

Introduction

Pop-out is a visual phenomenon, in which a unique target, embedded among distractor items, is rapidly identified (see poster title).

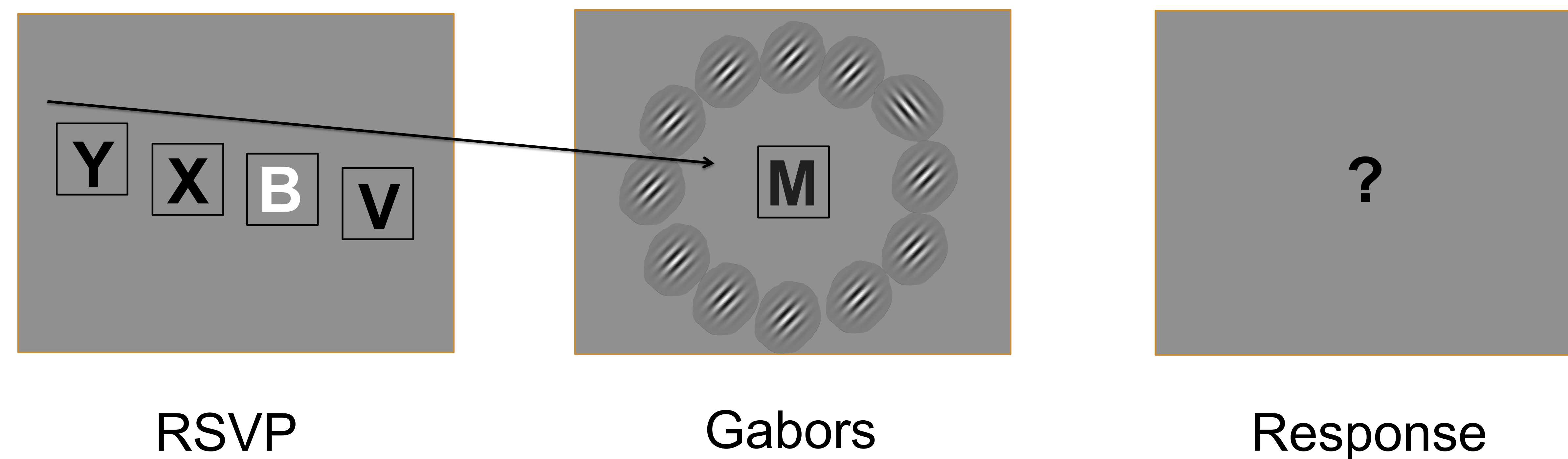
Because detection of pop-out appears effortless and automatic, it has been proposed that pop-out occurs without attention. Experimental evidence however, suggests that attention is required to perceive pop-out (1, 2). On the contrary, strong evidence suggests that grouping, a phenomenon that closely resembles pop-out, occurs without attention (3, 4, 5).

In the proposed project, we will compare pop-out detection with controls that were not included in prior studies.

Method

Participants will monitor a rapidly changing stream of letters (RSVP task) at the center of display and report the presence of a target letter.

