

Altered fronto-limbic functional connectivity in Body Dysmorphic Disorder: A resting-state fMRI study.

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Background

Body Dysmorphic Disorder (BDD) is characterised by preoccupations with imagined or minor body defects, and repetitive behaviours designed to hide or improve these supposed defects. Previous neuroimaging research in Body Dysmorphic Disorder (BDD) has revealed abnormalities in the visual, cortico-striatal and limbic systems, in both task based and volumetric MRI studies of the disorder. There has been no work to date on resting state brain activity in BDD.

Aim

The current study was able to further our understanding of BDD using resting-state fMRI. This allowed us to investigate task-independent functional connectivity (FC) patterns between brain regions. It was hypothesized that the BDD group would demonstrate abnormal FC in fronto-striatal regions due to previous neuroimaging findings in BDD.

Method

Seventeen BDD participants and 18 healthy controls matched on age, sex, and handedness underwent a resting-state functional MRI scan. FC, a measure of the correlation between brain regions or voxels was compared between groups via a seed-based and voxel-based approach across the brain, using CONN Connectivity Toolbox.

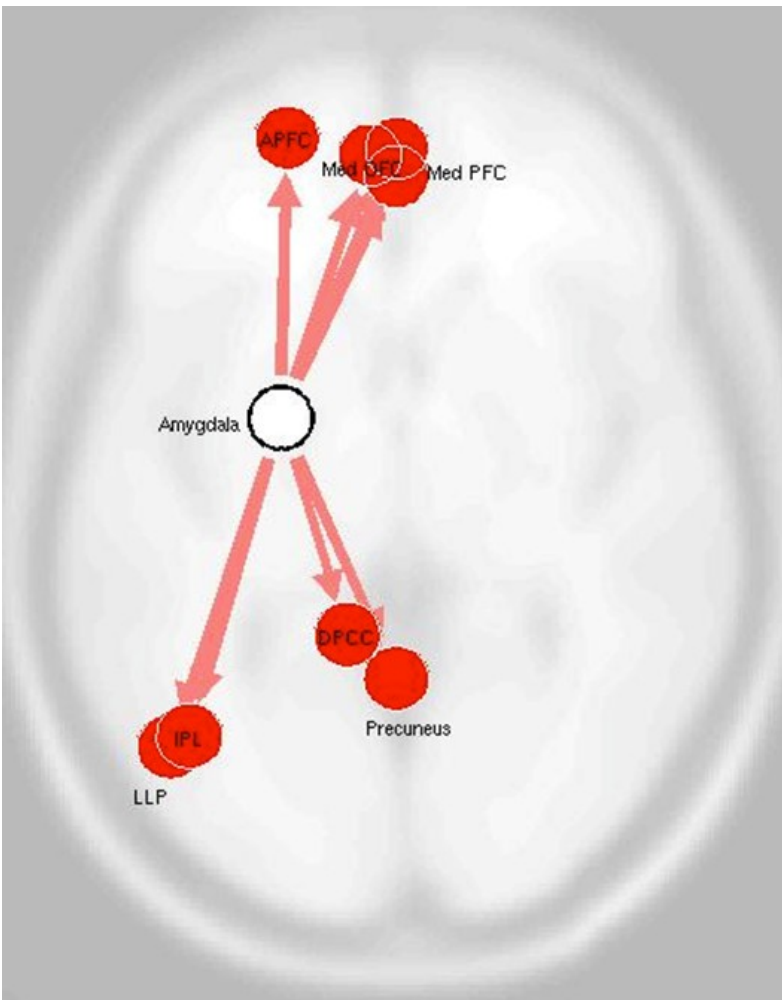
Table 1: Sample characteristics

	BDD (mean ± SD)	Controls (mean ± SD)
Demographic Characteristics		
- Age (Years)	34.0 ± 12.0	30.56 ± 10.0
- WTAR IQ estimate	106± 10	111 ± 7
- Handedness (L/R)	3/14	3/15
- Gender (M/F)	6/11	6/12
Clinical variables		
- BDD severity (BDD-YBOCS)	23.6 ± 7.1	-
- Duration of illness (Years)	10.4 ± 6.9	-
- Depression (Zung)	48.1 ± 10.3	23.8 ± 8.5*
- Social Anxiety (SIAS)	41.1 ± 18.1	16.4 ± 3.8*

