

Effect of variable tempo learning on skill acquisition

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Type of presentation: oral presentation

Abstract

Moving efficiently and at the right time is important in complex human skills such as music performance. The acquisition of such motor skills remains largely unexplored, especially the role of learning schedules in acquisition of timed motor skills. Varied learning schedules are known to facilitate transfer to other motor tasks, and retention of a learned task in spatial movements [1]. Facilitation of transfer of learning through variability in learning schedules has been reported as evidence of structure learning in visuomotor tasks [2]. Variability during practice of wide left-hand interval leaps in piano performance led to better transfer to untrained motor tasks right after training, but not after a retention period [3]. We examined the effects of a variable tempo learning schedule on timing skill acquisition with 24 non-musician participants who learned an 8-note sequence on a piano keyboard. 12 of the participants practiced the sequence at 2 tempi (“2-tempo Group”), while 12 participants practiced the sequence at 6 different tempi (“6-tempo Group”). Both groups performed the same number of total practice trials. We examined timing regularity in three transfer tests: one at a novel (average) tempo, one at a novel fast tempo and one at a previously practiced slow tempo. The 2-tempo Group showed lower variability at the novel (mean) tempo, contrary to previous findings in the spatial domain. The novel (average) tempo yielded the least variability across all transfer conditions, suggesting most transfer from the different tempo practice conditions. The 2-tempo Group also performed with lower variability at the unfamiliar fast tempo, even though the 6-tempo Group practiced fast tempi closer to the novel test tempo. Finally, the 2-tempo Group performed the familiar slow tempo with less variability. We discuss implications of learning schedules on transfer of motor skills in temporal and spatial domains.

References

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