Moving the brain: Neuroimaging motivational changes of deep brain stimulation in obsessive-compulsive disorder

Figee, M.

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Intentional Maps in Posterior Parietal Cortex.
*Annual Rev Neurosci.* 25, 189-220.

Treatment of patients with intractable obsessive-compulsive disorder with anterior capsular stimulation. Case report.

Anderson, S. W., Damasio, H., & Damasio, A. R (2005).
A neural basis for collecting behaviour in humans.
*Brain: a journal of neurology,* 128, 201–12.

Pathophysiology of obsessive-compulsive disorder: a necessary link between phenomenology, neuropsychology, imagery and physiology.
*Prog. Neurobiol.,* 72, 195-221.

Deep brain stimulation of the ventral caudate nucleus in the treatment of obsessive-compulsive disorder and major depression. Case report.
*J Neurosurg* 101, 682-686.

Deep brain stimulation for OCD and major depression.
*Am J Psychiatry,* 162, 2192.

Distinct striatal targets in treating obsessive-compulsive disorder and major depression.
*Journal of neurosurgery,* 111(4), 775–9.

Performing functional magnetic resonance imaging in patients with Parkinson’s disease treated with deep brain stimulation.
*Mov Disord* 21:1154-1162.

From reactive to proactive and selective control: developing a richer model for stopping inappropriate responses.
*Biological Psychiatry* 69:e55–68.

Morphological asymmetry in anterior limb of human internal capsule revealed by confocal laser and polarized light microscopy.
*Psychiatry Research,* 91(3), 141-154.
References


Quantification of striatal dopamine transporters with \([^{123}\text{I}]\) beta-CIT SPECT is influenced by the selective serotonin reuptake inhibitor paroxetine: a double-blind, placebo-controlled, crossover study in healthy controls.


*Neuropsychopharmacol* 33, 1252–1258.


*Psychiatry Res* 33: 83-94.


C


*Depress. Anxiety* 24, 440–446.

tal confounds.

NeuroImage, 37, 508–17.

Clinical Case Study: Treatment of late-onset OCD following basal ganglia infarct.
Depress Anxiety, 15, 87-90.

Acquired Obsessive-Compulsive Disorder Associated With Basal Ganglia Lesions.

The neuropsychology of obsessive compulsive disorder: the importance of failures in cognitive and behavioural inhibition as candidate endophenotypic markers.

Orbitofrontal dysfunction in patients with obsessive-compulsive disorder and their unaffected relatives.
Science 321, 421-422.

Electrophysiological effects and clinical results of direct brain stimulation for intractable epilepsy.

Altered Brain Activity during Reward Anticipation in Pathological Gambling and Obsessive-Compulsive Disorder.

Neural correlates of value, risk, and risk aversion contributing to decision making under risk.

Functional alterations of large-scale brain networks related to cognitive control in obsessive-compulsive disorder.

Cross-species affective functions of the medial forebrain bundle-Implications for the treatment of affective pain and depression in humans.
References


D


obsessive-compulsive disorder.
Arch Gen Psychiatry 67, 1061–1068.

Low level of dopaminergic D2 receptor binding in obsessive-compulsive disorder.
Biol Psychiatry 55, 1041-1045.

The role of dopamine in obsessive-compulsive disorder: preclinical and clinical evidence.

On certainty: studies in obsessive-compulsive disorder.

Pharmacotherapy of obsessive-compulsive disorder and obsessive-compulsive spectrum disorders.

Serotonergic modulation of striatal dopamine measured with positron emission tomography (PET) and in vivo microdialysis.
Journal of Neuroscience, 15, 821– 829.

Resolution of Severe Obsessive-Compulsive Disorder After a Small Unilateral Nondominant Frontoparietal Infarct.
Int. J. Neurosci., early online, 1-3.

Functional magnetic resonance imaging of autism spectrum disorders.
Dialogues Clin Neurosci., 14, 319–351.

Functional neuroimaging of reward processing and decision-making: a review of aberrant motivational and affective processing in addiction and mood disorders.

