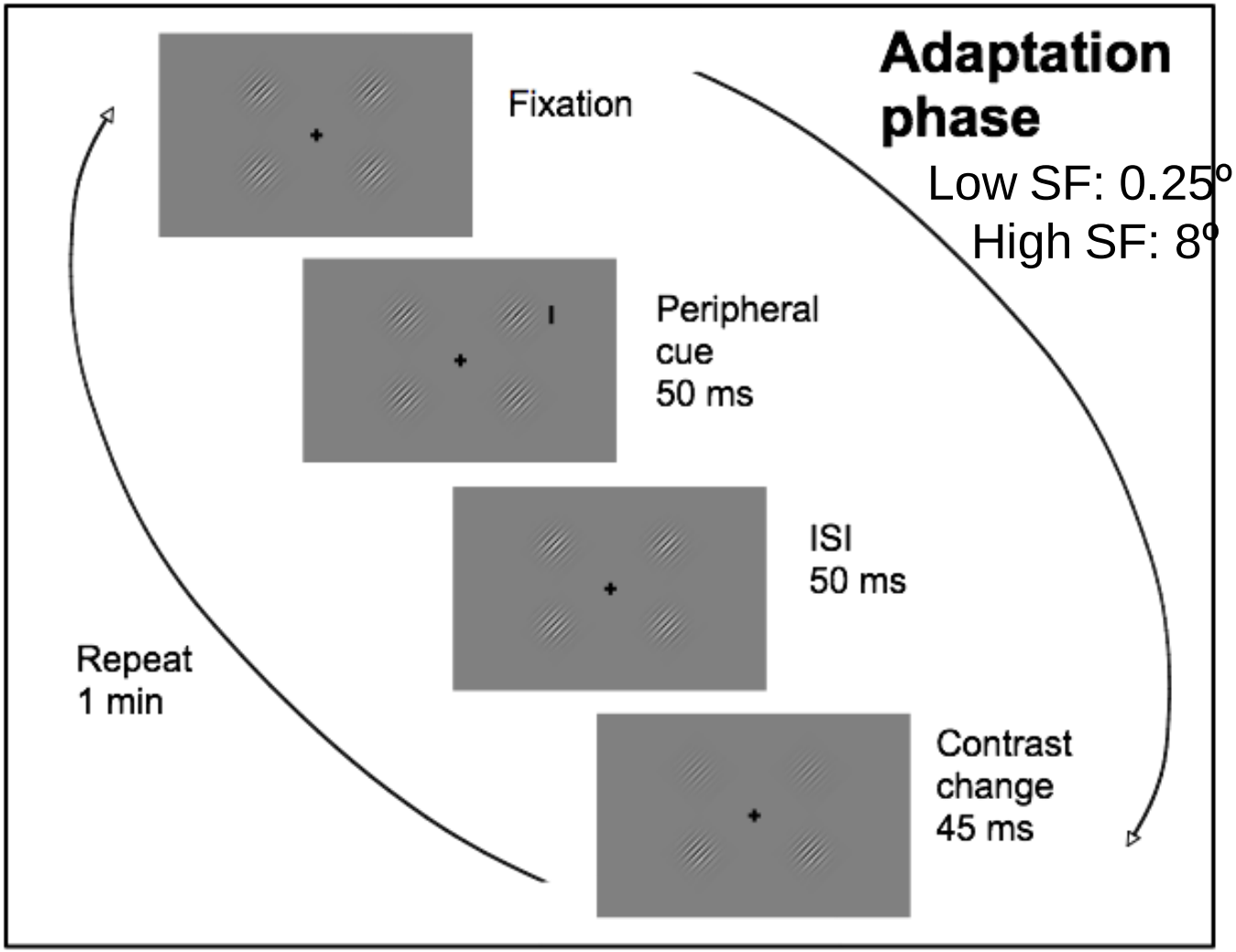
Attention facilitates spatial segregation and temporal integration
⇒Degrades temporal segregation and spatial integration

Attention favors Parvo over Magno activity:

Attention **facilitates parvocellular** neurons at the attended location, which in turn **inhibit** the activity of **magnocellular** neurons at the same location.