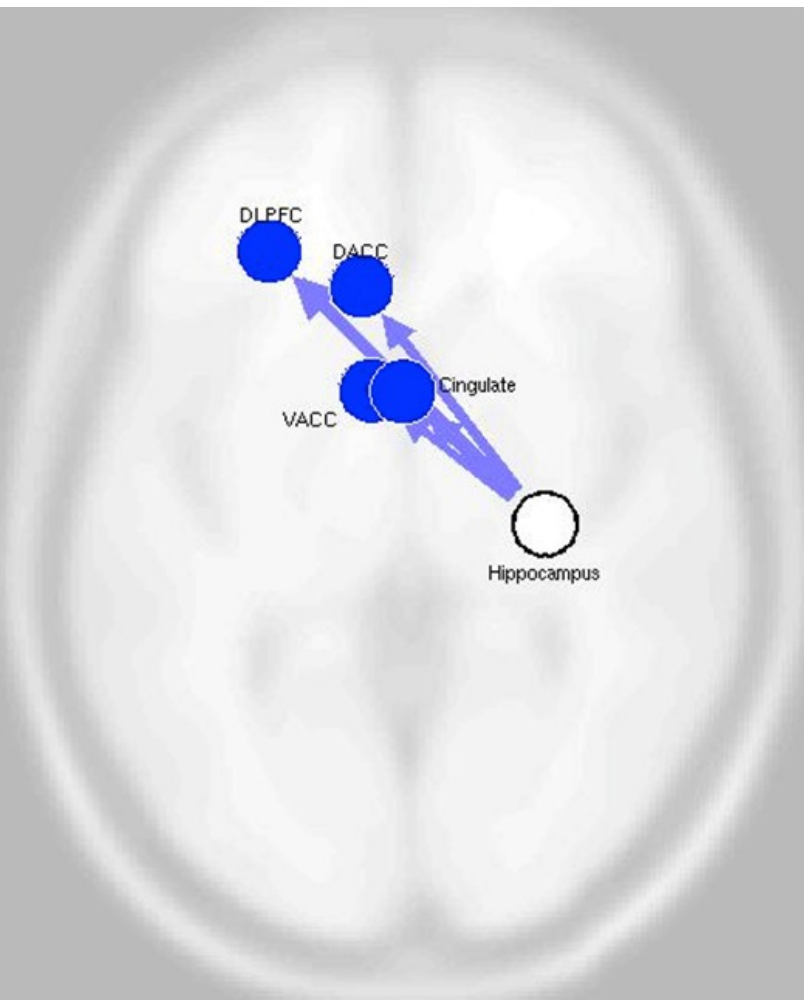
*p<0.001 group differences

Results

Figure 1a and 1b Seed based analysis



Greater amygdala connectivity in BDD



Reduced hippocampal connectivity in BDD

Table 2: Seed based analysis

ROI	ROI target	Beta	T	P (corrected)
L Amygdala	BA23 L posterior cingulate	0.21	4.30	0.01
	Precuneus	0.17	4.25	0.01
	L medial orbitofrontal cortex	0.21	3.99	0.01
	BA31 L posterior cingulate	0.17	3.98	0.01
	BA23 posterior cingulate	0.21	3.86	0.01
	BA29 anterior cingulate	0.19	3.66	0.01
	L medial prefrontal cortex	0.19	3.62	0.03
R Hippocampus	BA9 L dorsolateral prefrontal	-0.22	4.3	0.02
	BA24 L anterior cingulate	-0.25	3.86	0.03
	BA32 L anterior cingulate	-0.21	3.78	0.03

