

# Changing pattern in the basal ganglia: motor switching under reduced dopaminergic drive

Vincenzo G. Fiore<sup>1\*</sup>, Francesco Rigoli<sup>1</sup>, Max-Philipp Stenner<sup>1,2</sup>, Tino Zaehle<sup>2</sup>, Frank Hirth<sup>3</sup>, Hans-Jochen Heinze<sup>2,4</sup>, Raymond J. Dolan<sup>1,5</sup>

<sup>1</sup> Wellcome Trust Centre for Neuroimaging, University College London, 12 Queen Square, London WC1N 3BG, United Kingdom

<sup>2</sup> Department of Neurology, Otto-von-Guericke-University Magdeburg, Leipziger Str. 44, 39120 Magdeburg, Germany

<sup>3</sup> King's College London, Institute of Psychiatry, Psychology & Neuroscience, Department of Basic & Clinical Neuroscience, London, UK

<sup>4</sup> Department of Behavioral Neurology, Leibniz Institute for Neurobiology, Brenneckestr. 6, 39118 Magdeburg, Germany

<sup>5</sup> Max Planck UCL Centre for Computational Psychiatry and Ageing Research, 10-12 Russell Square, London, WC1B 5EH, United Kingdom

\*Corresponding author:

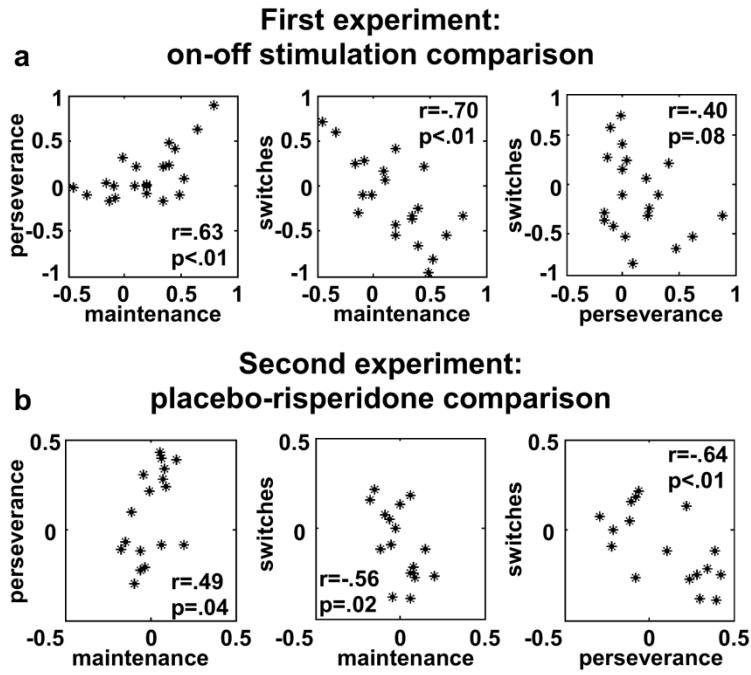
Wellcome Trust Centre for Neuroimaging at UCL

12 Queen Square - London - WC1N 3BG

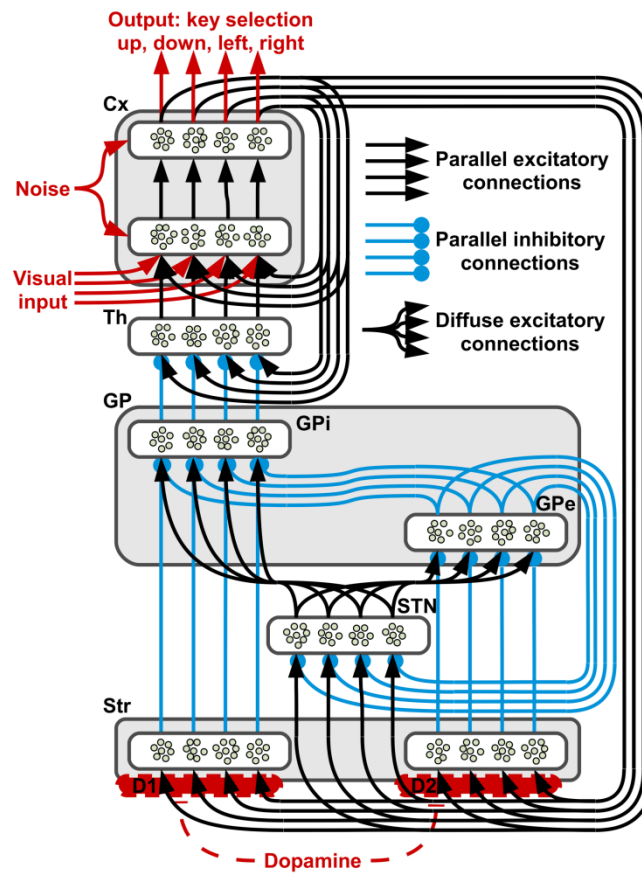
Tel: +44 (0)20 3448 4362

email: v.fiore@ucl.ac.uk

**Running Title:** Changing pattern in the basal ganglia



Supplementary figure 1 – **Correlations**. The scatterplots report the degree of correlation among the three indices used in the first (a) and the second (b) experiments.



Supplementary Figure 2 – **Neural architecture used to simulate all the reported conditions.** Cx= cortex; Th= thalamus; GP= globus pallidus (GPi=pars interna, GPe= pars externa); STN= subthalamic nucleus; Str= striatum; D1 and D2 stand for the presence of DA receptors. Changes in parameters concern DA drive, expressed by  $d_g$  in equation 1, and baselines for all units in the nuclei of STN and GP to simulate subthalamic DBS.