

Humanoid facial expressions: a tool to study human behaviour

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Introduction: Besides action vitality forms^{1,2}, facial expressions represent a fundamental social cue which enables to infer the affective states of others³. The present kinematic study aimed to investigate **whether and how positive and negative facial expressions of the iCub robot, associated to gentle and rude vitality forms, could modulate the behaviour of participants.**

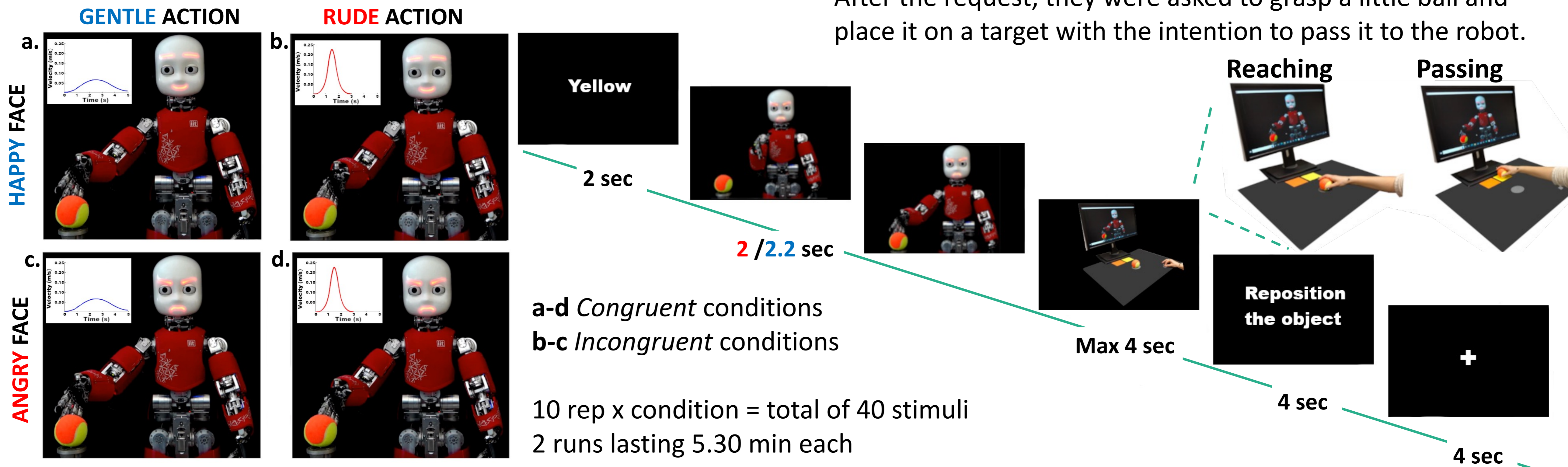
Methodology:

Participants: 18 healthy right-handed volunteers (11 females and 7 males, mean age = 24.28, SD = 2.42)

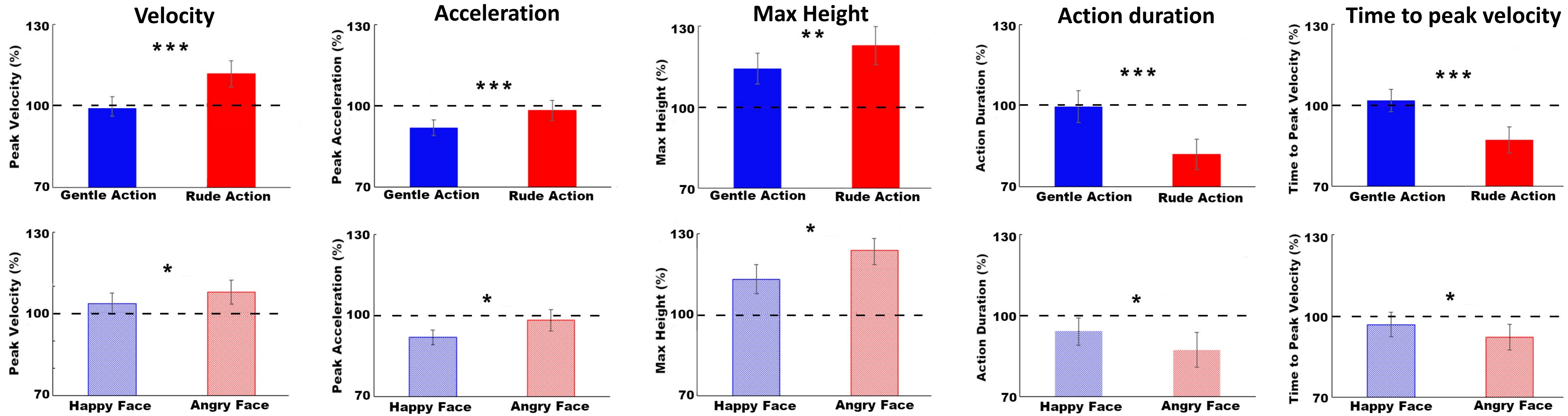
Experimental design: 2 vitality forms x 2 facial expressions

