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Role of Working Memory in Language Activation during Visual Scene Processing

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Abstract

The current study examined the role of working memory in language activation during visual processing. Twenty-six native English speakers searched for a visual target while completing a concurrent linguistic memory task, a concurrent spatial memory task, or in the absence of dual-task demands. Linguistic activation was measured by comparing visual fixations to phonologically-overlapping items and control items whose names did not overlap with the target. Participants experienced significant phonological competition across all conditions, but memory load impacted the timing of competitor co-activation (delayed and more sustained under spatial load), as well as the magnitude (attenuated under both spatial and linguistic loads) compared to the no-load condition. We conclude that linguistic representations are accessed during visual search even with concurrent cognitive loads, but that working memory influences the degree of language-based competition, possibly by modulating the activation and maintenance of linguistic and spatial information.