

Task demands can affect binocular rivalry and motion transparency

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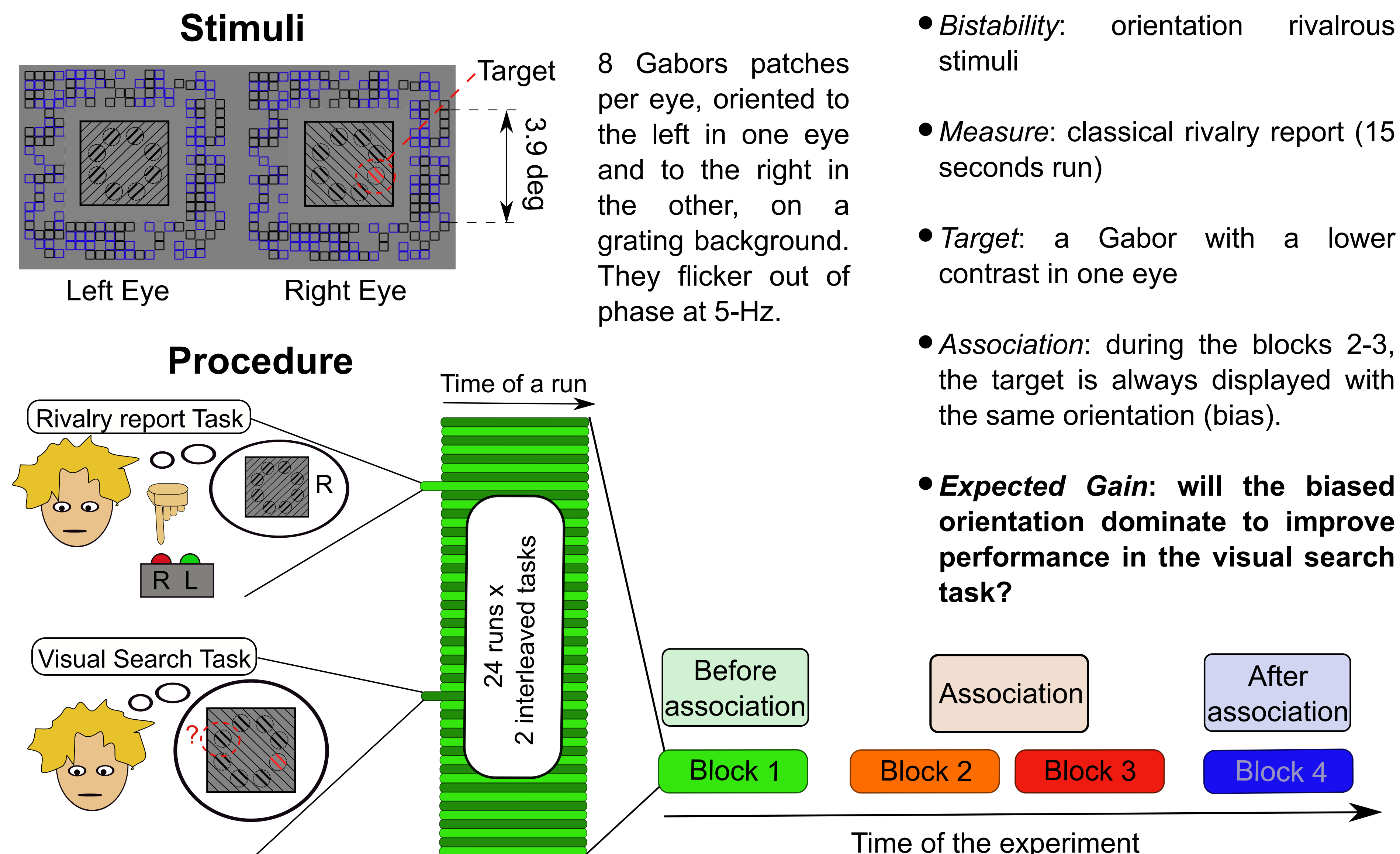
Introduction

Does our visual system try to find the most probable scene given the stimulus (Mamassian & Landy, 1998) or the most useful scene given the objectives of the current task? We address the existence of a "task dependant gain process", influencing the perception at least in ambiguous situations. This work extends previous demonstrations where the task influence the type of information intake (Schyns & Oliva, 1999).

