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Visual and Verbal Interference in Recognition of Imitative and Mimetic Words

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Osaka (2001) suggested that imitative words would be processed verbally and mimetic words would be processed visually. This study investigated whether visual or verbal second task would interfere with the processing of imitative or mimetic words. Our hypothesis was visual task would interfere with recognition of mimetic words, whereas verbal task interfere with recognition of imitative words.

Method

Experimental Design

The design used the reading span (high, low) as a between-participants variable, and the stimuli of memory task (figures, words) and the target word of sentence recognition task (imitative, mimetic) as within-participants variables. Dependent variables were reaction times and error rates for memory task and sentence recognition task.

Stimuli

Forty sentences including one imitative word and forty sentences including one mimetic word were used in sentence recognition task. In the half of the sentences, these sentences made sense and else did not make sense. In memory task, twenty combinations of three words or figures were used.

Participants

Participants were thirty-five female undergraduate students. All were Japanese native speakers and had normal or corrected vision.

Procedure

Reading Span Test. We measured each participant's working memory capacity by Japanese reading span test (Osaka, 2002).

Sentence Recognition Task and Memory Task. The fixation point was presented for 3000ms. After that, three figures or words were presented for 3000ms, so participants were required to memorize these stimuli. Participants answered whether the sentence presented after the figures or words could make sense as quickly and accurately as possible (sentence recognition). Three figures or words were presented again, participants answered whether these stimuli were presented previously by pressing allocated keys (memory task).

Results

Seventeen participants with a high reading span (more than six sets) and eighteen with a low reading span (less than five sets) were assigned to the high and low groups, respectively.

Recognition Task

The mean reaction times for correct responses were shown in Figure 1. Interaction between the target word (imitative, mimetic) and the stimuli of memory task (figures, words) were significant ($F [1, 33] = 7.85, p < .01$). Other main effects and interactions were not significant. About error rate, no main effect and interaction was significant.

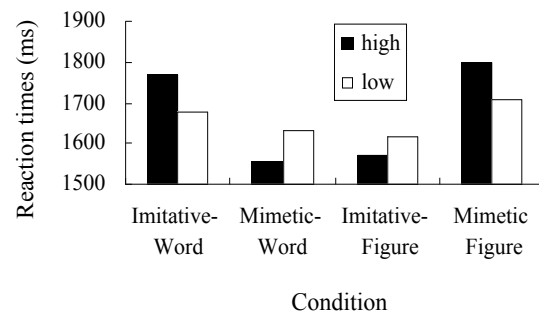


Figure 1: Reaction times for recognition of sentences (ms).

Memory Task

In word condition, reaction times for mimetic words were significantly longer than imitative words ($F [1, 33] = 4.75; p < .05$). In figure condition, error rate for imitative words were significantly higher than mimetic words ($F [1, 33] = 5.25, p < .05$).

Discussion

The results of sentence recognition task showed that verbal dual task interfered with the memory of imitative words and visual task interfered with the memory of mimetic words. These results support our hypothesis. The results of memory task suggested that there was a tradeoff between primary task and secondary task, however. The task switching between phonological loop and visuo-spatial sketchpad would affect these results. Working memory capacity did not related with performance of words' maintenance.