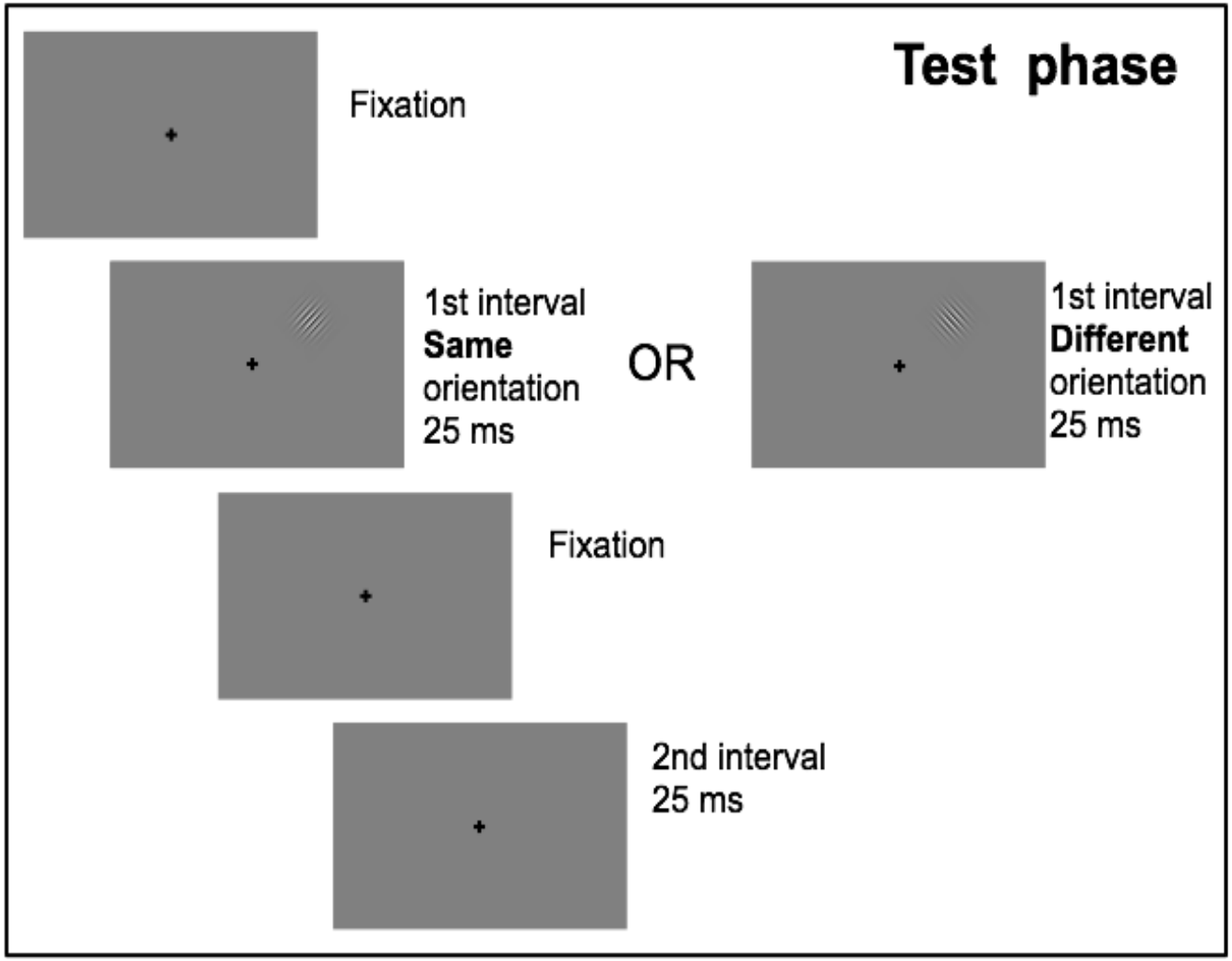
Attention favors Parvo over Magno activity

