Influences of voluntary actions on temporal preparation in multiple temporal contexts

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It has recently been shown that self-initiation of foreperiods (FPs) influences temporal preparation to visual stimuli in choice reaction time (RT) tasks. Here, we investigated whether this effect extends to a simple-RT task using variable FPs. Participants performed the task with 20 FP durations, across three different FP distributions, under two conditions: in the action condition, participants self-initiated FPs with a voluntary action; in the external condition, FPs were initiated externally, after a random interval. Curves of RT as a function of FP duration showed faster RTs in the action condition, irrespective of distribution. Actions also reliably led to more negative slopes of RT curves. Moreover, we found that participants made a larger number of premature responses in the action condition, particularly at longer FPs. This suggests that voluntary actions increase motor readiness, positioning participants closer to response threshold, speeding up responses but hindering the ability to inhibit early responses.

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