

The Effect of Semantic Relatedness between Storage and Processing on Working Memory

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Most working memory theories focus on the competition in attentional resources between the processing and storage components of a complex span task. The purpose of the present study was to examine the effect of semantic relationship between the processing and storage tasks on the span performance. Here we report three within-subjects experiments manipulating both cognitive load and semantic relatedness between the processing and storage tasks within a naming span task. Experiment 1 found that semantic relatedness enhanced participants' span performance. Experiment 2 showed that the beneficial effect of semantic relatedness was disappeared after the presentation duration of processing items within a test trial was reduced. Experiment 3 controlled the semantic relatedness of processing items and also found the beneficial effect of semantic relatedness between the processing and storage tasks. These findings demonstrated that semantic relatedness and cognitive load have independent contribution to memory performance. Results are discussed in terms of the processing task as a retrieval cue in a complex span task.

Keywords: *naming span task, cognitive load, semantic relatedness*