

How the brain shapes the way we act: the role of the insula

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Actions with identical goals can be performed with different vitality forms. Vitality forms convey information on the agent's attitudes towards the receiver. In the first part of the talk, it will be shown that the dorso-central insula (DCI) is the key region selectively involved in both the observation and execution of actions conveying different vitality forms. Moreover, recent fMRI data will be presented providing the evidence that, in addition to DCI, the middle cingulate cortex (MCC) is another brain area strongly activated during the processing of vitality forms. Anatomical data will be also discussed revealing the fiber tracts connecting the insula with the parieto-frontal circuit classically involved in the control of hand actions. In the second part of the talk we will provide evidence that actions conveying vitality forms differ from emotions. Specifically, cortical and subcortical networks involved in the processing of these two action affective components will be shown and compared. In conclusion, we will discuss about the implementation of vitality forms in robotics research field aiming to create future robots able to express these fundamental aspects of social communication. This research is supported by a Starting Grant from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme. G.A. No 804388, wHiSPER.