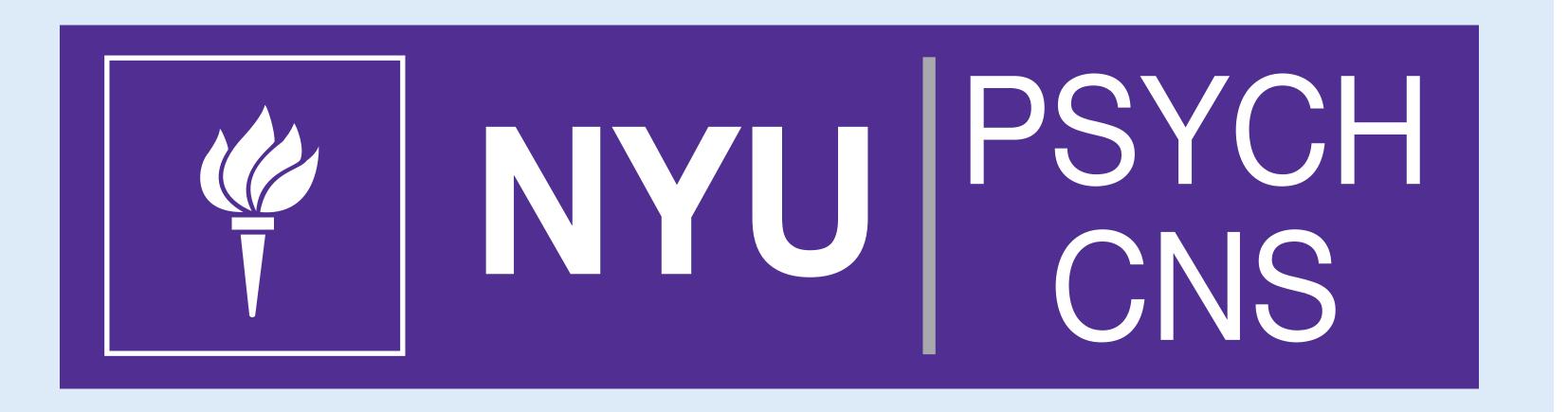
Effects of Faces as Exogenous Cues are Dependent on Visual Field and Handedness

Emma Ferneyhough, Damian Stanley, Elizabeth Phelps & Marisa Carrasco New York University



Background

- Exogenous (involuntary) attention:
 - improves contrast sensitivity (CS) at attended locations
 - impairs CS at unattended locations (Pestilli & Carrasco, 2005)
- Faces are effective attention cues (Phelps, Ling & Carrasco, 2006)
- Both face (Kanwisher et al., 1997; Yovel et al., 2003) and attention (Mesulam, 1999) processing are lateralized brain functions
- Handedness may be related to degree of brain lateralization (Luh et al., 1994)

Question

How do visual field and handedness interact with attention to affect contrast sensitivity?

Experiment 1: Faces Experiment 2: Dots Fixation (500) Cue (75) Horizonte Privation (500) Cue (75) Response (2000) "Report location and orientation of tilted target gabor patch"

Independent Variables:

Attention cues (Face or Dot): Valid, Distributed or Invalid Handedness: Left or Right

