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## Dysfunction of the motivational brain

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# Dysfunction of the motivational brain

## --- Evidence from anxiety and schizophrenia

Pengfei Xu

1. A marked striatal reward pathway is consistently under-recruited across decision-making phases, specific to negative symptoms, in patients with schizophrenia.
2. Weakened intrinsic mesocorticolimbic connectivity contributes to social amotivation in schizophrenia.
3. A triple brain system for the reduced approached motivation and action in schizophrenia, composed by abnormalities in medial/orbital prefrontal valuation integration of attenuated top-down lateral prefrontal control over blunted bottom-up input of mesolimbic dopaminergic signals.
4. Risk aversive behaviors in anxious individuals can be modulated by an emotional frame/context, underpinned by a hyperactive amygdala centric 'emotional' system and a hypoactive analytic system in the dorsal anterior cingulate cortex.
5. Heightened loss aversion biases in anxiety are associated with hyperactivation of brain areas associated with emotional processing but lower coupling of brain systems implicated in top-down control.
6. Avoidance behaviors in anxious individuals a modulatory effect of medial prefrontal valuation on the interactions between bottom-up emotional information input from the amygdala and top-down prefrontal affective/cognitive control.
7. A four-dimensional and triple-system model of motivation is proposed to explain roles of inadequate top-down/bottom-up modulations on valuation of approach-avoidance motivation in maladaptive behaviors and abnormal neural circuitries of psychiatric disorders.