Temporal preparation in choice reaction time tasks: Evidence of increased readiness for task-specific processing requirements

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Abstract

Reaction time usually decreases when an imperative stimulus is preceded by a warning signal, which reduces the temporal uncertainty of the imperative stimulus’ onset. This effect has been attributed to temporal preparation and has mainly been investigated by studies manipulating the foreperiod, that is, the interval between the warning signal and the imperative stimulus (Niemi & Näätänen, 1981). The present study investigated to what extent temporal preparation in choice reaction time tasks involves increased readiness for task-specific processing requirements as opposed to increased task-independent readiness. Participants performed a pitch, a letter, or a color discrimination task within a variable foreperiod paradigm. Tasks alternated regularly between auditory and visual discrimination and in separate blocks of trials, the upcoming visual discrimination task was either predictable or unpredictable. We observed the standard variable foreperiod effect for both visual discrimination tasks irrespective of task predictability. Importantly, however, the variable foreperiod effect was larger when the visual discrimination task was predictable than when it was unpredictable. These results suggest that temporal preparation in choice reaction time tasks involves increased readiness for both task-independent and task-specific processing requirements.

Keywords: Temporal preparation; Variable foreperiod; Choice reaction time; Task predictability

References


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