Interaction with a robot changes human motor behavior

Laura Fademrecht
Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Tobias Meilinger
Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Stephan Streuber
École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Aurelie Saulton
Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Heinrich Bülthoff
Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Rouwen Cañal-Bruland
Friedrich-Schiller-University Jena, Jena, Germany

Stephan de La Rosa
Max Planck Institute for Biological Cybernetics, Tübingen, Germany

Abstract: Social judgments about other people are often made based on visual appearance. In this study, we investigated whether visual appearance of an interaction partner influences action coordination in social interactions. In a novel interactive augmented reality setup participants interacted (i.e. carried out a high-five) with a life-sized 3D avatar that was either human-looking or robot-looking. Importantly, the kinematics of the avatars were identical for both appearances. We examined whether motion trajectories of a high-five action and other motion trajectory parameters such as velocity, radial error, synchrony, and variability were modulated by the visual appearance of the avatar. Results showed that participants carried out the high-five faster and applied different motion trajectories for the human-looking than for the robot-looking avatar. These findings suggest that visual appearance does not only influence social judgments but also the immediate behavior towards the interaction partner.