

Abstract

A perception experiment and a reproduction experiment were conducted to investigate whether a longer duration (3000 ms) would require more cognitive resources to be represented in working memory than a shorter duration (1500 ms). The amplitudes of Event-Related Potentials (ERPs) Slow Waves (SW) were used as an index of memory demand. In the perception experiment participants decided whether a S2 duration was identical to a S1 duration that was separated from S2 by a 2-second delay interval. In the reproduction experiment, participants reproduced a sample duration following a 2-second delay interval. SW recorded during the delay interval were significantly more positive over frontal/central regions in the 3000 ms condition than in the 1500 ms condition between 400-800 ms after the S1 offset in the perception experiment. However, there was no significant difference between the two conditions in the reproduction experiment, perhaps due to excessive variance in the ERP data. Though the SW difference obtained in the perception experiment was not replicated in the reproduction experiment, and the time window for the difference obtained in the perception experiment was shorter than that normally found in working memory experiments, we believe that the effect reflects a memory load difference.