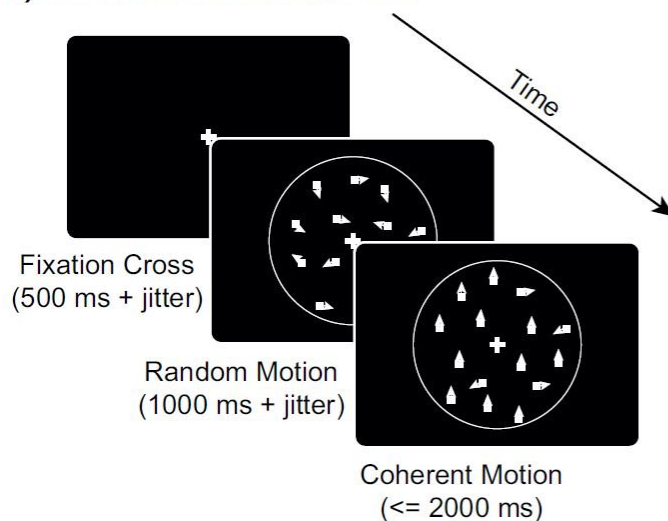


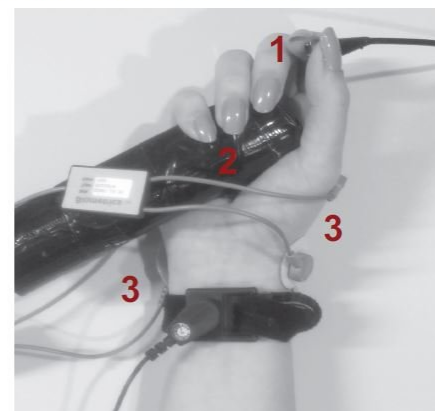
Speed-accuracy tradeoff turns up gain in the brain

June 4 2018

a) Random dot motion task



b) Response/EMG setup



- 1 'Pinch' response button
- 2 'Grasp' response button
- 3 EMG electrodes

a) random dot motion task: after a fixation cross and a period of random motion, coherent motion (here: upward, coherence 70%) is displayed for 2000 ms or until response (the same task was used in the EEG experiment); b) response setup in TMS experiment: Participants held one button (up) between their thumb and index finger (pinch) and one in the palm of their hand (down), attached to a cylinder (grasp) Credit: Spieser et al., *eNeuro* (2018)

Widespread changes in neural activity enable people to quickly make a decision by "turning up the gain in the brain," suggests a human study published in *eNeuro*. The findings help to resolve a central issue in our understanding of decision-making.

The ability to optimize the balance between careful and hasty [decision-making](#) is critical for survival. However, a compelling explanation for how the brain strikes such a balance, known as speed-accuracy tradeoff (SAT), is lacking.

Carmen Kohl and colleagues reconcile contradictory accounts of the SAT by providing evidence for a model of speeded decision-making that explains both behavioral and neural data. For this study, human participants indicated the direction of moving dots on a screen either as fast or as accurately as possible using a "pinch" or "grasp" response while their brain and muscle activity was recorded.

The researchers found that their results were best explained by a model in which the brain adjusts the [signal-to-noise ratio](#) of [neural activity](#) in order to tailor the balance between speed and accuracy to the decision-making context.

More information: Neurodynamic Evidence Supports a Forced-Excursion Model of Decision-Making under Speed/Accuracy Instructions, *eNeuro*, [DOI: 10.1523/ENEURO.0159-18.2018](#)

Provided by Society for Neuroscience

Citation: Speed-accuracy tradeoff turns up gain in the brain (2018, June 4) retrieved 28 April 2024 from <https://medicalxpress.com/news/2018-06-speed-accuracy-tradeoff-gain-brain.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--