**Background & Objectives**

**Main Question:** Is awareness necessary for Synesthetic color perception?

- Grapheme-Color Synesthetes perceive color in achromatic letters.
- Previous studies have shown that some behavioral measures of synesthetic perception (congruency effects) disappear when color-inducing stimuli are masked [1].
- However, it is unclear whether neural correlates of synesthetic color perception are preserved when Synesthetes are unaware of the inducing stimuli.

ERPs elicited by achromatic letters and false-fonts during the attentional blink were compared in Synesthetes and matched controls.

**Stimuli**

- False-fonts were generated by rearranging the component parts of all 26 letters of the Roman alphabet.
- Synesthetes were pre-tested and false fonts that elicited color percepts were excluded from the study.

**Methods**

- Ten grapheme-color Synesthetes completed the Eagleman synesthesia battery [2].
- Ten control subjects were matched for age and biological sex.

**Synesthetes**

- On each trial, T2 was presented at one of 5 SOAs: Lag 1, 2, 3, 5, or 9.
- The color patch following the RSVP stream was congruent or incongruent with the color elicited by T2 for each Synesthete.

**Results: Behavioral**

No significant differences in T2 accuracy between Synesthetes and matched controls at any lag (data shown is for all subjects).

**Results: Event-Related Potentials**

- Synesthetic color perception was uniquely indexed by 2 ERP components: the sensory effect of color & the incongruence negativity.
- Both ERP effects were absent for unseen stimuli during the attentional blink.

Synesthetic color perception appears to require attention and awareness.

**Summary & Conclusion**

- Future studies can use these ERP components as implicit markers of synesthetic color perception along with various paradigms to manipulate attention and awareness.

**References**