Cereb. Cortex 18, 2735-2747.

Compulsive Symptoms Associated With Frontal Lobe Injury.
Am. J. Psychiatry, 151, 618.


Brain, 133, 3661-75.

Brain structure & function, 213(1-2), 93-118.


PLoS.One. 4, e8429.

Biol Psychiatry 70, 754–62.


Neurosurgery, 69, 1281–90.

Targets for deep brain stimulation in obsessive-compulsive disorder.

*Psychiatr Ann.* 40, 492-498

Neurosurgical targets for compulsivity: what can we learn from acquired brain lesions?


Neuroimaging of deep brain stimulation in psychiatric disorders.


Dysfunctional reward circuitry in obsessive-compulsive disorder.

*Biological psychiatry* 69, 867-74.

Deep brain stimulation induces endogenous striatal dopamine release in obsessive-compulsive disorder.

*Biological Psychiatry, in press.*

Deep brain stimulation restores frontostriatal network activity in obsessive-compulsive disorder.

*Nature Neuroscience* 4, 386-7

A review of antipsychotics in the treatment of obsessive compulsive disorder.

*J Psychopharmacol.* 20, 97-103.

Probing Compulsive and Impulsive Behaviors, from Animal Models to Endophenotypes: A Narrative Review.

*Neuropsychopharmacol.*, 35, 591-604.

Discrete coding of reward probability and uncertainty by dopamine neurons.

*Science* 299, 1898-1902.


H


The Assessment of Anxiety States by Rating.

Hamilton M. (1960).
A rating scale for depression
_J Neurol Neurosurg Psychiatry_ 23, 56–62.

Striatal IMP-SPECT decrease in obsessive compulsive disorder, normalized by pharmacotherapy.
_Neuropsychiatry Neuropsychol. Behav. Neurol.,_ 2, 290-300.

Harrison, B. J., Soriano-Mas, C., Pujol, J., Ortiz, H., López-Solà, M., Hernández-Ribas, R.,
Altered corticostriatal functional connectivity in obsessive-compulsive disorder.
_Archives of general psychiatry, 66_, 1189-200.

Harrison, B. J., Pujol, J., Cardoner, N., Deus, J., Alonso, P., López-Solà, M.,
Contreras-Rodríguez, O., et al. (2012).
_Biological psychiatry._

Reduced midbrain-pons serotonin transporter binding in patients with obsessive–compulsive disorder.
_Acta Psychiatr Scand 115_, 388–394

Traitement stéréotaxique des tics et cris inarticulés ou copralalique considérés comme phénomène d’obsession motrice au cour de la maladies de Gilles de la Tourette.
_Revue Neurologique (Paris), 123_, 89-100.

Hesse, S.,Muller, U., Lincke, T., Barthel, H.,Villmann, T., Angermeyer, M.C., Sabri, O.,
Serotonin and dopamine transporter imaging in patients with obsessive-compulsive disorder.
_Psychiatry Res._ 140, 63–72.

Intraoperative functional MRI as a new approach to monitor deep brain stimulation in Parkinson’s disease.
_Eur Radiol 14_:686-690

‘Behavioral’ addictions: do they exist?


I


J


Dopamine transporter density of basal ganglia assessed with [¹²³I]IPT SPET
in obsessive-compulsive disorder.

Grey matter abnormalities in obsessive-compulsive disorder:
Statistical parametric mapping of segmented magnetic resonance images.

Obsessive-Compulsive Disorder Associated With a Left Orbitofrontal Infarct.

Mapping brain regions in which deep brain stimulation affects schizophrenia-like behavior in
two rat models of schizophrenia.
Brain stimulation, Oct 8.

Nucleus accumbens deep brain stimulation results in insula and prefrontal activation: a large
animal fMRI study.
PloS one, 8, e56640.

Anticipation of increasing monetary reward selectively recruits nucleus accumbens.
J. Neurosci. 21, RC159.

Dissociation of reward anticipation and outcome with event-related fMRI.
Neuroreport 12, 3683–3687.