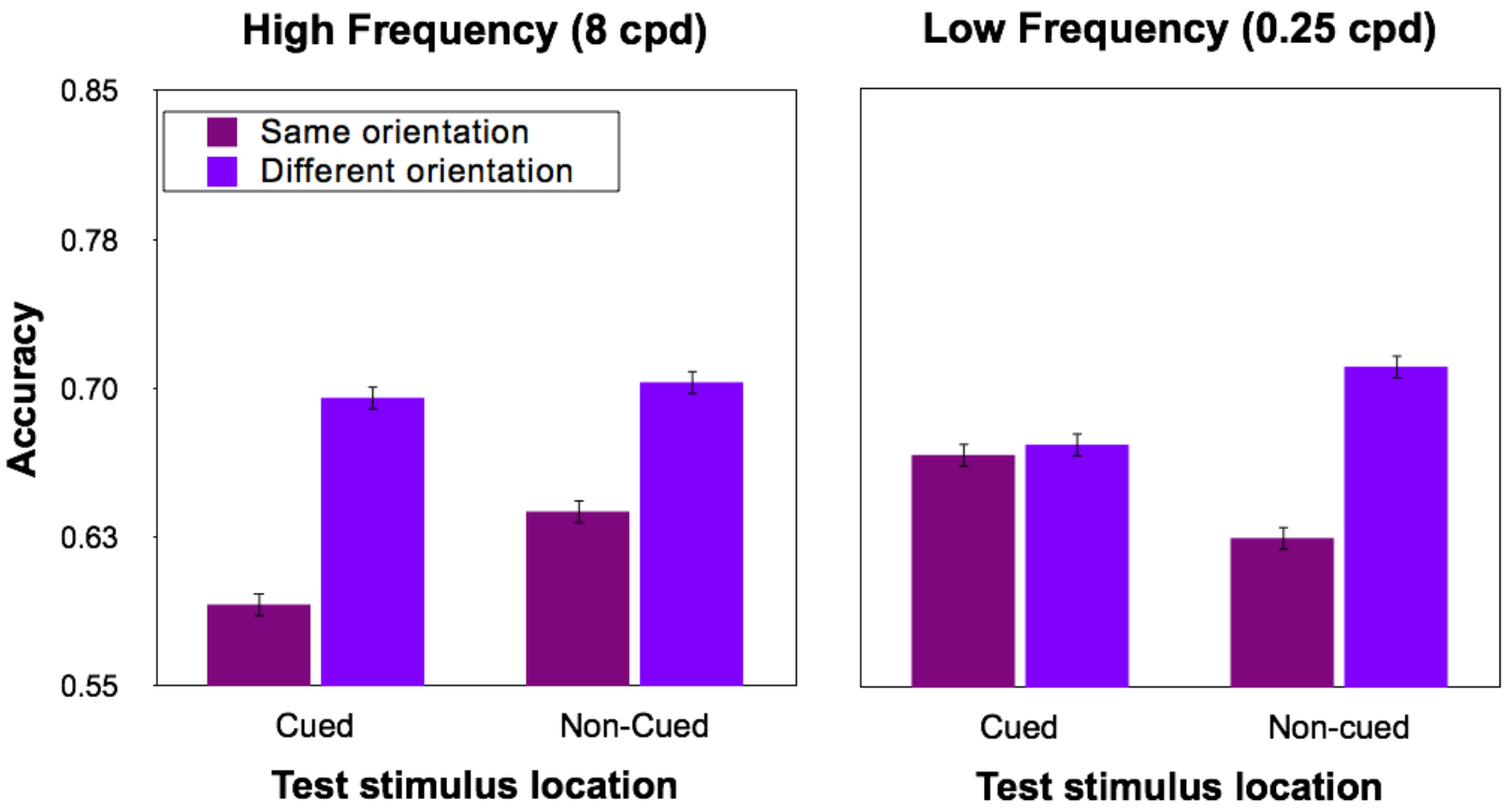
Selective adaptation: spatial frequency, orientation

