

Relative cognitive efficiency of event-based and dynamical timers

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Some studies have evidenced the existence of task specific-timers, conceiving timing not as an ability shared over all rhythmic tasks but as emerging from the specificity of movements (Delignières, Lemoine & Torre, 2004). Two different kinds of timers, event-based and dynamical, have been identified (Schöner 2002). Event-based timers are conceived as central, and conversely dynamical timers appeared effector-specific, and peripheral. Lewis and Miall (2003), reviewing neuroimaging studies on timing ability, argued for the existence of separate neural timing systems associated with opposite task characteristics. They distinguished between automatic controlled timing involved in continuous tasks, and cognitively controlled timing involved in discrete tasks.

We analysed in this study the variability of event-based timers (tapping) and dynamical timers (forearm oscillation), and the associated attentional cost testing participants in a double-task paradigm (concurrent reaction time task). We obtained a lower variability and a lower reaction time for dynamical than for event-based timers. The lower attentional cost of dynamical timers is consistent with the hypothesis of their peripheral nature, and this cognitive efficiency could represent a determinant criterion for their exploitation.

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