

対面条件の主従的な個人間協応パラダイムにおける協応特性と その学習過程

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Learning and Dynamics for the Unilateral between People Coordination in the Face to Face Condition

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Abstract

The coordination paradigm in the studies of Kelso's within a person coordination (1984) and Schmidt's between people coordination (1990) was designed in Side by Side (SS) condition. In this paper, another paradigm was designed, which is the between people coordination of rhythmic movement in Face to Face (FF) condition. The purposes of this study were to examine the dynamic coordination properties on the between people coordination in FF condition, and to examine whether learning occur on that condition.

The required coordination task for each subject was to coordinate their rhythmic movement with a standard person(STDP)'s rhythmic movements in either $\phi = 0^\circ$ or $\phi = 180^\circ$ mode. The STDP had been trained to synchronize his rhythmic movement exactly with metronome pulse increased from 0.8 to 2.2Hz at 0.2intervals. For this condition, $\phi = 0^\circ$ mode was a mirror image (Mirror mode) that the coordinated pair moving direction horizontally was identical on the same side, and $\phi = 180^\circ$ mode was an anti-mirror image (Antimirror mode) that moving direction on the opposite side.

In Experiment 1, dynamic coordination properties, whether critical fluctuations or phase transitions was observed or not, were investigated for the between people coordination in FF condition. The result showed that phase switching from required one mode to another mode (phase transitions) arose in Antimirror mode, and that, as the movement frequency increased, phase stability and accuracy for Antimirror mode decreased. It was evident that the between people coordination paradigm in FF condition also could be interpreted on the basis of that in SS condition.

In Experiment 2, the learning processes for each phasing mode were investigated, respectively. When the initial phase was compared with the final in the acquisition trials, learning effect for Mirror mode was observed in the standard deviations (SD) of relative phase, whereas that for Antimirror mode in the deviations from required relative phase. It was showed that learning aspect qualitatively differed with the required phasing mode on the between people coordination.

Key Words : unilateral between people coordination, Face to Face condition, relative Phase(ϕ), and learning effect