EEG delta oscillations as a correlate of basic homeostatic and motivational processes.
Neuroscience and biobehavioral reviews, 36, 677–695.

R-fluoxetine increases extracellular DA, NE, as well as 5-HT in rat prefrontal cortex and
hypothalamus: an in vivo microdialysis and receptor binding study.
Neuropsychopharmacology. 27, 949-59.

Neurocircuitry of addiction.
Neuropsychopharmacology, 35, 217-38.
References


L


How does deep brain stimulation work? Present understanding and future questions.

McIntyre, C.C. & Hahn, P.J. (2010).
Network perspectives on the mechanisms of deep brain stimulation.

Obsessive-Compulsive Neurosis Following Head Injury: A Report of Four Cases.
Brit. J. Psychiatry, 144, 190-192.

Minneapolis, Medtronic.

Integrating evidence from neuroimaging and neuropsychological studies of obsessive-compulsive disorder: the orbitofronto-striatal model revisited.
Neuroscience and biobehavioral reviews, 32, 525-49.

Brain functional connectivity in stimulant drug dependence and obsessive-compulsive disorder.

Neurobiology of basal ganglia circuits in Tourette syndrome: faulty inhibition of unwanted motor patterns?
Advances in Neurology, 85, 113-22.

Identification and Treatment of a Pineal Region Tumor in an Adolescent With Prodromal Psychotic Symptoms.
Am. J. Psychiatry, 167, 1033-1037.

Essai d’un traitement chirurgical de certaines psychoses.

Mechanisms of action of deep brain stimulation (DBS).
Case study: caudate glutamatergic changes with paroxetine therapy for paediatric obsessive-compulsive disorder.
*J Am Acad Child Adolesc Psychiatry* 37, 663-667.

Case Study: Suprasellar Germinoma Presenting With Psychotic and Obsessive-Compulsive Symptoms.

Fluvoxamine treatment and D2 receptors: a pet study on OCD drug-naïve patients.
*Neuropsychopharmacology* 32, 197-205.

The impact of stereotactic pallidal surgery on the dopamine D2 receptor in Parkinson disease: a positron emission tomography study.
*J Neurosurg* 98, 57-63.

Diffusion tensor imaging and tract-based spatial statistics in obsessive-compulsive disorder.

Clinical correlates of nucleus accumbens volume in drug-naive, adult patients with obsessive-compulsive disorder.

Naqvi NH, Bechara A. (2010).
The insula and drug addiction: an interoceptive view of pleasure, urges, and decision-making.

The mesolimbic dopamine reward circuit in depression.
*Biological psychiatry*, 59, 1151-9.

White-matter abnormalities in Tourette syndrome extend beyond motor pathways.
*Neuroimage* 51(3), 1184-93.

Patients with obsessive-compulsive disorder are impaired in associative learning based on
external feedback. 

Brainstem involvement in obsessive-compulsive disorder. 

Long-term Electrical Capsular Stimulation in Patients with Obsessive-Compulsive Disorder. 
*Neurosurgery*, 52, 1263-1274.

Electrical stimulation in anterior limbs of internal capsules in patients with 
obsessive-compulsive disorder. 
*Lancet* 354, 1526.

O

Neural responses during anticipation of a primary taste reward. 
*Neuron* 33, 815–826.

A right orbitofrontal region and OCD symptoms: A case report. 

Obsessive-Compulsive Behavior Disappearing after Left Capsular Genu Infarction. 

Deep brain stimulation in the internal capsule and nucleus accumbens region: responses 
detected during active and sham programming. 
*J Neurol Neurosurg Psychiatry* 78, 310-314.

Dopamine D1 receptor binding in the striatum of patients with obsessive-compulsive disorder. 

Serotonin/dopamine interaction in learning. 
*Prog Brain Res* 172, 567-602.
FieldTrip: Open source software for advanced analysis of MEG, EEG, and invasive
electrophysiological data.

