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Immediate action-effects facilitate response speed via stimulus-response association

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Abstract

Eitam et al. (2013) reported that immediate feedback to response could motivate the same response in the following trials. They suggested action-effects could have a value as information on control over the environment, resulting in the response facilitation. However, the underlying mechanism of such facilitatory effects, what particular processes action-effects reinforce, remains unclear. Therefore, we investigated whether the response facilitation depends on actions, stimuli, or stimulus-response relationship. Participants were required to select adequate responses in accordance with the stimuli as response cue. The action-effects depended on the combination of stimuli and responses; immediate and lagged effects could be predicted by the stimulus, but shared the same response button. Results showed that the response was executed faster when driven by stimuli associated with immediate effects than those associated with lagged effects. This indicates that immediate action-effects might facilitate response via stimuli-response association, but not via independent processes of actions or stimuli.