Figure 2: Voxel based analysis

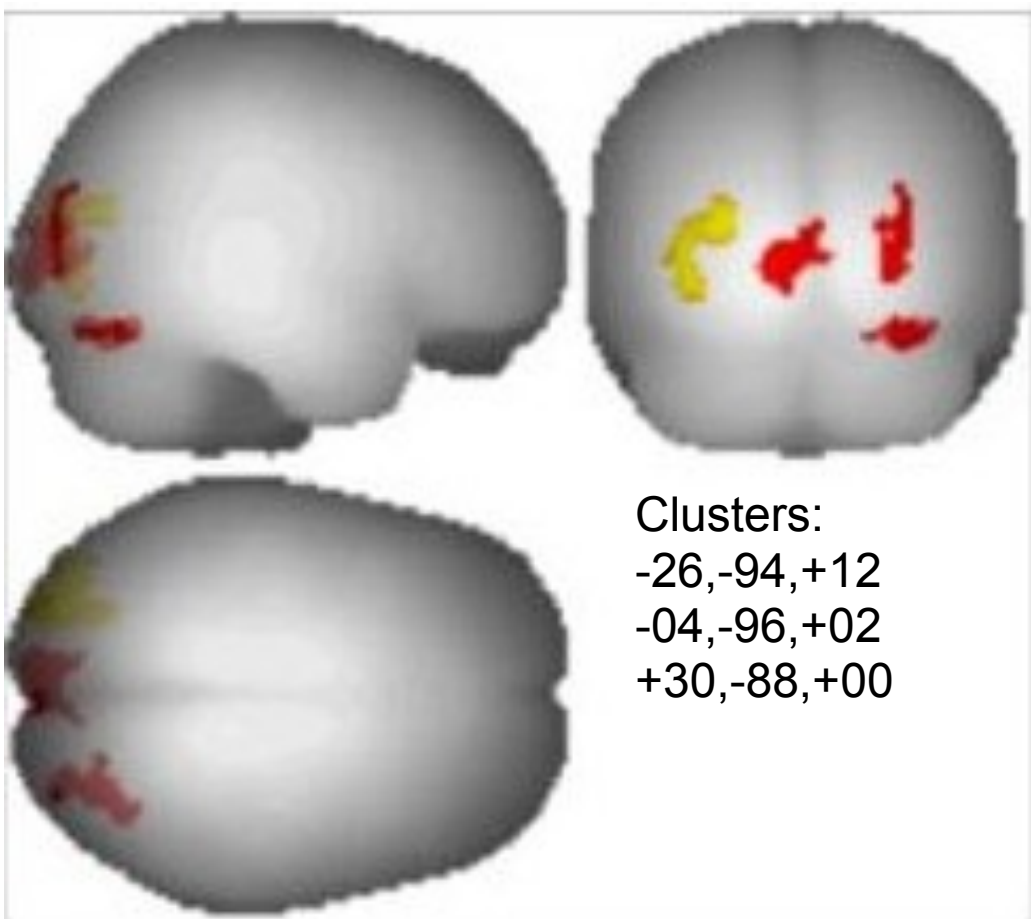


Figure shows clusters in the left and right (BA17, BA 18 and BA19) show reduced synchronous FC in BDD patients compared to healthy controls.

Clusters:
-26,-94,+12
-04,-96,+02
+30,-88,+00

Results Summary

Results of the current study do not lend support to the fronto-striatal hypothesis in BDD; however, abnormalities in fronto-amygdala and hippocampal connectivity with several key brain regions were uncovered. In addition, a measure of voxel level FC using the Intrinsic Connectivity Contrast (ICC) revealed preliminary evidence of improper communication within the visual systems in BDD, even without the presence of any overt task performance.

Conclusions

This data may lend support for the argument that BDD lies on a spectrum of anxiety spectrum disorders, characterized by emotional dysregulation and socio-cognitive deficits, which includes abnormalities in processing visual information.

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