Attention to Transparent Moti of the

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One Component o on Strongly Inhibi Unattended Comp

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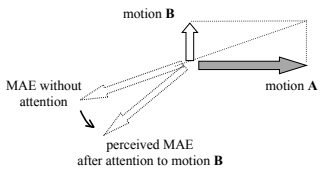
INTRODUCTION

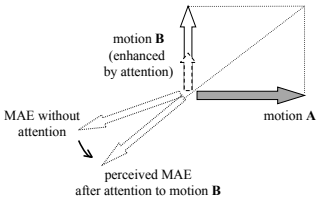
♣ Adaptation to bivectorial transparent motion gives rise to unidirectional motion aftereffect (MAE) (Mather, 1980).

♣ Attention to one of the components in bivectorial transparent motion shifts the direction of the MAE toward the direction opposite to the attended component (Alais and Blake, 1999). The directional shift of MAE could be due to enhancement of the attended component, or inhibition of the unattended component, or both.

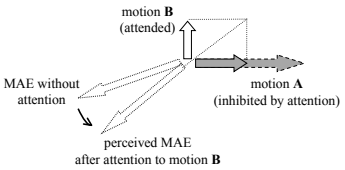
MOTION AFTEREFFECT IN BIVECTORIAL TRANSPARENT MOTION: WITH AND WITHOUT ATTENTION



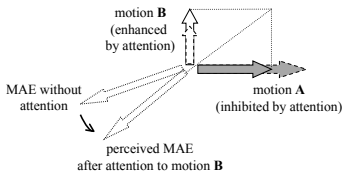
ENHANCEMENT OF THE ATTENDED COMPONENT



INHIBITION OF THE UNATTENDED COMPONENT



COMBINATION OF ENHANCEMENT AND INHIBITION



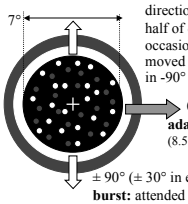
QUESTIONS

♣ Does attention to one of the components of the transparent motion during adaptation result in inhibition of the unattended component?

♣ Is the inhibition direction selective?

STIM

ADAPTING PHASE



Half of random dots moved in one direction (0°) coherently. The other half of dots moved incoherently, but occasionally a proportion of this group moved coherently either in +90° or in -90° for a brief duration as a burst.

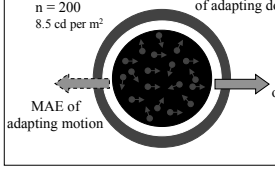
adapting dots: unattended (8.5 cd per m^2; n= 100; 2.5° per sec)

burst: attended dots (17 cd per m^2; n= 100)

ULI

TESTING PHASE

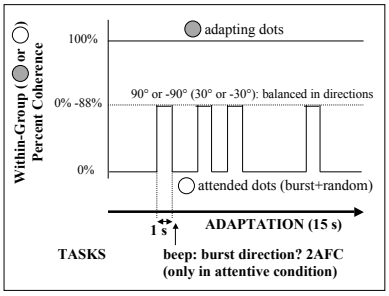
Dots moved incoherently. Small percentage of dots (nulling dots) moved in the opposite direction to the MAE of adapting dots

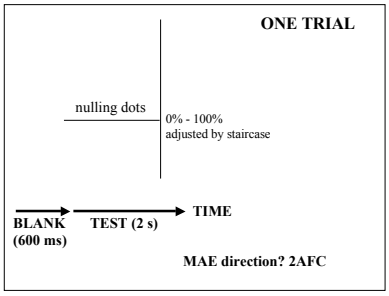


PROCEDURE

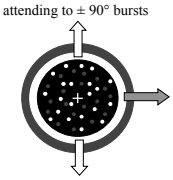
♣ **Passive condition**: After adapting to the motion stimulus, observers reported the MAE direction in the test phase in a two-alternative forced-choice (2AFC) paradigm.

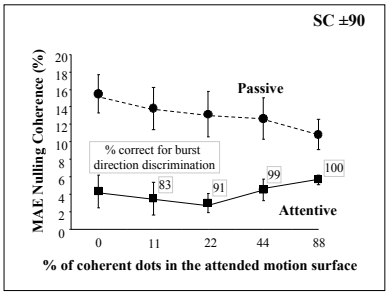
♣ **Attentive condition**: Observers reported the direction of briefly inserted bursts during adaptation (2AFC). In the test phase, they reported the MAE direction (2AFC).

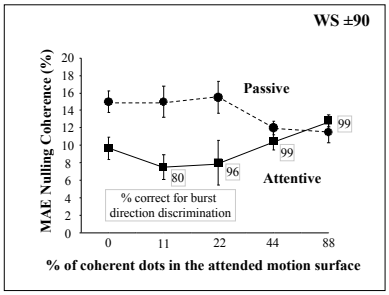


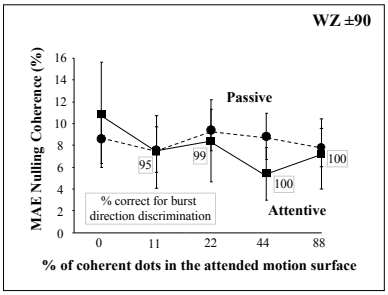


EXPERIMENT 1



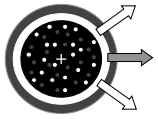


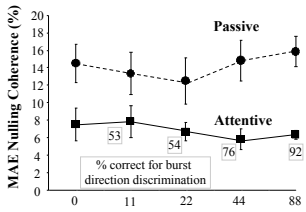


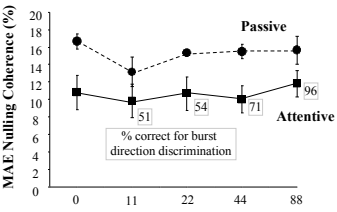


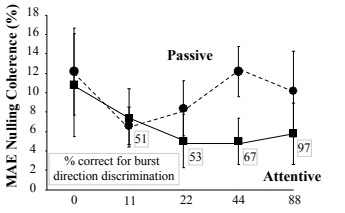
EXPERIMENT 2

attending to ± 30° bursts









RESULTS

♣ Attention to bursts in either direction (± 90° or ± 30°) reduced the MAE of the unattended motion component relative to the passive viewing condition.

♣ The strength of the MAE of the unattended motion component can be reduced even in the absence of coherent motion in the attended dots.

CONCLUSIONS

Attention to one component of bivectorial transparent motion results in strong inhibition of the unattended component.

♣ The unattended motion component is inhibited independently of the direction of the attended motion component (± 90° or ± 30°).

♣ The unattended component can be inhibited even when the attended surface contains no coherent motion or weak coherent motion below detection threshold.

The results suggest that attention is allocated to moving surfaces rather than to motion directions.

REFERENCES

Alais, D. & Blake, R. (1999). Neural strength of visual attention gauged by motion adaptation. ***Nature Neuroscience***, **2** (11), 1015-1018.

Mather, G. (1980). The movement aftereffect and a distribution-shift model for coding the direction of visual movement. ***Perception***, **9**, 379-392.