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The Role of Event Related Potentials Originating in the Anterior Cingulate Cortex in Supporting Temporally Extended Hierarchically Structured Behavior

Anterior Cingulate Cortex (ACC) is a brain area located in the frontal cortex. Importantly, recent empirical evidence implicates this area in support of planning behavior. The ability to identify likely and unlikely outcomes of actions is thought to be crucial for successful planning. Moreover, planning has been demonstrated to be hierarchically organised which means that the neural mechanism supporting it should have the capacity to learn from information at different levels of hierarchy. However, the nature of the neural mechanism that supports these two aspects of planning remains elusive. In this talk, I present the results of two sets of experiments. The first set of experiments examines whether event-related potentials generated in the ACC are modulated by two types of feedback pertinent to two different levels of hierarchy. The second set of experiments investigates the role of the ACC in distinguishing likely and unlikely outcomes of an action in service of planning.