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# Individual Reward Styles Predict Brain and Behavioral Responses to Dopaminergic Challenges

*Thursday, September 11, 2025 4:30 PM (10 minutes)*

Background. Reward processing plays a central role in mental health and psychopathology. The Sign-Tracker/Goal-Tracker (ST/GT) framework, adapted from animal research, captures individual differences in how motivational salience is assigned either to reward-predictive cues (ST) or to the rewards themselves (GT). Here, we examined whether these profiles in humans are sensitive to changes in dopamine signaling, using fMRI and a pharmacological manipulation.

Methods. Thirty-four healthy participants (all male, mean age = 26.9) performed a Monetary Incentive Delay task under placebo and after administration of low doses of risperidone (0.5mg, 2mg) or haloperidol (3mg), in a cross-over design. Participants were categorized as ST or GT based on patterns of brain activation in key reward-related regions.

Results. Under placebo, ST showed stronger neural responses during reward anticipation, whereas GT responded more during reward outcomes. After dopamine receptor antagonism, ST displayed significant reductions in anticipatory brain responses ($p = 0.005$) in a dose-dependent manner ($p = 0.009$). GT showed no significant changes. Moreover, ST reported greater declines in subjective energy under drug conditions compared to GT ($p < 0.001$).

Conclusions. These findings suggest that individual differences in salience attribution predict how reward-related brain activity responds to dopaminergic modulation. fMRI-based ST/GT profiling may offer new insights into motivational processes and inform personalized approaches to psychological and psychiatric interventions targeting reward system dysfunction.

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No

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