QUESTION: Can perception be modified by the expected gain in a task?

If so, how fast can it be learned implicitly?

Expected Gain in Binocular Rivalry

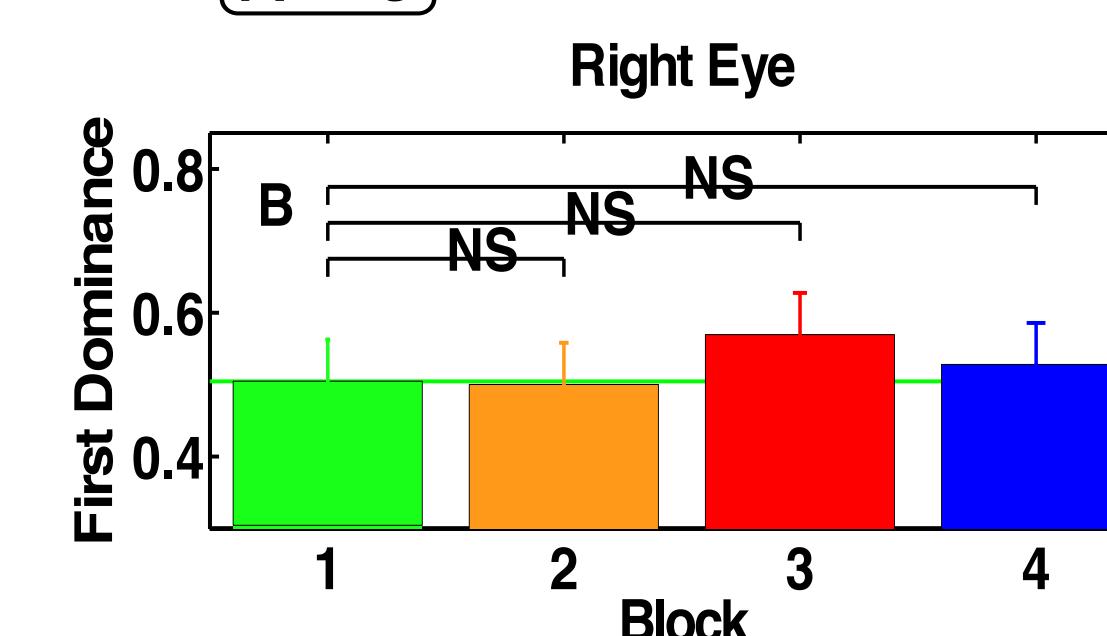
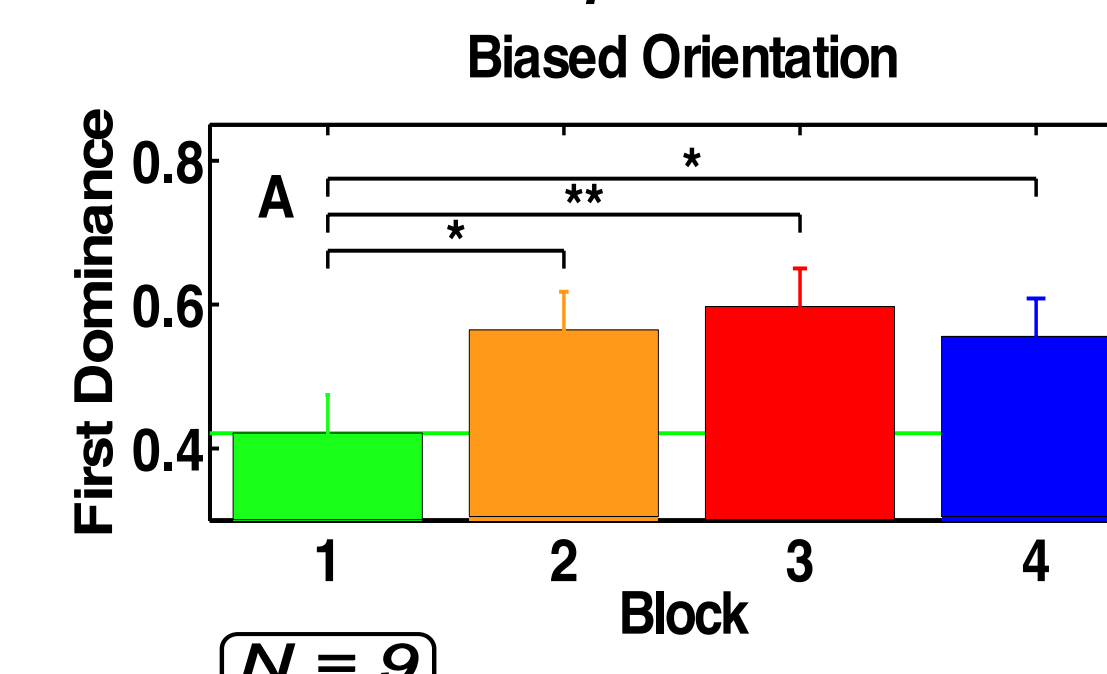


