

Aggressive-neutral-gentle: looking through the style of action

G. Di Cesare ^(a), C. Di Dio ^(a), E. Ruffaldi ^(b)

^(a) University of Parma, Department of Neuroscience, Parma, Italy, ^(b) PERCRO, Scuola Superiore Sant'Anna, Pisa, Italy.

Important information about others' behavior is carried out by the dynamics of the observed action. Action dynamics describes the “vitality form” of an action, that is the cognitive and/or affective relations between the performing agent and the recipient. Here, using the fMRI technique, we assessed the neural correlates of vitality forms with two different experiments (Exp1 and Exp2). In both experiments we presented to the participants videos showing two actors executing a series of actions. The actions were carried out with different vitality forms: energetic or gentle (Exp1), aggressive, neutral, gentle (Exp2).

In Exp1, the participants were asked to perform two tasks. In one task (what), they had to focus on the goal of the presented action; in the other task (how), they had to focus on the vitality forms.

In Exp2, the participants were asked to perform two tasks, in one task (vitality) they had to focus on the vitality forms of the observed action, in the other task (velocity) they had to focus on the velocity of the observed action.

In both experiments, activations were found in visual areas and in the action observation/execution circuit. Most interestingly, in Exp1, the contrast how *vs.* what revealed activation in dorso-central insula bilaterally (kinematic – somatosensory – coding). Differently, in Exp2, the contrast vitality *vs.* velocity revealed activation in left anterior ventral insula (emotional coding).

These data suggest that the processing of distinctive aspects of vitality forms involves different parts of insula allowing the observer to understand the kinematic and emotional properties intrinsic to action observation.