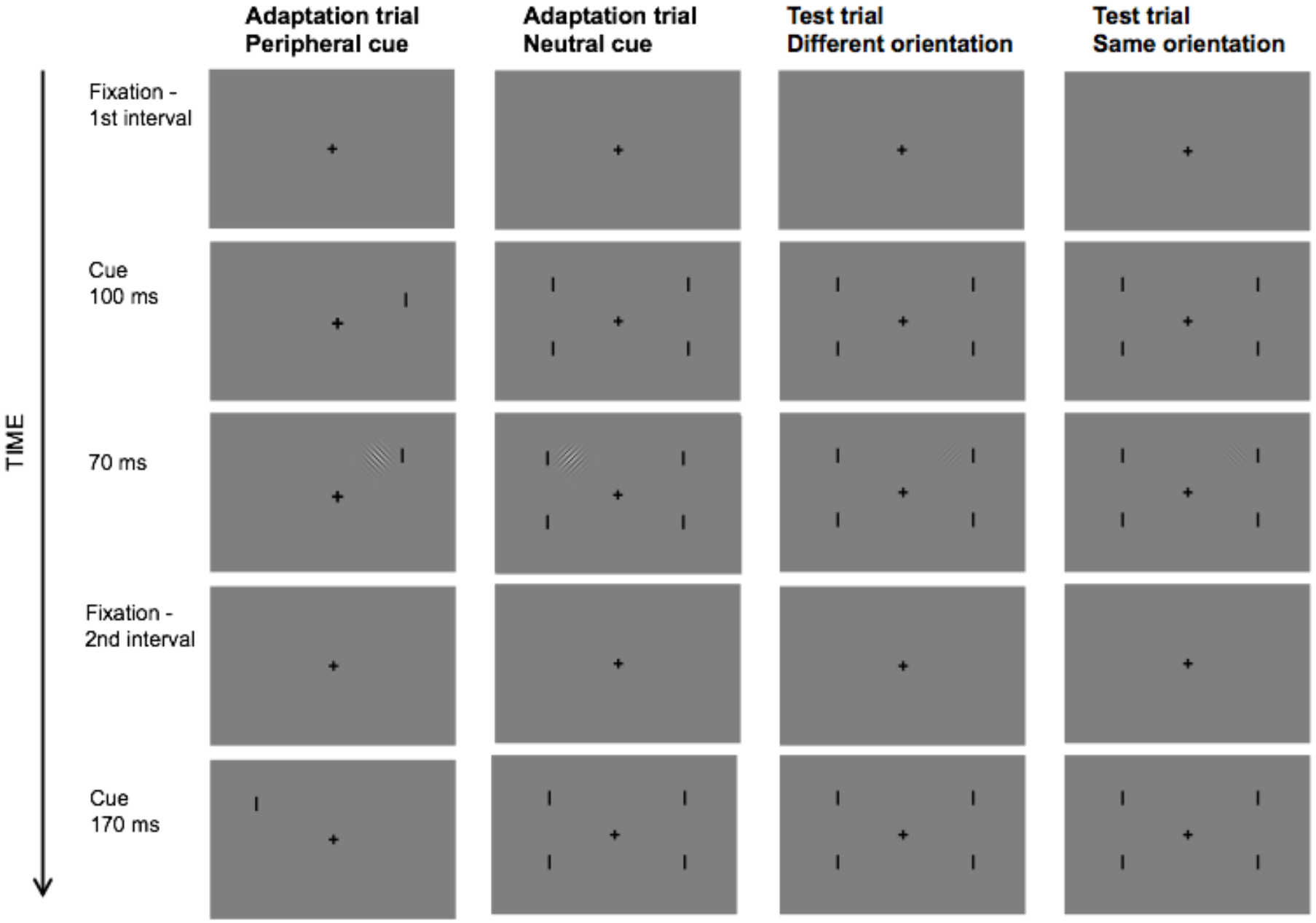


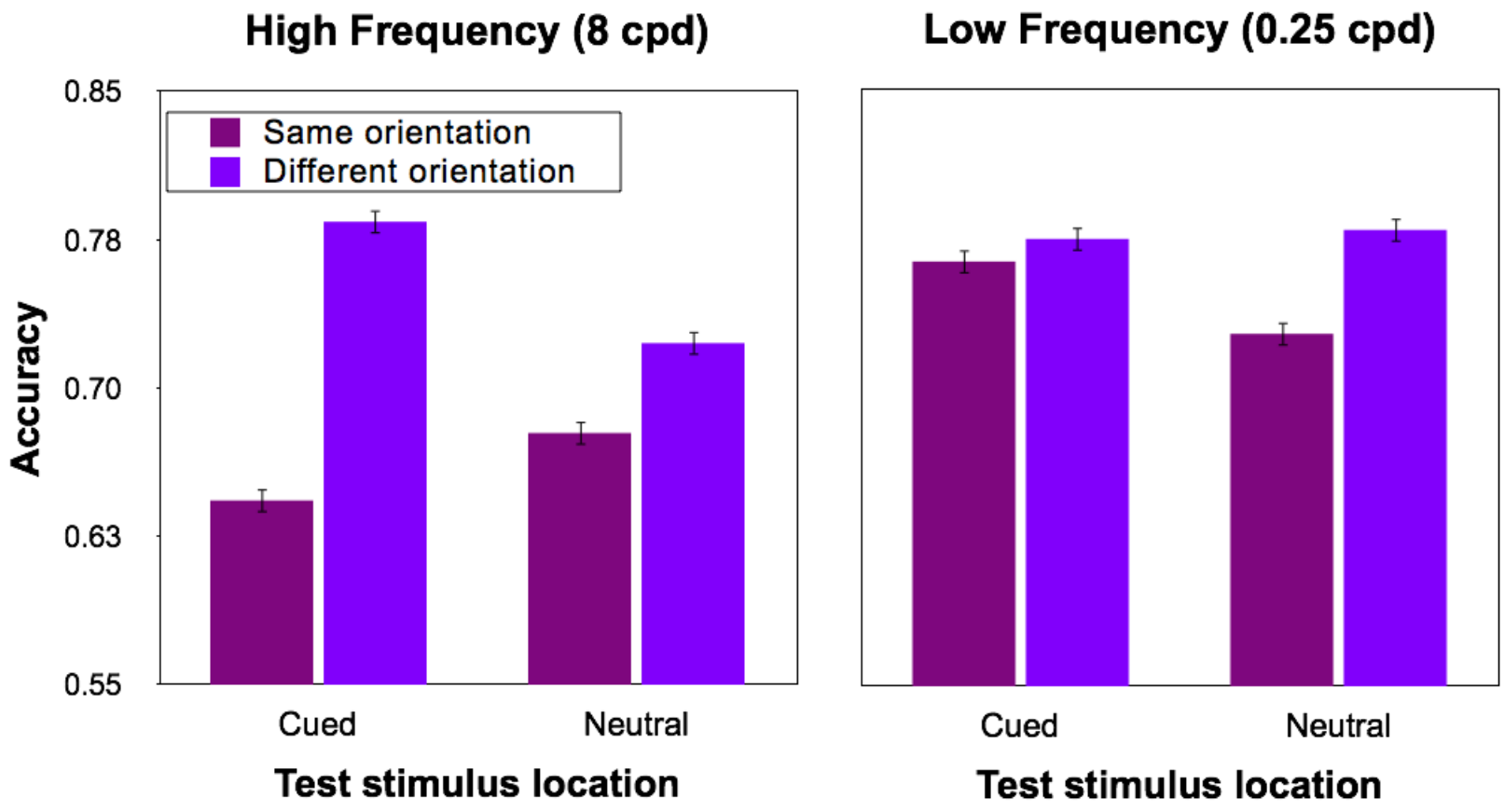
Attention favors Parvo over Magno activity

