

Informative and Affective Neural Pathways underlying Explore-Exploit Tradeoffs

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Submitter Shaoming Wang

Affiliation Temple University, Department of Psychology

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Presentation Abstract Summary Receipt of a reward involves multiple signals. For example, affective reward signals modulate emotion while informative reward signals provide reinforcement. Although both reward signals increase activation within the striatum, they evoke distinct patterns of connectivity (Smith et al., 2016, Sci Reports). Yet it remains unclear how affective and informative reward signals impact complex decisions such as whether to explore or exploit a given option. We therefore created a variant of a conventional 2-armed bandit task. On each trial, participants were first presented with a picture of their partner before choosing one of two bandits where the potential payouts (1-100 points) varied across time. After selecting a bandit, participants were shown how many points could be won on that trial. Participants were then shown a screen indicating that their partner was playing the card-guessing game. Next, participants were asked to press a button to reveal whether their partner guessed correctly or incorrectly. Participants would receive points only if their partner guessed correctly. Computational model fitting revealed that affective reward signals guide emotional ratings while informative reward signals guide choices. These behavioral results provide a foundation for future neuroimaging analyses to link affective and informative reward signals to distinct corticostriatal pathways.

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Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Shaoming *	Wang *	Temple University, Department of Psychology	shaoming@nyu.edu

David	Smith	Temple University, Department of Psychology	david.v.smith@temple.edu
Mauricio	Delgado	Rutgers University, Department of Psychology	delgado@psychology.rutgers.edu

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