- **Bistability:** orientation rivalrous stimuli
- **Measure:** classical rivalry report (15 seconds run)
- **Target:** a Gabor with a lower contrast in one eye
- **Association:** during the blocks 2-3, the target is always displayed with the same orientation (bias).
- **Expected Gain:** will the biased orientation dominate to improve performance in the visual search task?

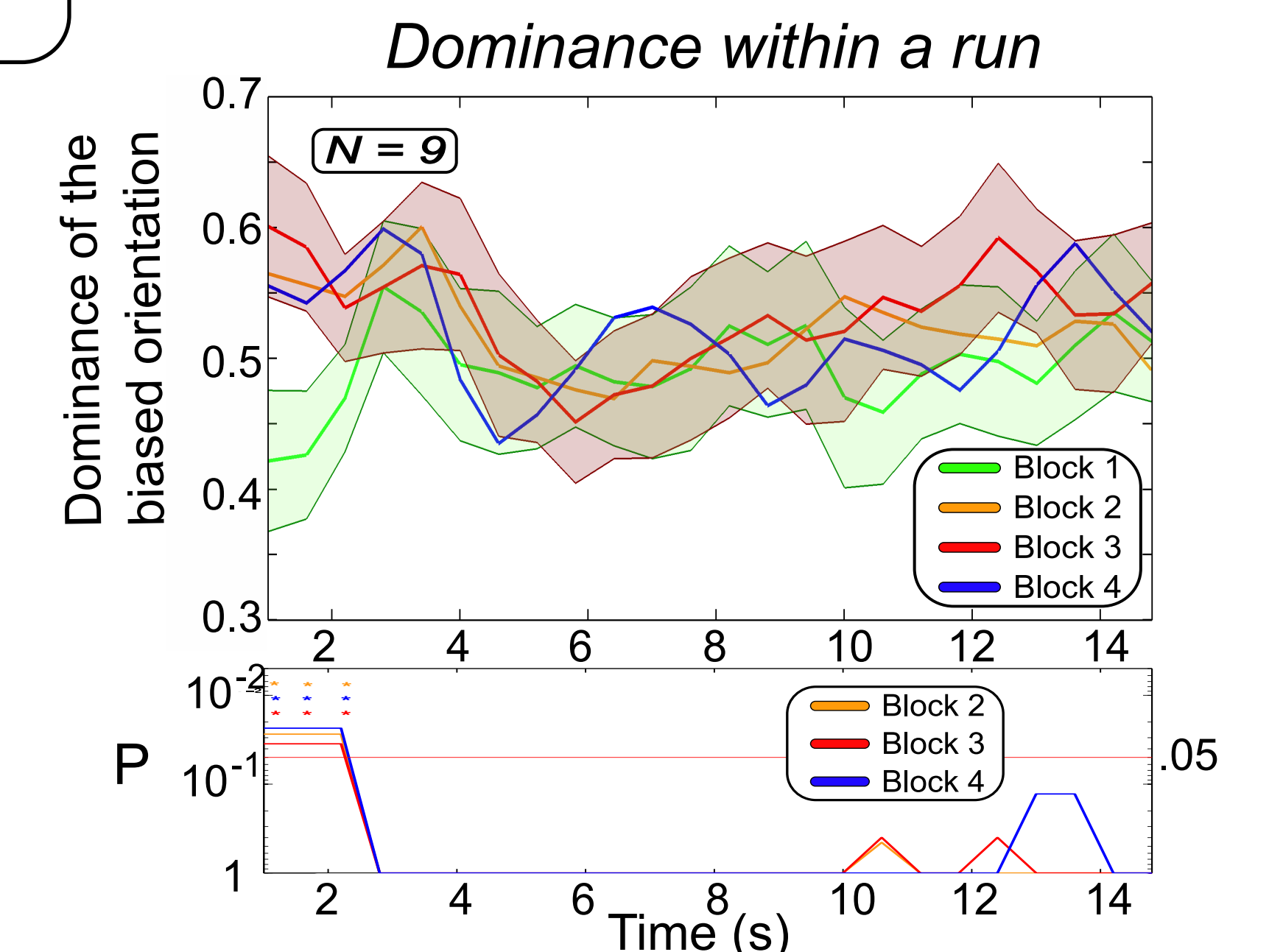
Methods

Results

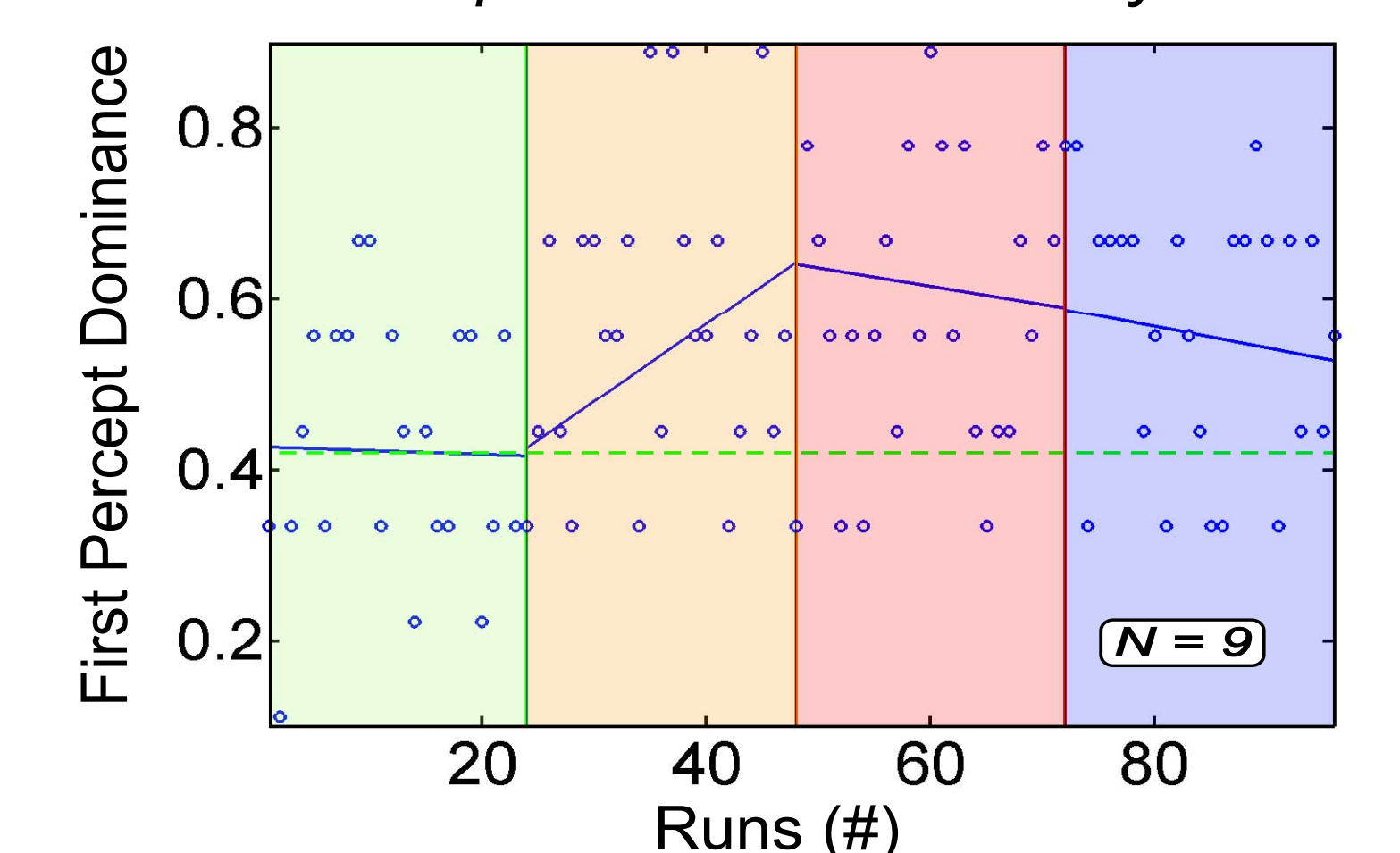
First Percept Dominance



- First percept dominance effect appears in blocks 2 & 3.
- Effect persists in block 4.
- As a control, no ocular effect.