Selective adaptation: spatial frequency, orientation

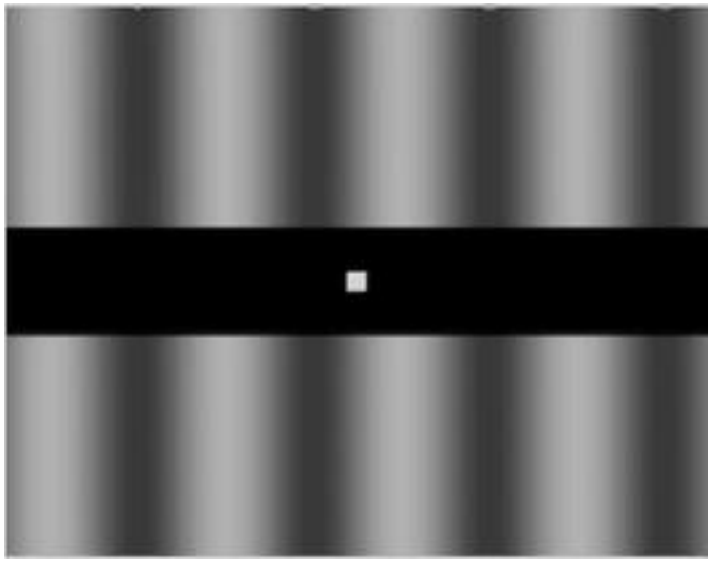



High Frequency (8 cpd)
Low Frequency (0.25 cpd)
Same orientation
Different orientation
Accuracy
0.85
0.78
0.70
0.63
0.55
Cued
Non-Cued
Cued
Non-cued
Test stimulus location
Test stimulus location

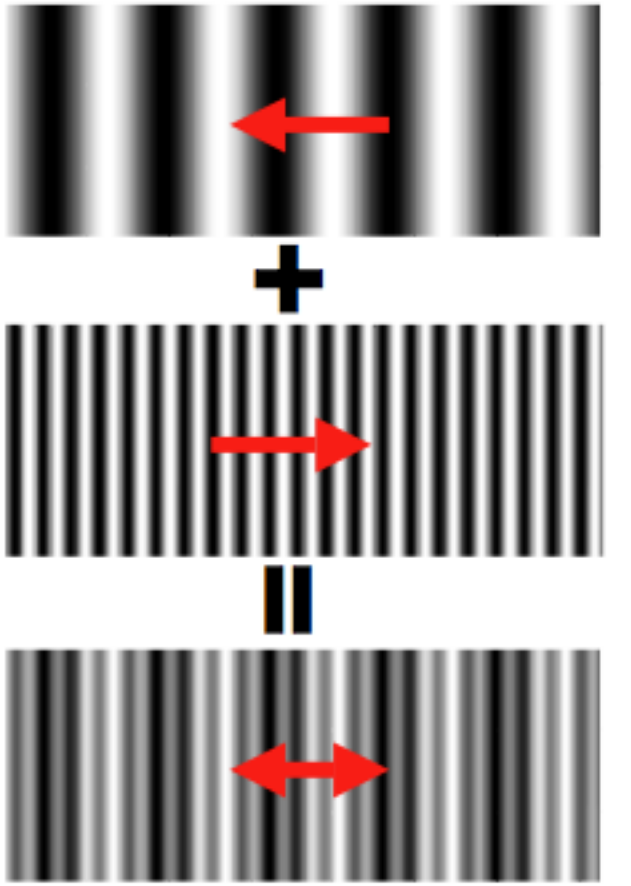

Adaptation trial
Peripheral cue
Adaptation trial
Neutral cue
Test trial
Different orientation
Test trial
Same orientation
Fixation -
1st interval
Cue
100 ms
70 ms
Fixation -
2nd interval
Cue
170 ms
TIME


High Frequency (8 cpd)
Low Frequency (0.25 cpd)
Same orientation
Different orientation
Accuracy
0.85
0.78
0.70
0.63
0.55
Cued
Neutral
Test stimulus location
Cued
Neutral
Test stimulus location

