Eye movements during visual search under memory load

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**BACKGROUND**

Visual working memory loads have been shown to adversely impact concurrent visual search performance, and the nature of this impact may vary depending on the type of load:

- Non-spatial load impacts attention but not set size slopes (Woodman, Vogel, & Luck, 2001)
- Spatial load impacts intercepts and set size slopes (Oh & Kim, 2004; Woodman & Luck, 2004)

To investigate where these effects occur in terms of attentional deployment during search, we monitored eye-movements during search under various kinds of memory load.

**EXPERIMENTS**

Visual search with memory load:
- Memory alone, search alone, and dual task (within)
- Non-spatial vs. Spatial memory load (between)

**RESULTS**

We demonstrate effects of memory load on three components of visual search response times:

- Latency to the first saccade – increased for both spatial and non-spatial memory loads
- Search time – increased selectively under non-spatial loads
- Time to respond following fixation of the target – increased for both load types

The increase in search time under non-spatial load appears to result from a constrained window of attention, as evidenced by smaller average saccade amplitudes and the consequent requirement of an additional fixation during search.

**REFERENCES**