First Percept Dominance Run by Run



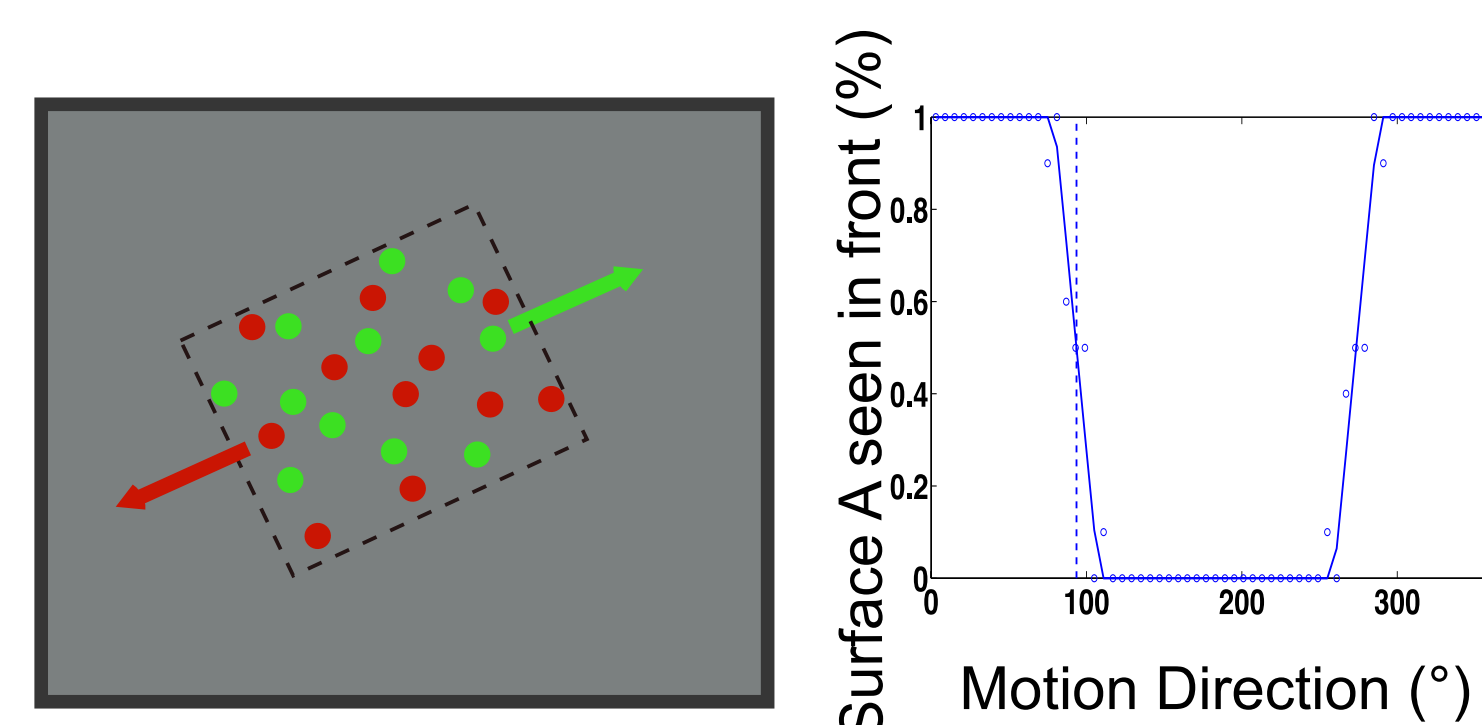
Expected Gain in the Perceived Depth of Transparent Surfaces