Motion After Effect - MAE

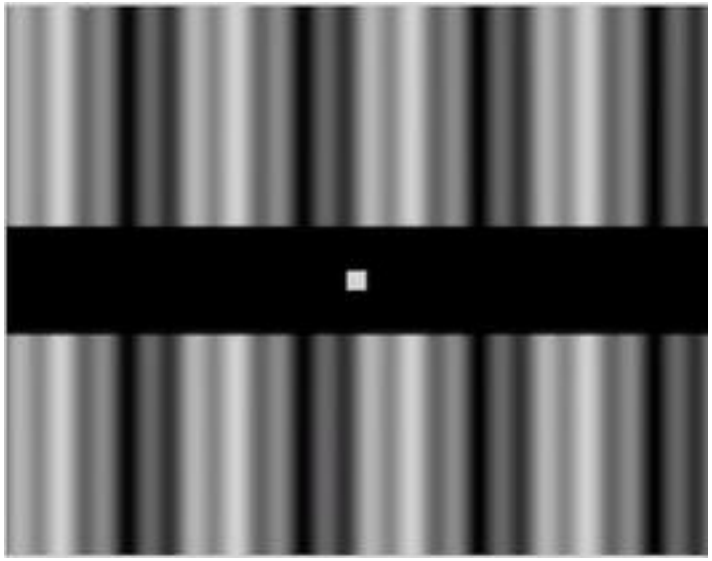


Shioiri & Matsumiya, 2009

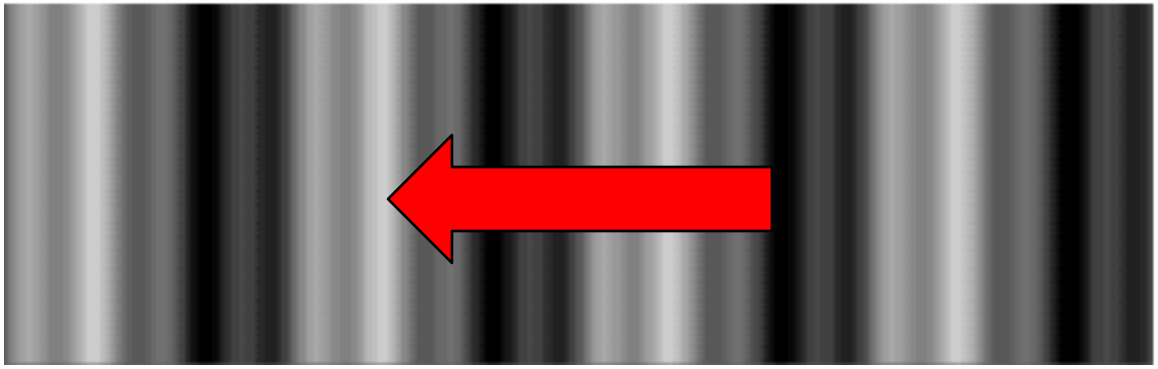


Adaptation stimulus

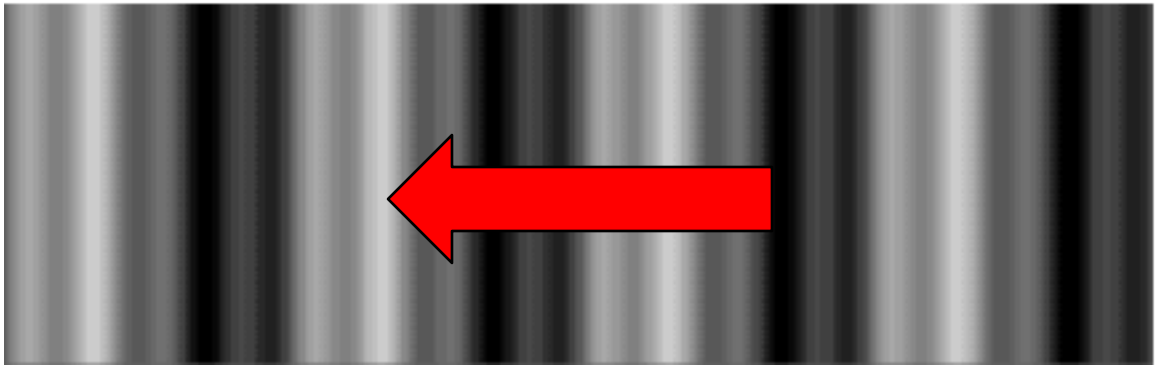
Shioiri & Matsumiya 2009



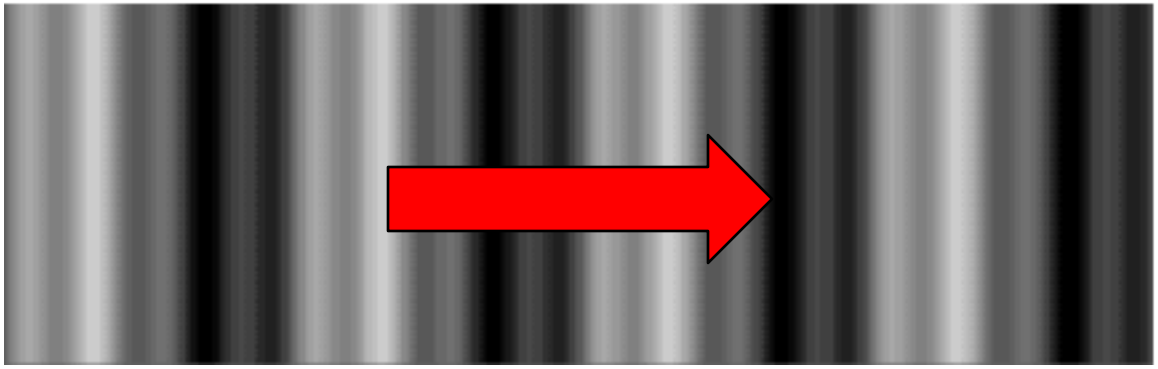
Perceived motion direction: same as **low** spatial frequency grating