A functional magnetic resonance imaging study of inhibitory control in
obsessive-compulsive disorder.

Obsessive-Compulsive Disorder Onset after Removal of a Brain Tumor.

Case Report: Obsessive Compulsive Disorder in Huntington Disease:
A Case of Isolated Obsessions Successfully Treated With Sertraline.

Increased activation in the right insula during risk-taking decision making is related to harm
avoidance and neuroticism.

Perani D, Garibotto V, Gorini A, Moresco RM, Henin M, Panzacchi A, Matarrese M,
In vivo PET study of sHT(2a) serotonin and D(2) dopamine dysfunction in drug-naïve
obsessive-compulsive disorder.

Peterson BS, Bronen RA, Duncan CC (1996).
Three cases of symptom change in Tourette’s syndrome and obsessive-compulsive disorder
associated with paediatric cerebral malignancies.

Basal ganglia volumes in patients with Gilles de la Tourette syndrome.
Archives of General Psychiatry, 60, 415-24.

Pfund, D.C. Chugani, C. Juhasz, O. Muzik, H.T., Chugani, I.B. Wilds, N. Seraji-Bozorgzad and
Evidence for coupling between glucose metabolism and glutamate cycling using FDG PET and
1H magnetic resonance spectroscopy in patients with epilepsy.
References

A differential neural response in obsessive-compulsive disorder patients with washing compared with checking symptoms to disgust.
Psychol. Med. 30, 1037-1050.

Parkinson disease: pattern of functional MR imaging activation during deep brain stimulation of subthalamic nucleus—initial experience.
Radiology 239, 209-216.

Imaging serotonin and dopamine transporters with 123I-ß-CIT SPECT: binding kinetics and effects of normal aging.
J Nucl Med 41, 36–44.

Reduced caudate and nucleus accumbens response to rewards in unmedicated individuals with major depressive disorder.
Am J Psychiatry 166, 702-710.

SERT and DAT availabilities under citalopram treatment in obsessive-compulsive disorder (OCD).
Eur Neuropsychopharmacol. 15, 521-524.

Elevated brain serotonin transporter availability in patients with obsessive-compulsive disorder.

Symptom-specific EEG power correlations in patients with obsessive-compulsive disorder.

Should addictive disorders include non-substance-related conditions?
Addiction. 101(suppl 1), 142-151.

Neural Differentiation of Expected Reward and Risk in Human Subcortical Structures.
Neuron 51, 381–90.


References

Functional magnetic resonance imaging study of regional brain activation during implicit sequence learning in obsessive-compulsive disorder.

Reduced availability of serotonin transporters in obsessive-compulsive disorder correlates with symptom severity – a [¹¹C]DASB PET study.
J Neural Transm 114, 1603–1609.

Pathological gambling is linked to reduced activation of the mesolimbic reward system.
Nat Neurosci. 8, 147-8.

Reduced orbitofrontal-striatal activity on a reversal learning task in obsessive-compulsive disorder.
Arch.Gen.Psychiatry 63[11], 1225-1236.

Cognitive inflexibility in obsessive-compulsive disorder and major depression is associated with distinct neural correlates.
PloS one, 8, e59600.

Is magnetic resonance imaging safe for patients with neurostimulation systems used for deep brain stimulation?
Neurosurgery 57, 1056- 1062; discussion 1056-1062.

Neurocognitive endophenotypes of impulsivity and compulsivity: towards dimensional psychiatry.

Ventral Striatum Response During Reward and Punishment Reversal Learning in Unmedicated Major Depressive Disorder.

Adults with early-onset obsessive-compulsive disorder.


Predictive reward signal of dopamine neurons.  
*J Neurophysiol.* 80, 1-27.

Maternal immune activation and strain specific interactions in the development of autism-like behaviors in mice.  
*Translational psychiatry,* 3, e240.

Late-Life Obsessive-Compulsive Disorder and Huntington's Disease.  

Deep brain stimulation of the nucleus accumbens shell increases impulsive behavior and tissue levels of dopamine and serotonin.  
*Experimental Neurology* 225, 302-309.


