

Biography

Hiroshi Imamizu received a Ph.D. (Experimental Psychology, 1995) from the University of Tokyo. Since 1992, he has been worked in Advanced Telecommunication Research Institute (ATR) in Kyoto as a researcher, a senior researcher, a department head, and a director. In 2015, he became a professor at Graduate School of Humanities and Sociology, the University of Tokyo as well as a director of ATR Cognitive Mechanism Labs. He aims at understanding and enhancing motor and cognitive learning.

Temporal recalibration of motor and visual potentials in lag adaptation

Abstract:

The brain continuously recalibrates motor-sensory asynchrony caused by changes in motor and sensory pathways. It is controversial whether motor- or sensory-related neural circuits recalibrate the asynchrony, partially due to the lack of direct neural evidences in either of the circuits. Combining magnetoencephalography (MEG) and functional MRI (fMRI), we investigated temporal changes in brain activities caused by a repeated exposure to a 150 ms-delay inserted between a button-press action and a flash as visual outcome. We found that readiness potentials shift later in motor system especially in fronto-parietal motor regions while visually evoked potentials shift earlier in occipital visual regions in the delay condition compared to a no-delay condition. These results suggest that both prospective motor processes and retrospective sensory processes collaboratively contribute to the recalibration