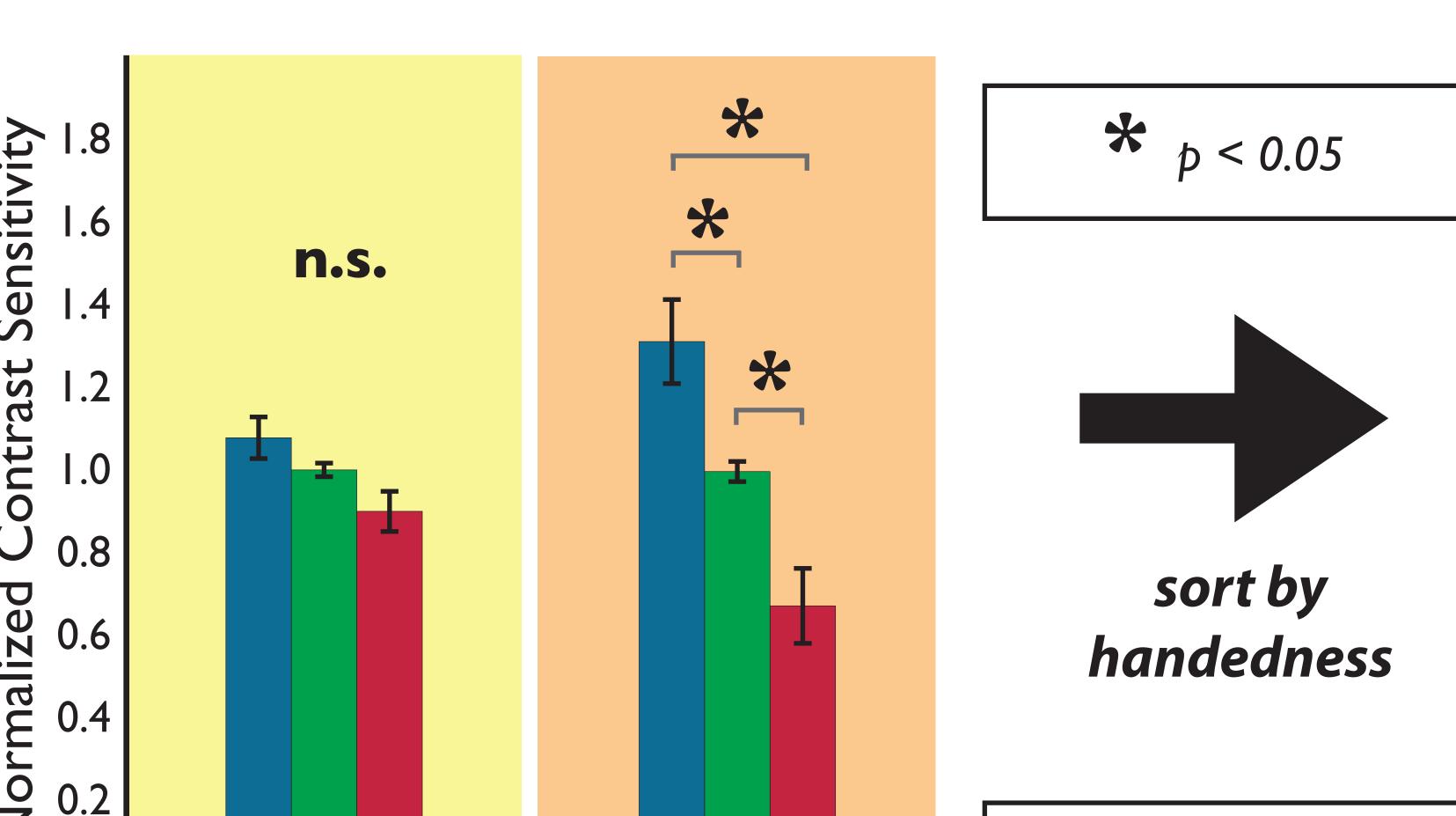
Gabor visibility: 7 log contrasts, 3-56%, 4 deg tilt

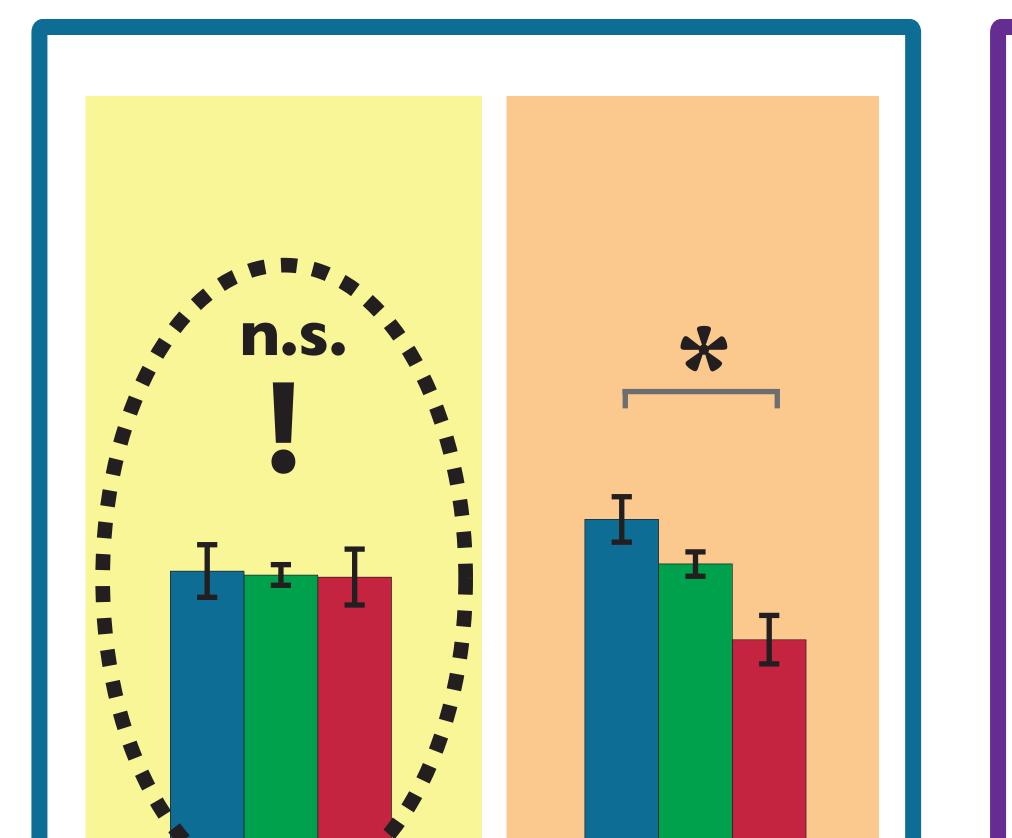
4,000 trials per observer in each experiment