Neuropsychiatry and SPECT of an Acute Obsessive-Compulsive Syndrome Patient.  

A common role of insula in feelings, empathy and uncertainty.  

Idiopathic basal ganglia calcification and pathological hoarding.  

Serotonergic modulation of dopamine measured with [¹¹C]raclopride and PET in normal
References

human subjects.
*Am J Psychiatry* 154, 490–496

The neurobiological underpinnings of obesity and binge eating: a rationale for adopting the food addiction model.
*Biological psychiatry*, 73(9), 804–10.

Deep Brain Stimulation Targeted at the Nucleus Accumbens Decreases the Potential for Pathologic Network Communication.
*Biological Psychiatry Apr* 23.

A case of self-inflicted leucotomy.

Selective serotonin re-uptake inhibitors (SSRIs) versus placebo for obsessive compulsive disorder (OCD).

Anticipation of monetary and social reward differently activates mesolimbic brain structures in men and women.

A 1H magnetic resonance spectroscopy study in adults with obsessive compulsive disorder: relationship between metabolite concentrations and symptom severity.
*J Neural Transm.* 115, 1051-62.

Dissociation of decisions in ambiguous and risky situations in obsessive–compulsive disorder.

Should OCD be classified as an anxiety disorder in DSM-V?
*Depress Anxiety* 27, 495-506

Deep brain stimulation for Parkinson’s disease dissociates mood and motor circuits: a functional
MRI case study.

*Mov Disord* 18, 1508-1516.


*Neuropsychobiology* 53, 40-5.


*Neuroimage* 50, 1618–1625.


*Brain research bulletin,* 79, 388–95.


*Frontiers in human neuroscience,* 6, 341.


Surgical Treatments for Drug Addictions in Humans.

*Deep Brain Stimulation: A New Frontier in Psychiatry.* Berlin; Heidelberg: Springer,131-140


Frontal abnormalities in a patient with obsessive-compulsive disorder: The role of structural lesions in obsessive-compulsive behavior.

*Neurol.*, 45, 2130-2134.
References

T


U


*J Neurosci Meth* 202, 113-118.


Clues to the aetiology of psychiatric disorders from genome-wide association studies.

Age of onset, family history and early and late arrests in criminality.

The genetic and molecular basis of psychiatric disease.

The future of missing heritability in complex human diseases.

Heritability of criminality.

In which directions have our genome-wide association studies of schizophrenia pointed?

X

The Impact of Prior Risk Experiences on Subsequent Risky Decision-Making: The Role of the Insula.

Y

Basal ganglia hemorrhagic ablation associated with temporary suppression of obsessive-compulsive symptoms.

Z

MicroRNAs and their role in psychiatric diseases.

References


Westenberg HGM, Verhoeven WM (1988).
CSF monoamine metabolites in patients and controls: support for a bimodal distribution in major affective disorders.

Whiteside SP, Port JD, Deacon BJ, Abramowitz JS (2006).
A magnetic resonance spectroscopy investigation of obsessive-compulsive disorder and anxiety.
Psychiatry Res. 2006 Mar 31;146(2):137-47.

A meta-analysis of functional neuroimaging in obsessive-compulsive disorder.

A compulsive movement disorder with cavitation of caudate nucleus.

Mechanisms of dopaminergic and serotonergic neurotransmission in Tourette Syndrome: clues from an in vivo neurochemistry study with PET.
Neuropsychopharmacology 33, 1239–1251.

Brain activation in paediatric obsessive compulsive disorder during tasks of inhibitory control.
British J Psychiatry 192, 25–31

A unified statistical approach for determining significant signals in images of cerebral activation.
Human Brain Mapping, 4, 58–73.

X

The Impact of Prior Risk Experiences on Subsequent Risky Decision-Making: The Role of the Insula.

Y

Basal ganglia hemorrhagic ablation associated with temporary suppression of obsessive-compulsive symptoms.
Aust N Z J Psychiatry 42, 467-77.


