

The Effects of Two Types of WM Load on Distractor Suppression

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Abstract: Studies have shown that working memory load (WML) influences attentional selection. That is, when many items are retained in working memory (WM), the target is more efficiently attended due to more efficient filtering of distractors. However, previous research has focused on the quantitative perspective of WML (i.e., the number of items) and rarely examined the qualitative perspective of WML (i.e., the precision of item). Furthermore, most previous research rarely manipulates the type of distractor suppression. The present study aims to investigate how quantitative and qualitative WML determines how efficiently an individual can suppress distractors, and whether the types of distractors determine the influence of WML on distractor suppression. In the first experiment, participants completed one of the two online experiments through Testable which were conducted using a dual task paradigm with a color working memory display and visual search task to assess the quantitative and qualitative perspective of working memory load and distractor types. The results of our 2 (low- and high-WM load) x 2 (multiple-item distraction, color-similarity distraction) x 2 (Quant WM group and Qual WM group) repeated ANOVA showed that a high-WM load reduces distraction compared to low-WM load. As well as quantitative WM is not affected by the distraction type compared to the qualitative WM. To replicate the results and produce a clearer result, we plan to conduct Experiment 2. In this revised experiment, we employ a similar memory-search dual task paradigm, but present two types of working memory load (WML) randomly on a trial-by-trial basis and simplify the load manipulation to a single variant. These experiments will provide compelling evidence supporting the close relationship between working memory and attention and further suggest the underlying mechanisms of quantitative and qualitative cognitive processes in working memory and attention.