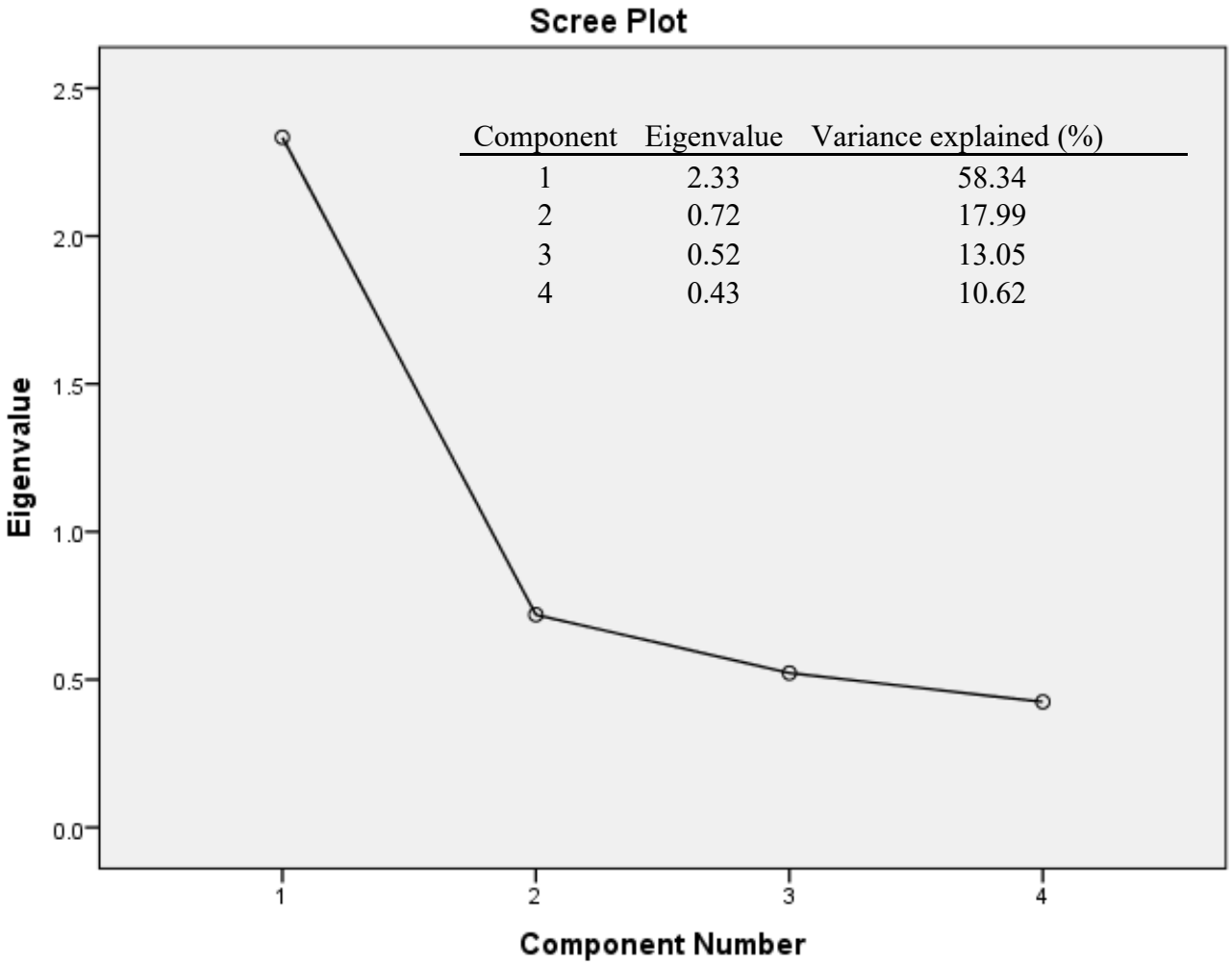
*Significant difference at $p<0.05$

[1]Data missing for 2 bipolar subjects; n = 33

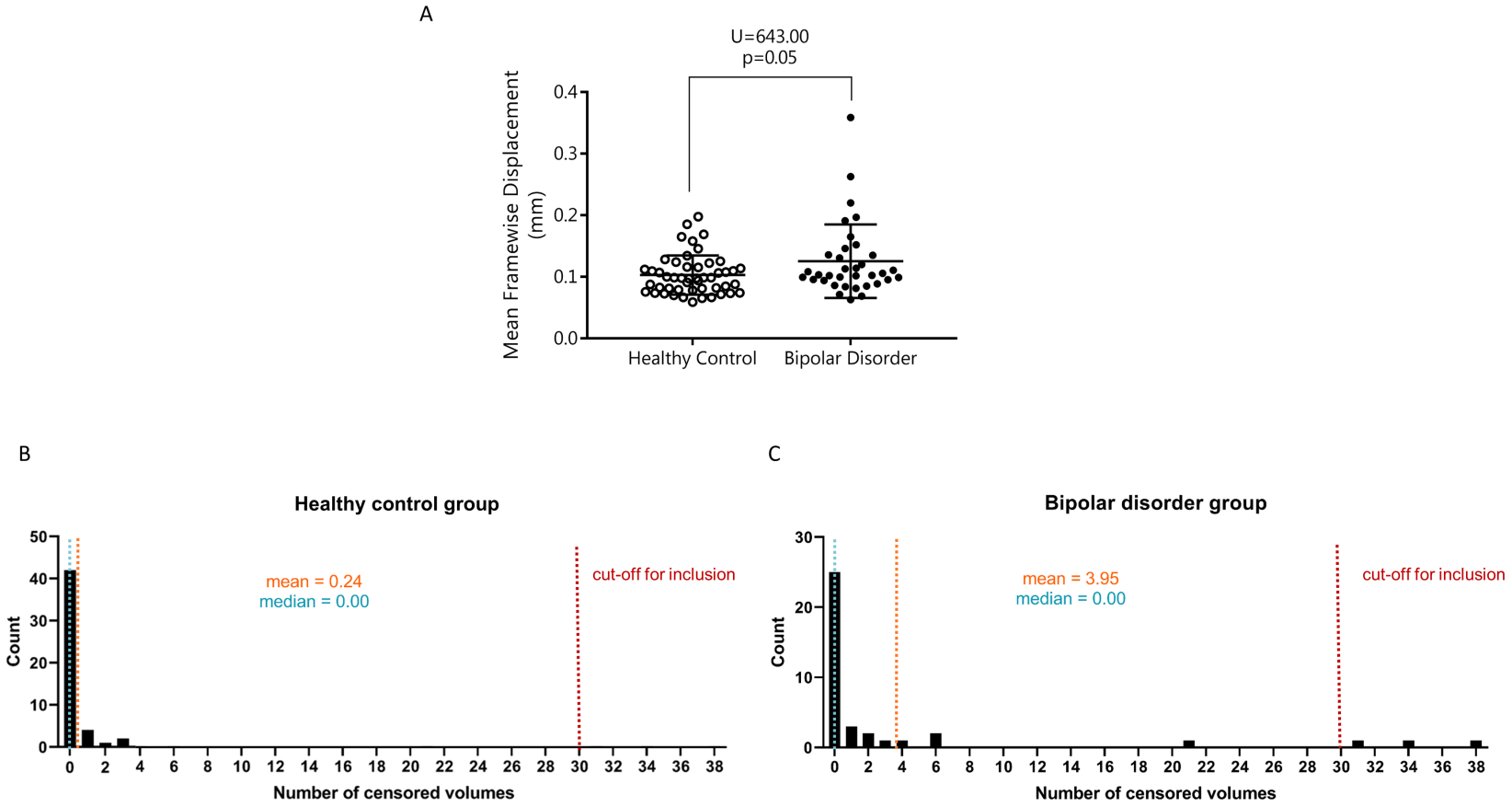
Supplementary Table 2. Bipolar disorder medication use

Medication Class	Bipolar disorder, N
Mood stabilizers,	20
Lithium only	4
Sodium valproate only	1
Lamotrigine only	7
Combination	8
Antidepressants,	11
SNRI/ SSRI/TCA	5/3/3
Antipsychotics,	20
Atypical/Typical	19/1
Benzodiazepine	1
Other Psychotropic	6
Antiepileptic	3
Medication-free	4