Experimental paradigm:

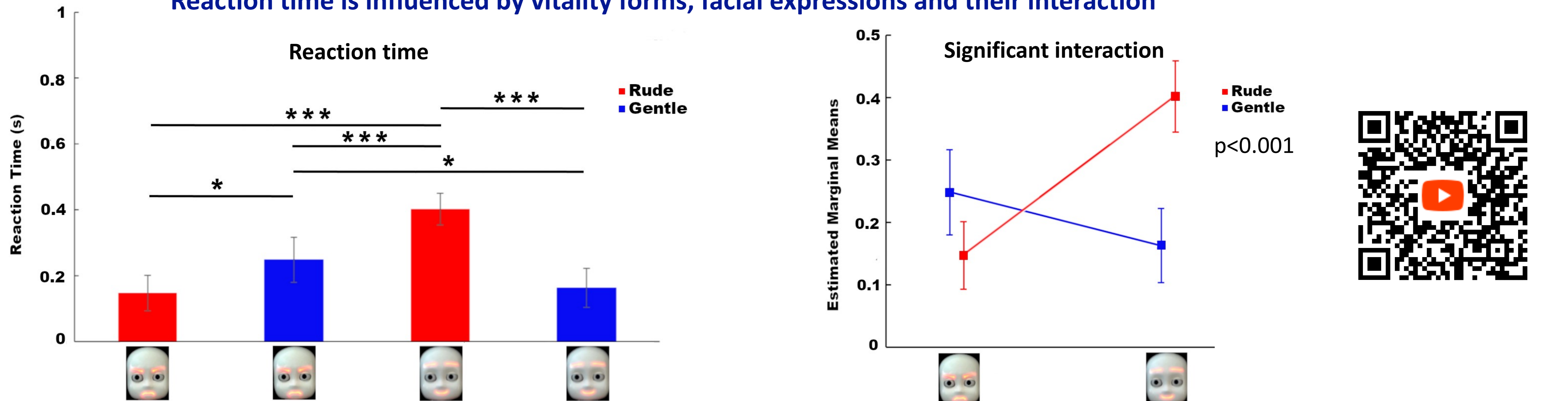
- Participants observed video-clips of the iCub robot performing a gentle or rude arm action (giving request) with a happy or angry facial expression.
- After the request, they were asked to grasp a little ball and place it on a target with the intention to pass it to the robot.



Vitality forms and facial expressions of the iCub robot modulate several kinematic parameters



Reaction time is influenced by vitality forms, facial expressions and their interaction



Discussion: Positive and negative facial expressions, associated to gentle and rude actions, modify the perception of the action vitality forms, modulating the motor response of participants. These findings shed new light for future studies aiming to investigate affective communication in clinical population with face recognition impairments.

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Bibliography: [1] Stern D., Forms of vitality: Exploring dynamic experience in psychology, the arts, psychotherapy, and development, 2010th ed. Oxford University Press. [2] Lombardi et al., The influence of vitality forms on action perception and motor response. Sci Rep. 2021 Nov 19;11(1):22576. [3] Ekman P. Facial expression and emotion. Am Psychol. 1993 Apr;48(4):384-92.