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Sensory prediction errors drive cerebellum-dependent adaptation of reaching.

Tseng YW, Diedrichsen J, Krakauer JW, Shadmehr R, Bastian AJ

J Neurophysiol 2007 Jul **98**(1):54-62 [[abstract on PubMed](#)] [[citations on Google Scholar](#)]

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Faculty Member

W Thomas Thach

Washington University
School of Medicine, United States of America
Neuroscience

New Finding
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Comments

The cerebellum is known to be involved in adapting arm movements to visual targets, but the question remains as to what the driving signal is: a sensory (visual) prediction error (forward model), a motor correction (inverse model), or both. The results in this paper are interpreted as supporting a sensory prediction forward model, rather than a motor correction inverse model. Subjects with cerebellar degenerative disease (as compared to normal controls) adapted poorly in a fast reach visual rotation task (when no motor correction was allowed), and did not benefit from the opportunity to correct the trajectory in a slower reach. There is also a good discussion of theoretical background, and a state-space model of trial-to-trial learning is included.

Competing interests: None declared

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