

## **Abstract**

Previous studies have found that imperceptibly biased motor response costs could affect visual perceptual decision unconsciously, suggesting that the motor response cost could change the identity of the sensory input during the perceptual decision-making process. In this study, a task, integrating the temporal bisection task and the motor response cost, was adopted to test whether a biased motor response cost would affect the temporal perceptual decision. The result of the two-tailed paired t-test between the experimental and control conditions suggests no statistically significant effect of the motor response cost on the participant's temporal perceptual decision in this temporal bisection task. As all the participants have reported awareness of the biased motor response cost in this temporal experiment, the result could suggest that either the effect of the motor response cost on the perceptual decision can be counteracted if the biased motor response cost is consciously aware, or the motor response cost simply has no effect on the temporal perceptual decision.

## **Introduction**

Time is an essential dimension of the world, and the ability to perceive time is crucial for the survival and goal-reaching of humans and other animals. Organisms possess the ability to keep track of interval time. A flexible and cognitively directed timer operates across the timescales of seconds-to-minutes through the cooperation of a network that consists of different brain areas such as the posterior parietal cortex, the supplementary motor area, the prefrontal cortex, and the basal ganglia (Buhusi & Meck, 2005). Recent studies have found that the motor response cost could bias the participants' visual perceptual decision during a random dot motion discrimination task, specifically through the bias of the identity of the visual stimulus input (Marcos et al., 2015; Hagura, Haggard, & Diedrichsen, 2017). Also, a