Positions priming in briefly presented search arrays

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Position and color priming in briefly presented search arrays

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Introduction

In efficient visual search, priming of pop-out (PoP; Maljkovic & Nakayama, 1994, 1996) is usually reported as a speeded response when a target feature is repeated on consecutive trials.


Questions:

1. Do color and/or position repetitions increase accuracy at brief exposure durations?

2. If so, is a category weighting account a viable alternative to the PoP framework within a TVA-framework (Bundesen, 1990)?

Results

We present least squares fits by a simple additive TVA based model of PoP. The model is only used in the present study, since it is limited to one-shot-memory, which will not suffice to describe PoP in detail. PoP has shown to be a cumulative effect, building up over several trials and decaying relatively slowly (Maljkovic, & Nakayama, 1994). The model also applies to pooled, rather than individual data. However, the goodness of fit is quite promising.

The model has 4 free parameters (t0, alpha, weight, and color). The parameters are fixed at 50, 0.19, 0.98, and 0.98, respectively. The model was fitted to the data using a weighted least squares method.

Conclusions

• PoP affects accuracy at very brief exposures.

• The effects cannot be explained by reference to response related mechanisms.

• The results suggest a perceptual component in PoP. This does in not exclude response related PoP.

• A simple additive TVA model can be fitted quite well to experimental data.

• Recent literature suggests that repetition are the result of two or multiple mechanisms (see Lamy & Yashar, in press; Kristjánsson & Campana, 2010).

References


