**The effects of time horizon and guided choices on explore-exploit decisions in rodents**

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Humans and animals have to balance the need for exploring new options with exploiting known options that yield good outcomes. This tradeoff is known as the explore-exploit dilemma. To better understand the neural mechanisms underlying how humans and animals address the explore-exploit dilemma, a good animal behavioral model is critical. Most previous rodents explore-exploit studies used ethologically unrealistic operant boxes and reversal learning paradigms in which the decision to abandon a bad option is confounded by the need for exploring a novel option for information collection, making it difficult to separate different drives and heuristics for exploration. In this study, we investigated how rodents make explore-exploit decisions using a spatial navigation Horizon Task (Wilson, Geana, White, Ludvig, & Cohen, 2014) adapted to rats to address the above limitations. We compared the rats’ performance to that of humans using identical measures. We showed that rats use prior information to effectively guide exploration. In addition, rats use information-driven directed exploration like humans, but the extent to which they explore has the opposite dependence on time horizon than humans. Moreover, we found that free choices and guided choices have fundamentally different influences on exploration in rodents, a finding that has not yet been tested in humans. This study reveals that the explore-exploit spatial behavior of rats is more complex than previously thought.

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