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Authors

Wolf, Thomas

Sebanz, Natalie

Knoblich, Günther

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The role of period correction and continuous input from a co-performer in joint rushing

Thomas Wolf
CEU, Vienna, Austria

Natalie Sebanz
Central European University, Budapest, Hungary

Günther Knoblich
Central European University, Budapest, Hungary

Abstract

Recent studies provide experimental evidence for joint rushing - the phenomenon that participants in rhythmic group activities unintentionally increase their tempo. We hypothesized that joint rushing arises from the combined workings of established sensorimotor synchronization mechanisms (e.g., phase and period correction) with a simple phase advance mechanism that has been studied in mass-synchronizing insects. We invited musicians and non-musicians to participate in three tapping experiments. Participants were asked to continue to produce a constant target tempo alone (solo) or together with a partner (joint). The results show that joint rushing induces a lasting period correction but stops when auditory feedback of the partner's taps is removed. Musical training reduced the magnitude of joint rushing but did not eliminate it. These results are consistent with our hypothesis that joint rushing occurs because adjustments induced by a simple phase advance mechanism alter the period of internal timekeeping.