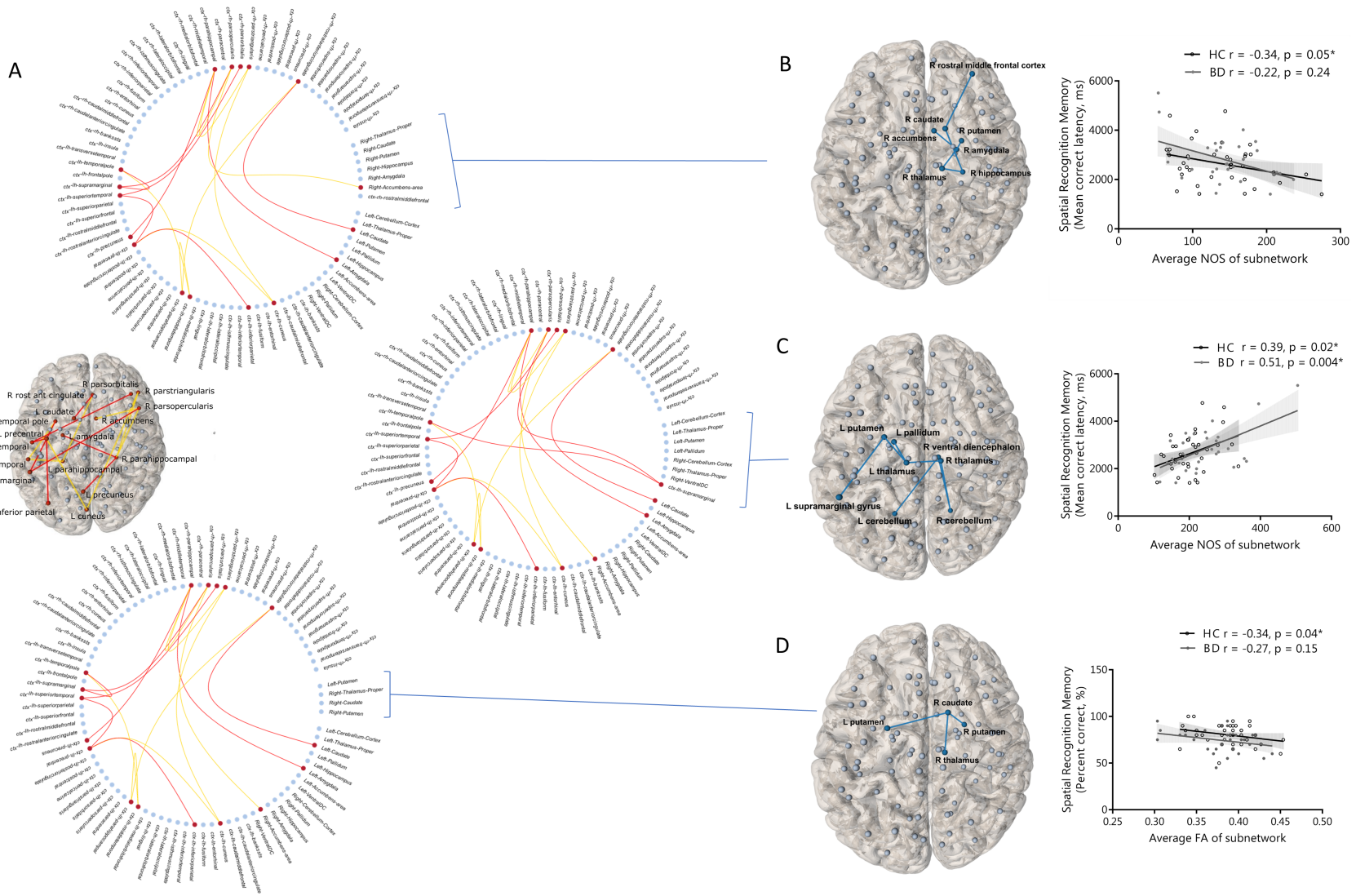
SNRI, Serotonin–norepinephrine reuptake inhibitors: SSRI, Selective serotonin reuptake inhibitors; TCA, Tricyclic antidepressants



Supplementary Figure 1. Scree plot illustrating the first component identified at an eigenvalue greater than 1.0 and occurring before the first point of inflection which was retained for further analysis. All components identified are listed with corresponding eigenvalues and percentage variance explained.



Supplementary Figure 2. The BD group showed greater mean framewise displacement compared to controls before motion correction and censoring (U=643.00, p=0.05) (A). Distribution of the number of volumes censored in healthy controls (B), none of which were excluded from the analysis, and in BD (C) including individuals with BD (n=3) that were excluded from the analyses due to >30 volumes corrupted.


A
R parsorbitalis
R parstriangularis
R rost ant cingulate
R parsopercularis
L caudate
L temporal pole
R accumbens
L precentral
L amygdala
L superior temporal
R parahippocampal
L middle temporal
L parahippocampal
L supramarginal
L precuneus
L inferior parietal
L cuneus
B
R rostral middle frontal cortex
R caudate
R putamen
R accumbens
R amygdala
R thalamus
R hippocampus
HC r = -0.34, p = 0.05*
BD r = -0.22, p = 0.24
Spatial Recognition Memory (Mean correct latency, ms)
Average NOS of subnetwork
C
L putamen
L pallidum
R ventral diencephalon
R thalamus
L thalamus
L supramarginal gyrus
L cerebellum
R cerebellum
HC r = 0.39, p = 0.02*
BD r = 0.51, p = 0.004*
Spatial Recognition Memory (Mean correct latency, ms)
Average NOS of subnetwork
D
L putamen
R caudate
R putamen
R thalamus
HC r = -0.34, p = 0.04*
BD r = -0.27, p = 0.15
Spatial Recognition Memory (Percent correct, %)
Average FA of subnetwork

Supplementary Figure 3. Visual comparison of the resting-state network found to underlie spatial memory performance in this study (left) and three anatomical subnetworks previously identified and described as underlying performance in this task in an overlapping cohort of healthy controls and bipolar disorder individuals (right) (McPhilemy et al., 2019). Left: Resting-state network represented in anatomical space and in three circular representations including all network nodes grouped to illustrate their presence in each of the three anatomical subnetworks. Positive functional connections are coloured yellow; negative functional connections are coloured red; brain regions in the significant resting-state subnetwork are coloured red. Right: Anatomical subnetworks in which greater anatomical connectivity relates to (B) faster and (C) slower response times and (D) lower accuracy in spatial memory, reproduced from (McPhilemy et al., 2019). FA; fractional anisotropy, NOS; number of streamlines.