Each observer's accuracy was fit with psychometric curves to obtain Contrast Sensitivity: I / (Contrast Threshold = 67% accuracy)

Results





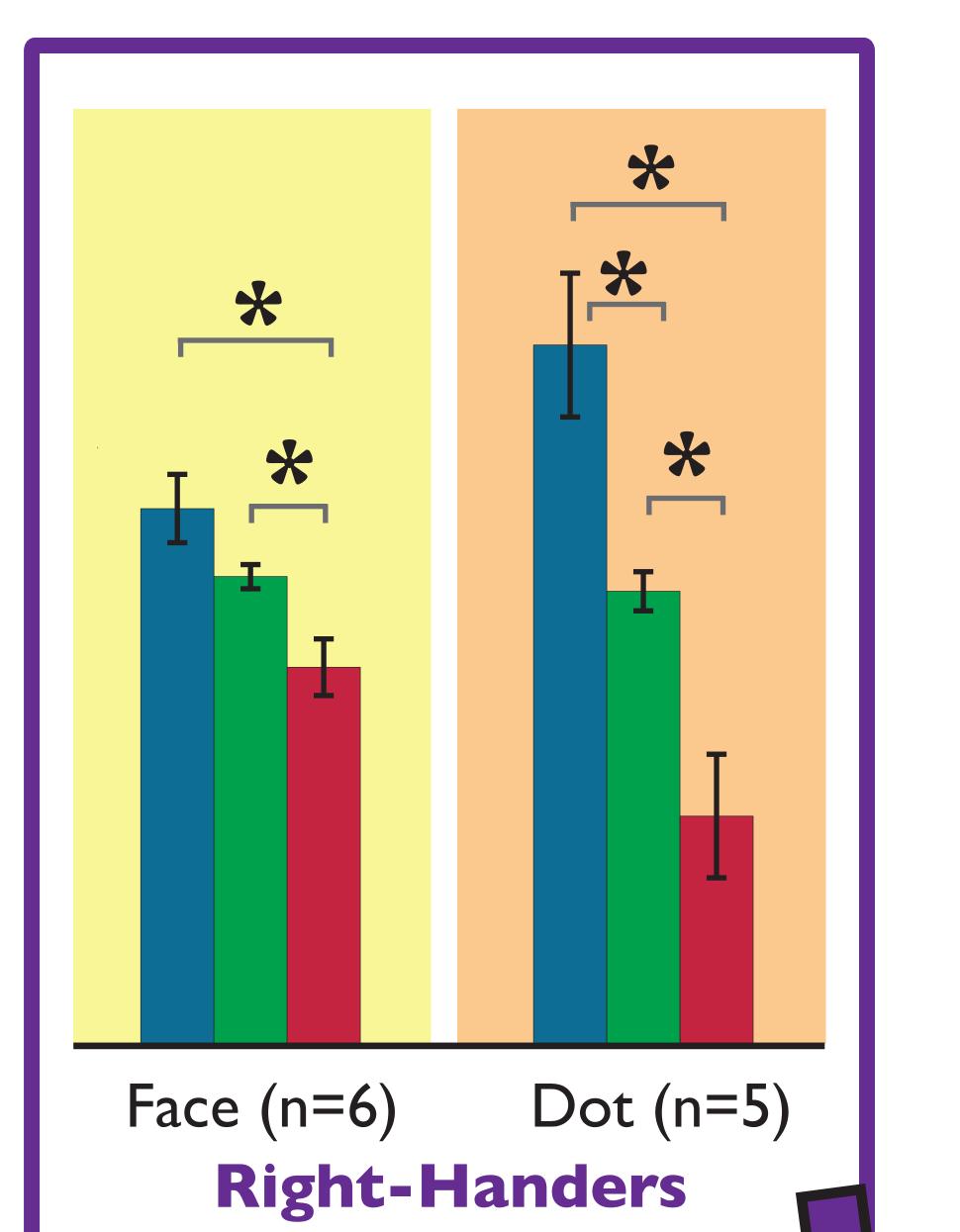


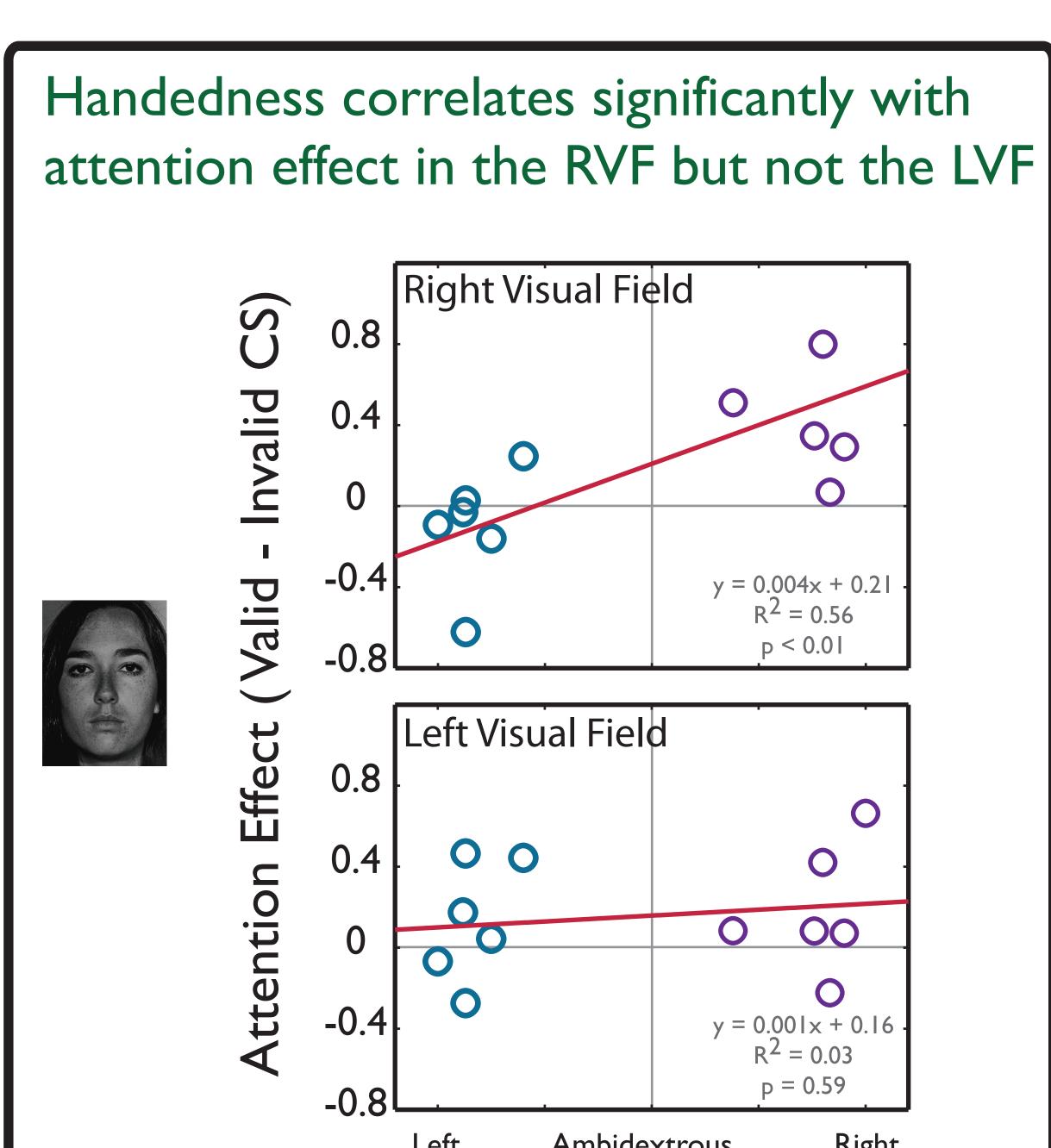
Left-Handers

Face (n=6)