Methods

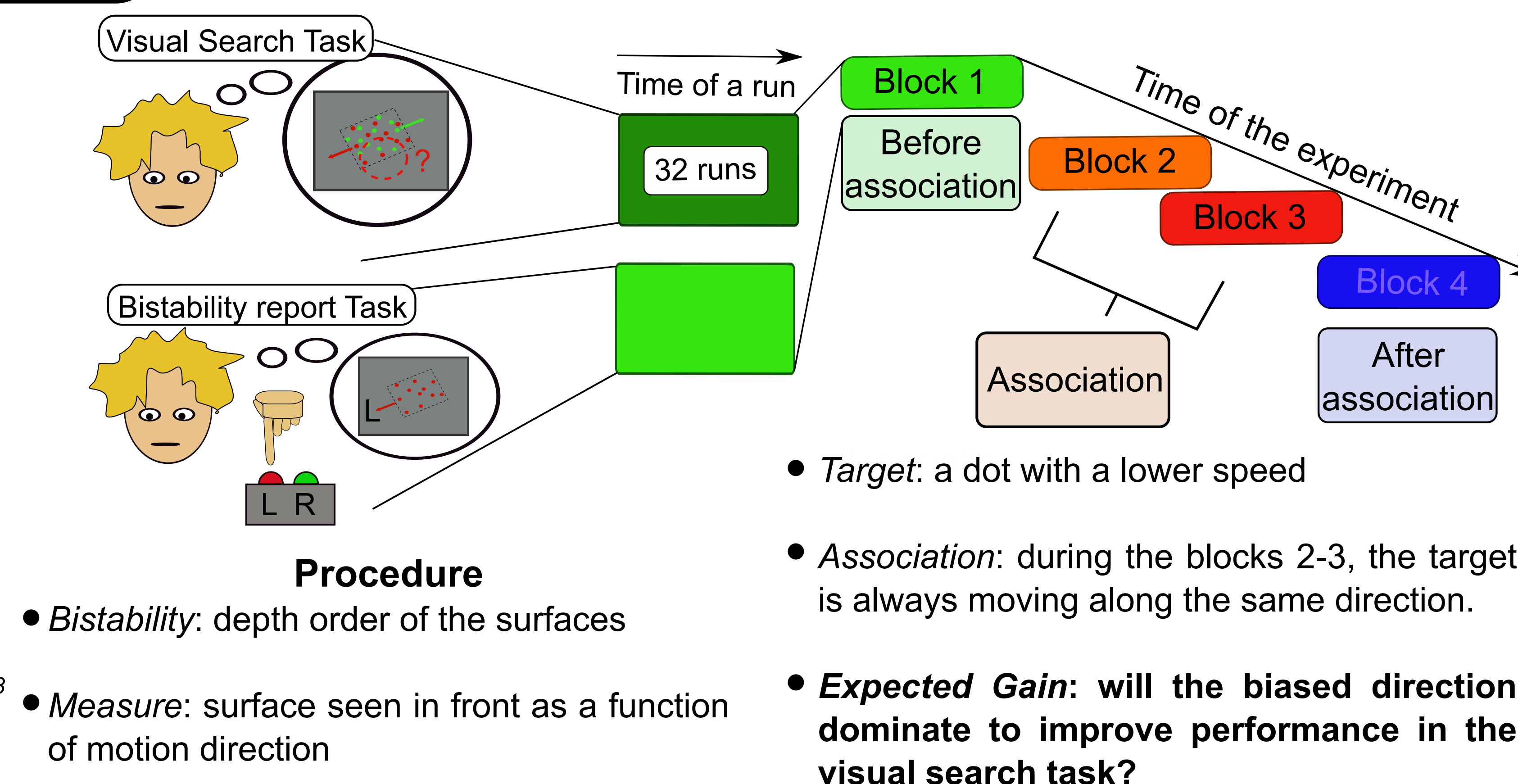
Results

Stimuli

Two random dot surfaces (white dots) sliding on each other in opposite directions.

