

Projecting space into the future: peripersonal space remaps in anticipation of an object manipulation

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Abstract: Manipulation planning relies on anticipatory processes, aimed at achieving the desired goal state, such as a grasp. This implies that peripersonal space is remapped to the anticipated grasp posture on the targeted object. Vibrotactile-visual interactions were probed at different times during a grasp-and-place task. Thumb or index finger were stimulated concurrently with a visual distractor on the to-be-grasped object. Object orientation (upright/upside down) afforded a thumb-up or thumb-down grasp, inverting the congruency between haptic and visual stimulation. Response times about which finger was stimulated show the expected crossmodal congruency effect already before motion onset, with shorter times when the visual distractor and the future position of the stimulated finger overlapped. Moreover, eye-tracking data show that the tactile stimulation influences the gaze in anticipation of the upcoming grasp. Thus peripersonal hand space is mapped into the future, predictively mediating between tactile and visual perceptions as a function of the final state.