Dot (n=5)

No attention effect for left-handers when cued with faces





Handedness Score

Summary

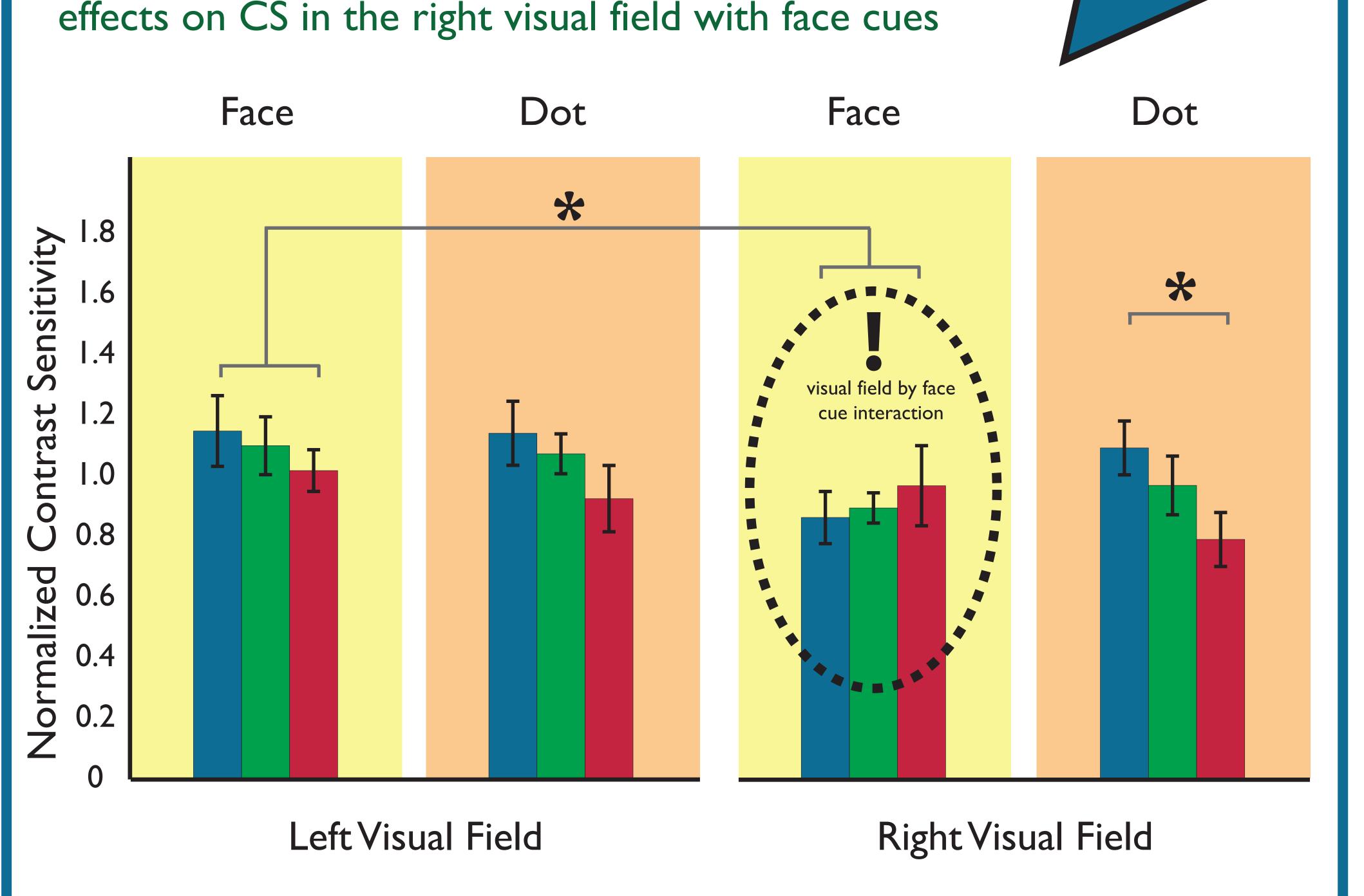
Right-handers show effects of attention on CS across the visual field with **both** face and dot cues

Left-handers show **opposite**effects of attention on CS
across the visual field with face
cues

Dot cues elicit effects of attention on CS for both right-and left-handers

Left-Handers show the *opposite* pattern of attention effects on CS in the right visual field with face cues

