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Neuroplastic changes in Bipolar Disorder

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Background: It is increasingly recognised that brain structure and function show experience dependent modification throughout our lifespan. The current presentation summarizes four lines of evidence regarding brain plasticity in bipolar Disorder.

Methods: We present data on brain plasticity changes in BD inferred from behavioural, cognitive and neuroimaging data.

Results: (a) We defined the first empirically derived staging classification of BD based on two underlying dimensions, one for illness severity and another for cognitive function. We identified a good and poor functional outcome groups defined by the degree of impairment in inhibitory control, density of episodes and level of residual depressive symptoms; (b) We derived a cognitive typology of patients with BD which was robustly replicated in three independent patient samples. Patients could be classified in three groups with poor (20-30% of the samples), normal (50% of the samples) and higher (20-30%) cognitive performance across multiple domains, (c) We are developing diagnostic tools for the assessment of individual patients based on their structural and functional neuroimaging data. This work is still in development but our initial results suggest that we can achieve diagnostic accuracy of approximately 80%, (d) We have analysed longitudinal data from a sample of 2200 Dutch youth assessed at aged 11, 13,16 and 19 and we have mapped individual trajectories to disease expression in BD based on the CBCL-MS new scale for the identification of subclinical manic symptoms.

Conclusions: Our data demonstrate a range of approaches that can be used to examine brain plasticity in BD.