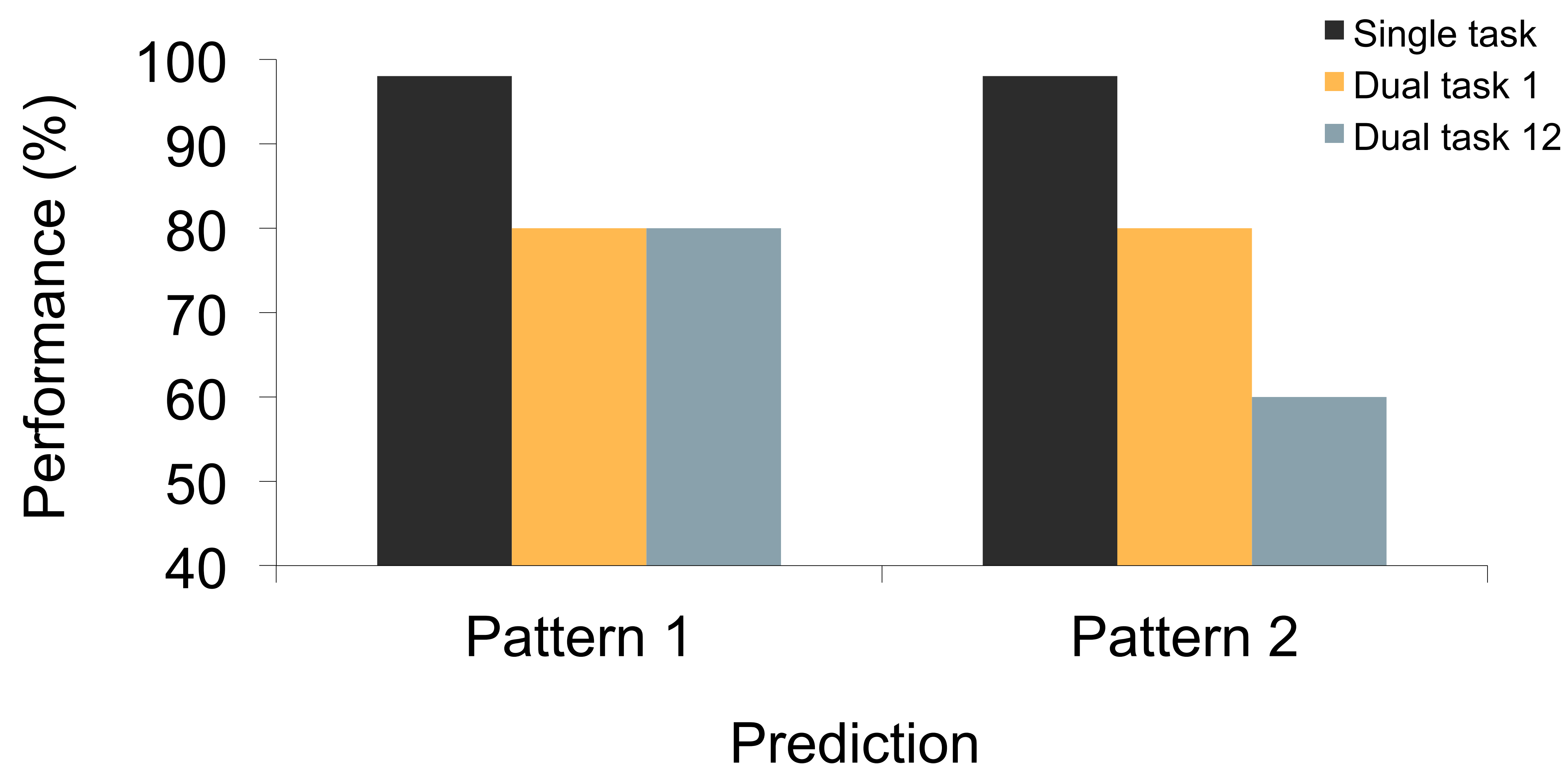
During the attentionally demanding RSVP task twelve gabors, arranged in an imaginary circle, will be displayed briefly. On half of the trials, one gabor will differ in orientation, causing a visual pop-out. After reporting the target letter, participants will report the presence of pop-out (dual task). We will include two controls: (1) pop-out single task and (2) dual task with single gabor (Dual task 1).



Example of trial sequence for the main experiment (Dual task 12).

Results and Conclusions

Performance in single and dual tasks



It has been previously established that performance drops in a dual task situation (1), suggesting that pop-out requires attention. Both patterns in our plot include this prediction (Single task vs. Dual task 12). However, previous studies did not include control for the general attentional requirement to detect a stimulus. We will include detection of a single gabor (Dual task 1) as a control in our experiment.

If performance in both dual tasks is comparable (Pattern 1), it would suggest that a pop-out does not require attention; however, if the performance in a pop-out task is worse than the performance on a detection task (Pattern 2), it would indicate that a pop-out requires attention above what is required for the detection of a single gabor.

References

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