Analyzing half a million mouse decisions

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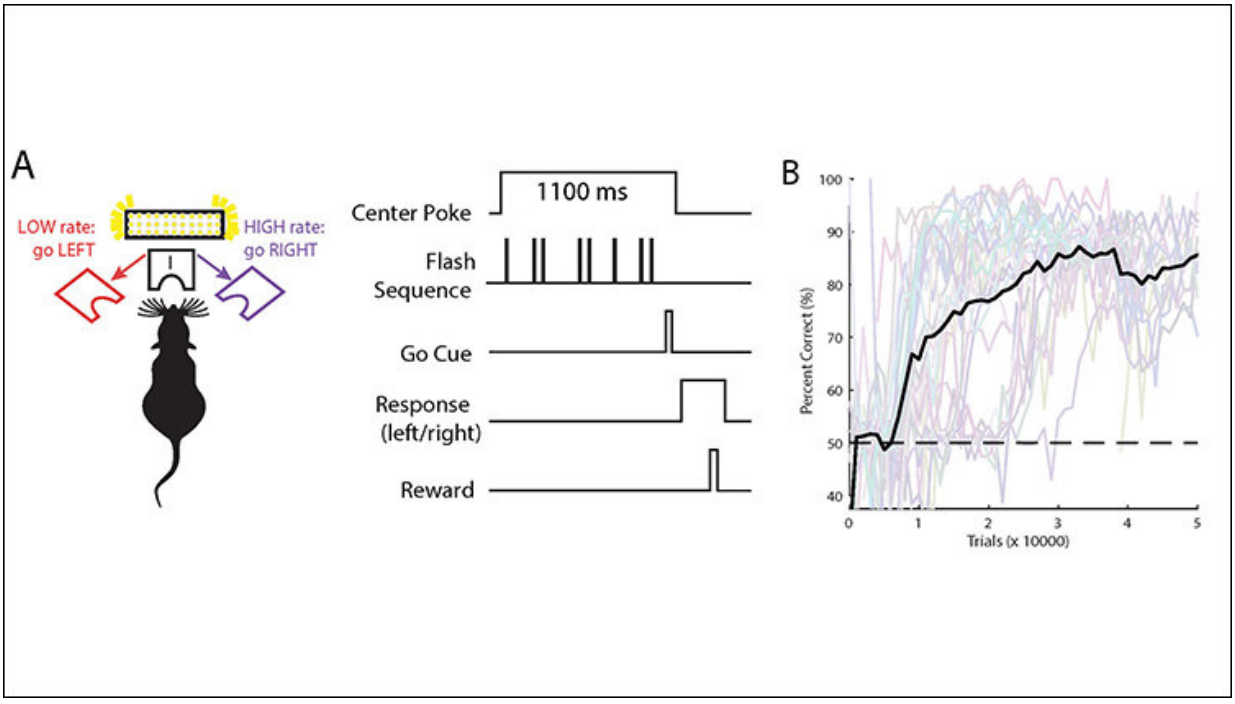

A dataset of over half a million trials demonstrates mice can be trained to make stable and reliable decisions about visual stimuli (A) Task schematic and trial structure of the three-port choice task. The mouse initiated trials and stimulus delivery by poking the center port. Mice reported whether stimuli were low-rate (left port) or high-rate (right port). Mice waited at the center port for at least 1100 ms, with the stimulus delivered after a variable delay (10-100ms). At the end of the 1000ms stimulus period, an auditory "Go" tone was played. Correct choices to the left or right were rewarded with a small drop of water (2 μL), incorrect choices were followed by a 2-3 s timeout. (B) Percent correct on easiest stimulus conditions (4 and 20 flashes/s) plotted across total trials experienced by the mouse. Individual mice: gray traces and average: black trace, 29 mice. Colors arbitrarily selected to facilitate distinguishing subjects. Credit:

Odoemene et al. Fig. 1, *JNeurosci* (2018)

Mice can be used to study the neural circuits underlying complex decision-making, suggests an analysis of more than 500,000 mouse decisions reported in *JNeurosci*.

Some of the most advanced tools in neuroscience are developed for use with mice, yet studies of behaviors most relevant to humans typically involve other model organisms. Anne Churchland and colleagues addressed this gap by investigating the mouse's potential as an animal model of decision-making.

The researchers trained a large group of mice to distinguish between high and low rates of flashing light and found that the animals employed a decision-making strategy more similar to that used by nonhuman primates than rats. They also identified a brain region that may be part of a circuit supporting this strategy. The research paves the way for manipulation of such a circuit, to be further defined in the future, with powerful techniques to probe its structure and function.

More information: Visual evidence accumulation guides decision-making in unrestrained mice, *JNeurosci* (2018). DOI: 10.1523/JNEUROSCI.3478-17.2018

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