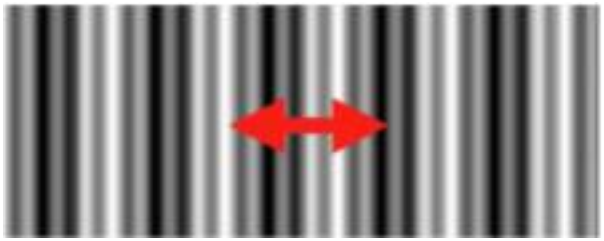
MAE duration: opposite to the **high** spatial frequency grating when tested with a **static** stimulus

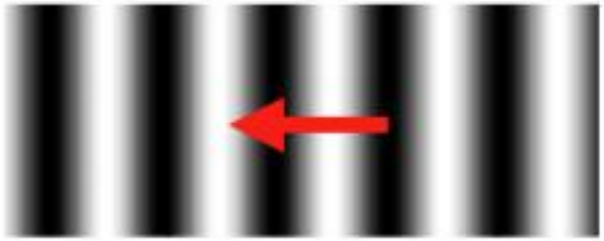


MAE: opposite to the **low** spatial frequency grating when tested with a **flickering** stimulus



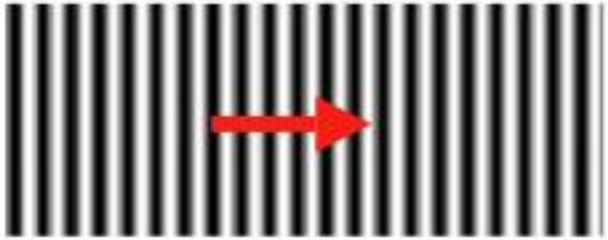
Shioiri & Matsumiya, 2009





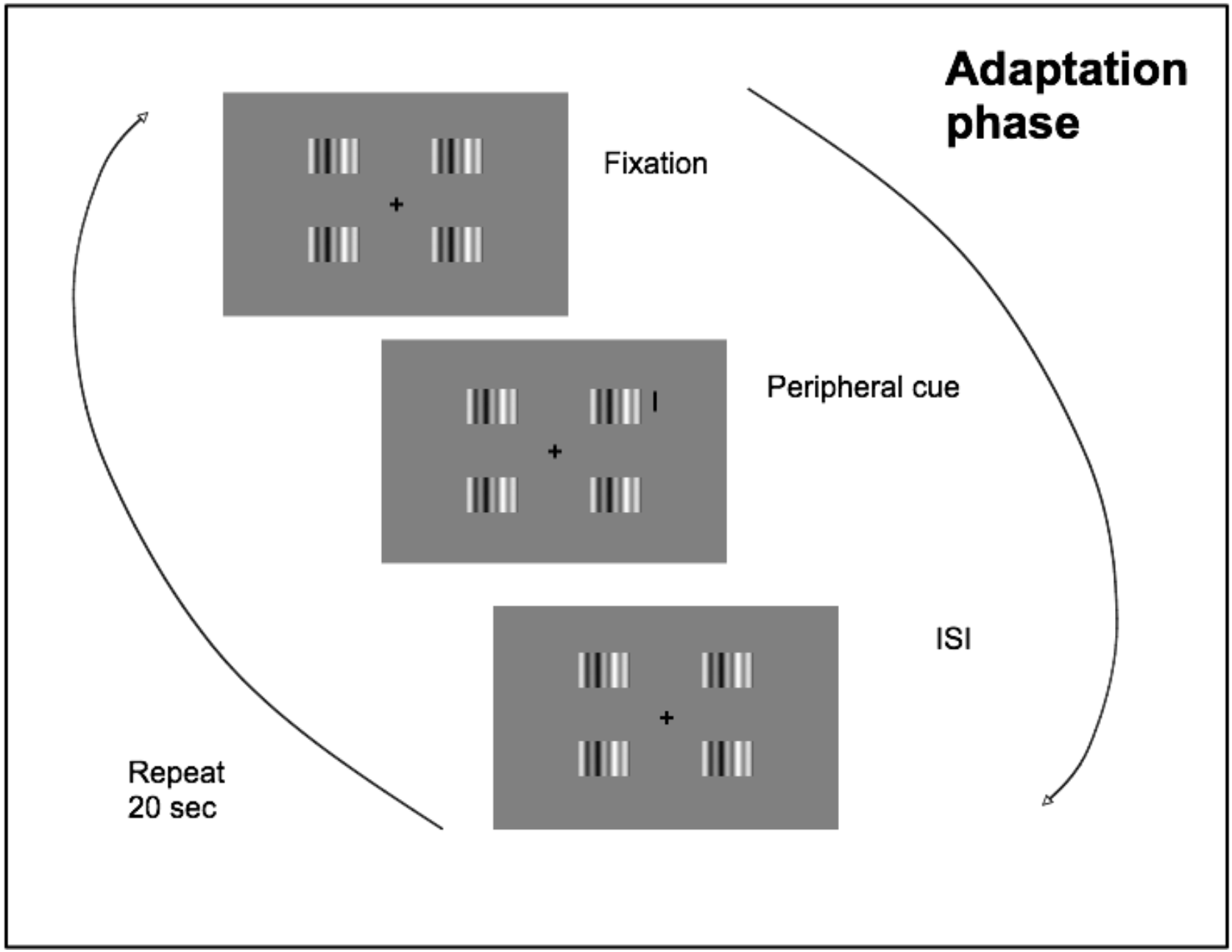
Fast motion system (Magno)

