Book of Abstracts

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Symposia

1. Movement Sequences 1: Insights from various tasks

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Sequential behavior is the organization of movements into a temporal structure that is relevant for the survival of the organism. The resulting behavioral sequences can be of a fixed and stereotyped nature, acquired through repetition, or they may also arise via more on-line mechanisms of composition, based on the assembly of existing sequence elements or subsequences. This mini-symposium will consider research for investigating sequential behavior, taking into account various research paradigms other than the serial RT task. This mini-symposium complements the twin mini-symposium *Movement Sequences 2: Insights from the serial reaction time task*.

Effect of hand used and hand position on the discrete sequence production (DSP) task.

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Previous studies on sequence learning indicate that keying sequences are initially learned in effector independent spatial coordinates and after extended practice in effector dependent motor coordinates. The present research examined this issue in more detail by manipulating the hand used and its position while it was used for executing the discrete sequence production (DSP) task. Participants practiced sequences with their left hand either on the left or right side of their body. In the test phase participants performed the practiced sequences with either hand and in either position. In the first experiment each element within a sequence was indicated by a key specific cue. Results showed that when the sequences were executed with the practiced hand there was an advantage for the practiced hand position, whereas there was no difference between the practiced and unpracticed position when the sequences were executed with the unpracticed hand. A questionnaire suggested that the sequences had been learned implicitly. In the second experiment we had participants learn the numbers representing keys at home before the start of the experiment and they reacted to one sequence-specific-cue with the execution of an entire sequence. This resulted in a different initial way of sequences learning and in more explicitly learned sequences. Still, the effects of changing hand and hand

position were largely comparable to those in Experiment 1. In conclusion, these experiments support the notion that at advanced skill levels sequence execution is based on several codes simultaneously, one of them being a representation that is both effector and position specific.

References

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Sequential effects on awareness of simple motor acts

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Time plays a central role in consciousness, at different levels of information processing. Here, we focus on awareness of simple motor acts, such as pointing movements. Subjects reached for a target, which could be shifted laterally on some trials. Following Perruchet's conditioning paradigm, the stimulus material was organized in such a manner that there could be long series of shifted trials following each other, and long series of trials where no shift occurred. On each trial, participants (1) expressed their expectancy of a shift, (2) pointed at the target, adjusting their movement towards the shift if required and (3) reproduced the movement just made (a measure of motor awareness). We analysed the spatial disparity between the initial and the reproduced movements on those trials with a target shift. Negative values (undershoots), suggest 'motor pessimism' in that motor awareness only reflects a sluggish, reconstructed awareness of the actual movement, while positive values (overshoots) suggest ³motor optimism² in that the reproduced movement is influenced more by participants¹ intention to point to the shifted target than by their actual movement. Expectancy strongly influenced experience of action. Further, delays inserted between expectancy, action and reproduction had no effect on visuomotor adjustment but influenced action awareness by boosting undershoots, suggesting increased reliance on a time-limited memory for action. Awareness of action is thus influenced by prior thoughts and expectations, but only over a short time period ‹ it is a dynamic and flexible mixture of what we intend to do and of what our motor system actually does.