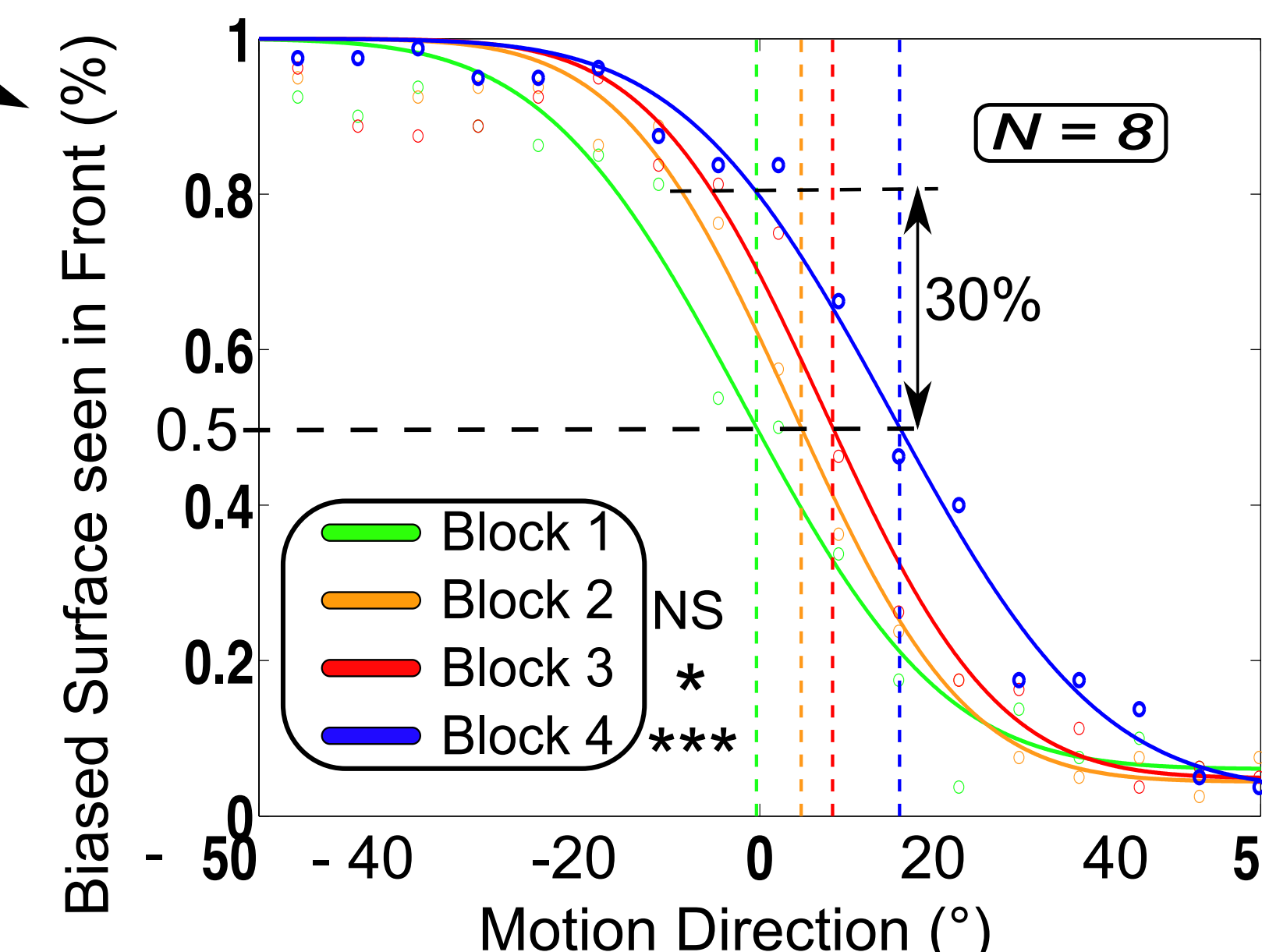


cf Mamassian & Wallace, VSS 03



- **Target:** a dot with a lower speed
- **Association:** during the blocks 2-3, the target is always moving along the same direction.
- **Expected Gain:** will the biased direction dominate to improve performance in the visual search task?

- Gradual changes in the surface seen in front, as expected



Discussion

We have shown that a visual search task can influence the temporal dynamics of bistable perception in phenomena as different as binocular rivalry and motion transparency.

Conclusions

- Influence of the expected gain on perception
- Implicit and long-lasting learning

References

Mamassian, P., & Landy, M. S. (1998). Observer biases in the 3D interpretation of line drawings. *Vision Research*, 38 (18), 2817-2832.

Schyns, P. G., & Oliva, A. (1999). Dr. Angry and Mr. Smile: when categorization flexibly modifies the perception of faces in rapid visual presentations. *Cognition*, 69(3), 243-265.

We acknowledge Tomas Knapen for relevant design advices and Jean-Michel Hupé for useful comments.