Motor Chunking During Sequence Learning in Grid-Navigation Tasks

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Abstract

Several canonical experimental paradigms (serial reaction task, mxn task, etc.) have been proposed to study the typical behavioural phenomena in a sequential motor key-press task. The repeated execution of visuomotor sequences in such paradigms lead to overall performance improvement such that the inter-response intervals in between certain sub-sequences decreases as compared to that across other sub-sequences. This efficient and hierarchical cluster organisation is called *motor chunking*. We provide empirical evidence for motor chunking in grid-navigation sequencing tasks. The participants performed Grid-Sailing Task (GST) [Fermin et. al., 2010] that required navigating a 10x10 grid from start to goal position while using a particular key-mapping between the 3 cursor movement directions and the 3 keyboard buttons. This study confirms the emergence of subject-specific, unique temporal patterns related to chunking after substantial practice.