Flicker test



Slow motion system (Parvo)

Static test


Adaptation phase
Fixation
Peripheral cue
ISI
Repeat
20 sec

Test stimulus

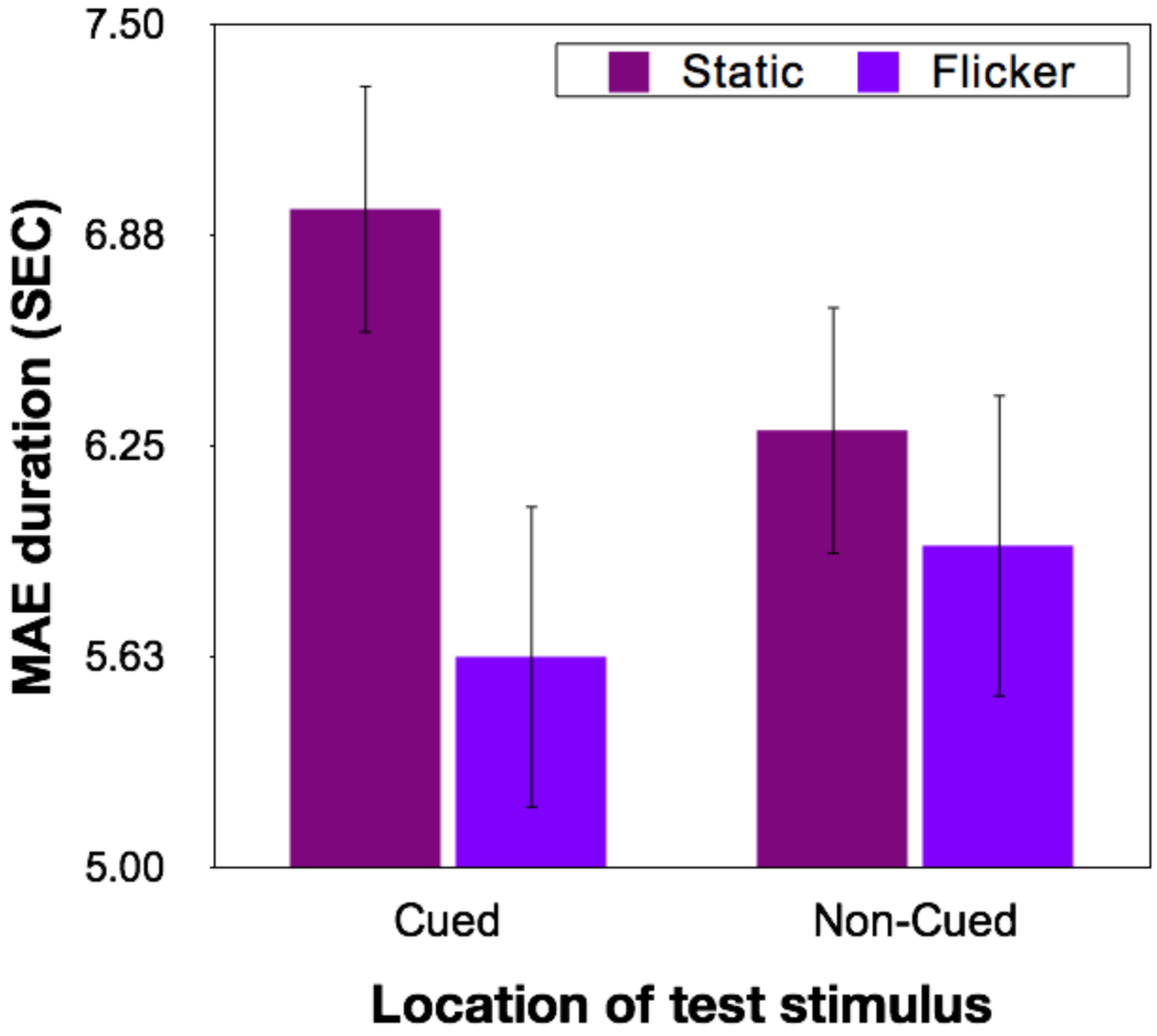
Cued location

Non-Cued location

Static or Flickering

MAE duration

Task: Press a key when you no longer see motion;
Press the left/right key in accordance with the MAE direction


7.50
6.88
6.25
5.63
5.00
MAE duration (SEC)
Static
Flicker
Cued
Non-Cued
Location of test stimulus