Searching for the right word: Hybrid visual and memory search for words

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In "Hybrid Search" (Wolfe 2012) observers search through visual space for any of multiple targets held in memory. With photorealistic objects as stimuli, response times (RTs) increase linearly with the visual set size and logarithmically with memory set size even when over 100 items are committed to memory. It is well established that pictures of objects are particularly easy to memorize (Brady, Konkle, Alvarez, & Olivia, 2008). Would hybrid search performance be similar if the targets were words or phrases where word order can be important and where the processes of memorization might be different?

In Experiment One, observers memorized 2, 4, 8, or 16 words in 4 different blocks. After passing a memory test, confirming memorization of the list, observers searched for these words in visual displays containing 2 to 16 words. Replicating Wolfe(2012), RTs increased linearly with the visual set size and logarithmically with the length of the word list. The word lists of Experiment One were random. In Experiment Two, words were drawn from phrases that observers reported knowing by heart (E.G. "London Bridge is falling down"). Observers were asked to provide four phrases ranging in length from 2 words to a phrase of no less than 20 words (range 21-86). Words longer than 2 characters from the phrase constituted the target list. Distractor words were matched for length and frequency. Even with these strongly ordered lists, results again replicated the curvilinear function of memory set size seen in hybrid search. Especially with memorized phrases, one might expect serial position effects; perhaps reducing RTs for the first (primacy) and/or last (recency) members of a list (Atkinson & Shiffrin 1968; Murdock, 1962). Surprisingly we showed no reliable effects of word order. Thus, in "London Bridge is falling down.", "London" and "down" are found no faster than "falling".