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ABSTRACT

Poster Instructions

Title	ACTION OBSERVATION ELICITED RESPONSES IN THE DORSAL PREMOTOR CORTEX (AREA F2) OF THE MACAQUE MONKEY Room: Poster Area - Session: D28 - Abstract Number: FENS-2021 - Poster Board Number: D005
Poster No:	D005
Presenter:	V. Papadourakis
Author(s):	V. Papadourakis(1), V. Raos(1)
Affiliation(s):	(1)Institute of Applied and Computational Mathematics Computational Neurosciences Group, Foundation for Research and Technology - Hellas, Heraklion, Greece
Session:	D28: Poster Session - Visuomotor processing Poster boards: D001-011
Date:	Wednesday - July 09, 2014 11:15 - 12:15
Location:	Poster Area
Subtopic:	D.6 Visuomotor processing
Topic:	D.6 Visuomotor processing
Theme:	D. Sensory and motor systems

Neuroimaging studies suggested the involvement of F2 in the action execution/observation network. We investigated the visual and motor properties of F2 neurons during the observation and execution of a reach-to-grasp action. The monkey was initially trained to reach for and grasp 3D objects with appropriate grips following the instructions of a LED placed above the object and then trained to observe the experimenter employing two randomly interleaved variations of the above task. In the first, the cuing LED was visible to the monkey (CUEOBS) whereas, in the second, the LED was off and the experimenter was getting instructions on a screen out of the monkey's view (NOCUEOBS). Moreover, a LED fixation condition in which the experimenter was not performing any movement was used as a control. We recorded 140 neurons that displayed task-related activity in both execution and observation tasks. Hierarchical cluster analysis of the response profile temporal characteristics revealed four classes of neurons. The response in the NOCUEOBS condition of all four classes starts after the movement onset. In contrast, the response in the CUEOBS condition of the 2nd, 3rd and 4th classes precedes movement onset by several hundreds of ms. Moreover, the neurons of the 4th class do not discharge during the observation of the experimenter's movement in the CUEOBS condition. Our study demonstrates that (i) F2 contains neurons responding to both action execution and action observation and (ii) the action observation elicited discharge is cue-modulated, thus substantiating the important role of F2 in the action execution/observation network.

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