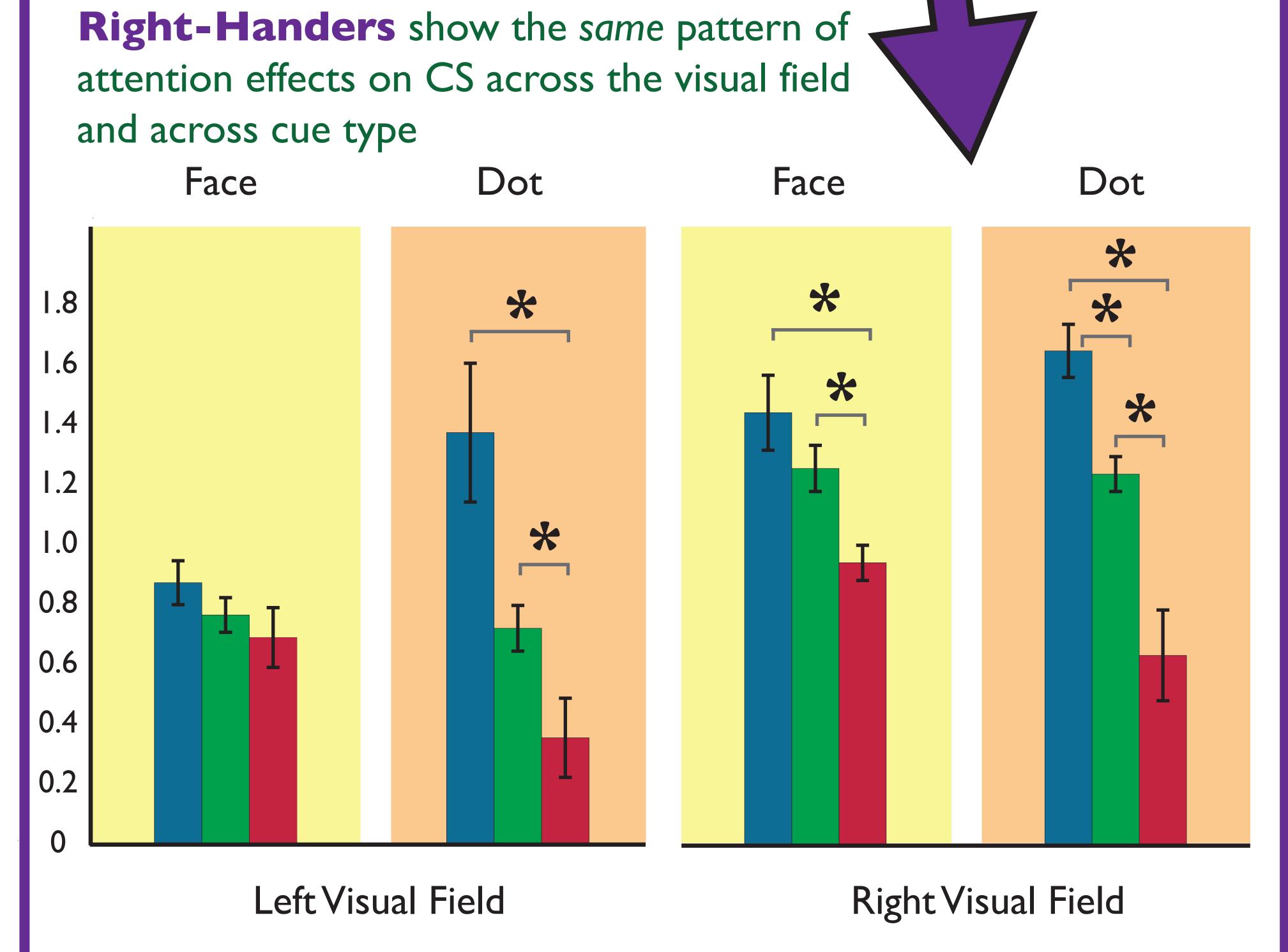
Face (n=12) • Dot (n=10)



Valid Cues

Invalid Cues

Distributed Cues



Conclusion

Do face and dot cues work in the same way to elicit attention?

It depends whether you are right- or left-handed.

In right-handers, attention and face processing are dominant in the right hemisphere

Left-handers may have less functional asymmetry in attention and face processing; in addition they are less homogeneous

The present differential effects may be specific to face cues. Faces are special stimuli:

They communicate important social information Our visual systems are "face recognition experts"

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