PSI 428
Attentional Processes

Attentional Set

Learning Objectives

- **Orienting attention with endogenous vs. exogenous cues**
- Does exogenous cues really reflect voluntary attentional orienting?
- Article Presentation

Endogenous vs. Exogenous Cues

- **Endogenous :** Originating internally (tfd.com)
- Visual attention is voluntarily directed to a non-fixated location in visual space based on an instruction.
- **Exogenous:** Originating externally (tfd.com)
- Visual attention is automatically directed to a non-fixated location in visual space by an abrupt change in the visual field.

Endogenous cue

Endogenous cue

Endogenous cue

Exogenous cue

Exogenous cue

Exogenous cue

Exogenous cue

Endogenous vs. Exogenous Cue

Endogenous vs. Exogenous Cue

Endogenous vs. Exogenous Cue

Endogenous vs. Exogenous Cue

Exegenous cue

Endogenous vs. Exogenous Cue

Endogenous vs. Exogenous Cues

- When attention is focused to a location, visual onset presented at nonattended locations do not interfere.
- By voluntary focusing, the attention-attraction effect of peripheral onsets and offsets can be eliminated.

Does exogenous cues really reflect voluntary attentional orienting?

- Endogenous cues work because they are **predictive of the location of the stimuli**
- «But there is a large and growing body of evidence indicating that reflexive orienting is triggered by central spatially **nonpredictive** directional cues, such as arrows.» (Ristic and Kingstone, 2006)

Does exogenous cues really reflect voluntary attentional orienting?

- Central arrows, since they were highly overlearned stimuli, can trigger rapid automatic shifts of spatial attention similar to exogenous cues.
- Therefore, **observed effects with central arrows might not reflect orienting attention with endogenous cues**

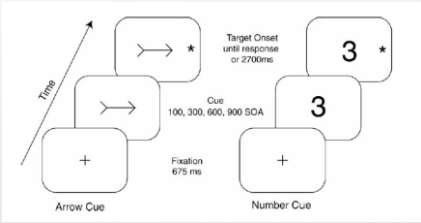
Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic & Kingstone (2006)

- **Method**:
- **Task**: where the asterics appeared (up, down, left or right?)
- **Predictive Cues**: The cue predicted the location %80 of the time
- **Unpredictive Cues**: The cue predicted the location %25 of the time

Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic & Kingstone (2006)



Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic & Kingstone (2006)

- **Number cues:**
  - "1" predicted a target at the top,
  - "3" a right target,
  - "6" a bottom target,
  - "9" a left target.

Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic & Kingstone (2006)

- **Arrow cues:**
  - predicted a target at the top,
  - a right target,
  - a bottom target,
  - a left target.

Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic & Kingstone (2006)

- **Method:**

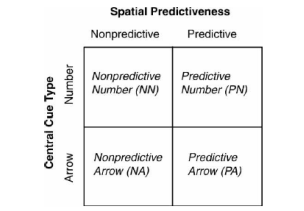


Figure 1. *Experimental conditions. A 2 × 2 matrix of the balanced within-subjects design used in the study, with cue type (arrow; number) and cue predictiveness (nonpredictive; predictive) included as factors.*

Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

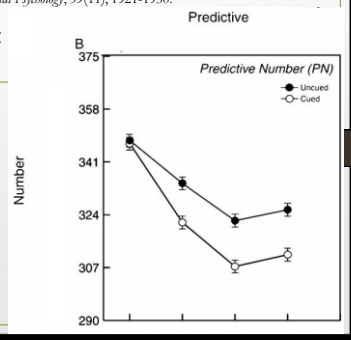
Ristic & Kingstone (2006)

- **How does this design observed investigate whether effects with central arrows reflect orienting attention with exogenous cues?**
-

Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic

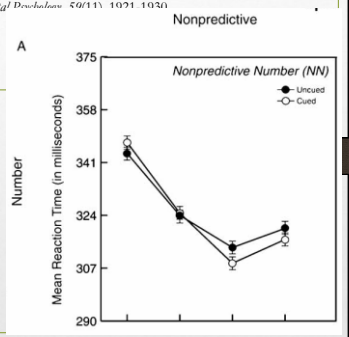
- Results:



Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic

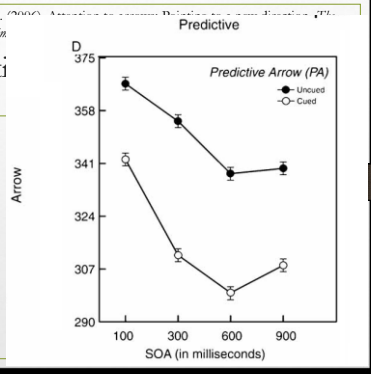
- Results:



Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Risti

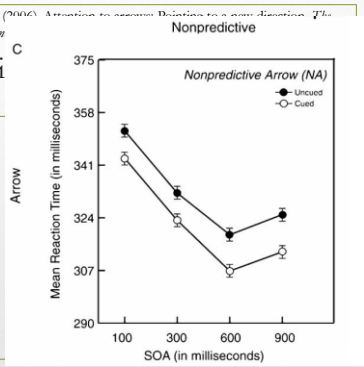
- Method:



Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Risti

- Results:



Ristic, J., & Kingstone, A. (2006). Attention to arrows: Pointing to a new direction. *The Quarterly Journal of Experimental Psychology*, *59*(11), 1921-1930.

Ristic & Kingstone (2006)

- **Conclusion:**
- The central arrows can shift attention like exagenous cues.
- The previously observed results with central arrows do not reflect «pure» effects of endogenous cues.