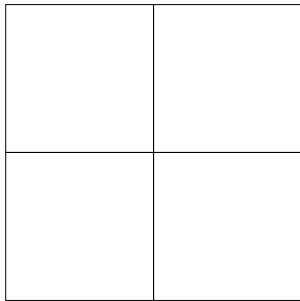


Visual Attention

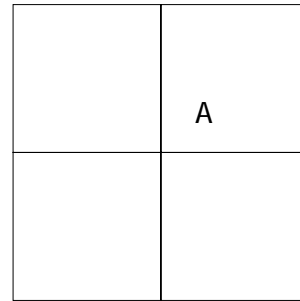
Spotlight Model (Posner)

- Focus visual attention to an area by using a **cue**
 - “Spotlight” or “zoom lens”
- measure time to identify target item when:
 - observer **does not** know where item will appear
 - observer **does** know where item will appear
- **cue** is a briefly presented dot at the location of target

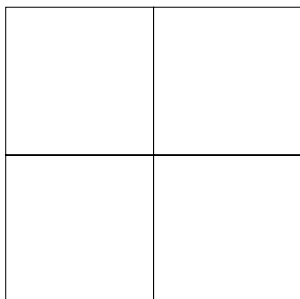
- no cuing: what letter appears?



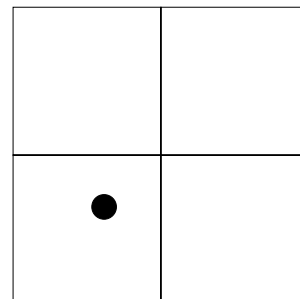
- no cuing: what letter appears?



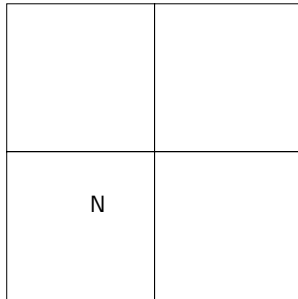
- with cuing: what letter appears?



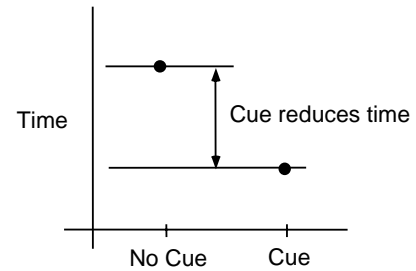
- with cuing: what letter appears?



- with cuing: what letter appears?

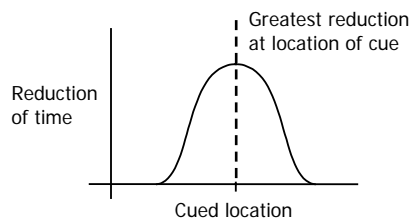


Results: Cue versus No Cue



Advance knowledge of location improves performance

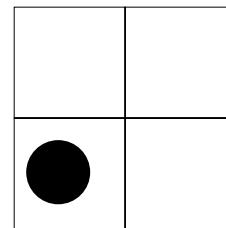
Results: Relative position of Cue



Amount of reduction depends on distance from cue
-attention is like a spotlight or a zoom lens

Cue triggers “formation of a spotlight”

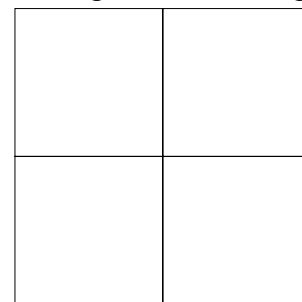
- whatever is in spotlight is attended
- more it is attended, the better it is processed
- size, shape of spotlight can be controlled

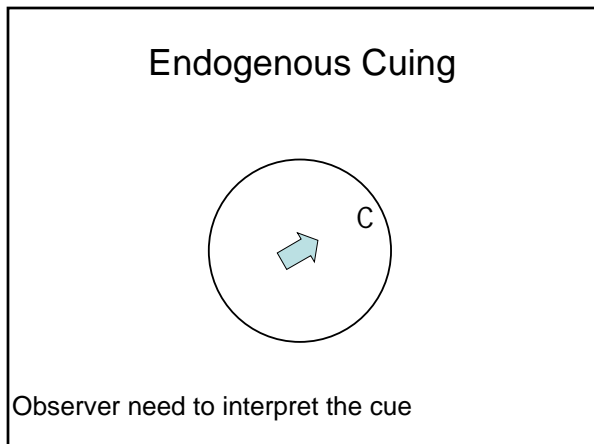
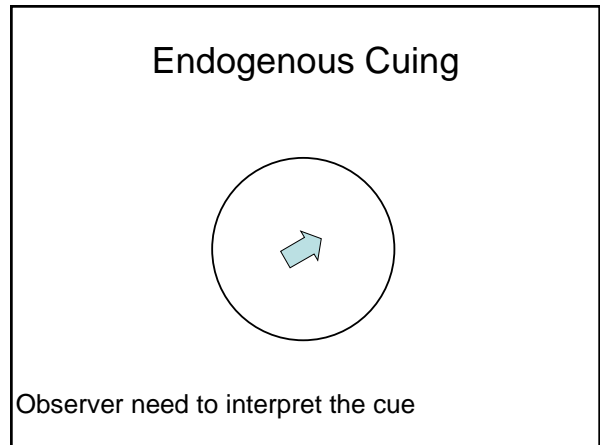
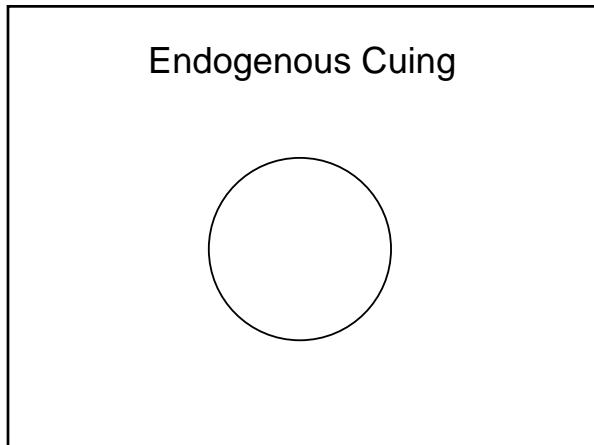
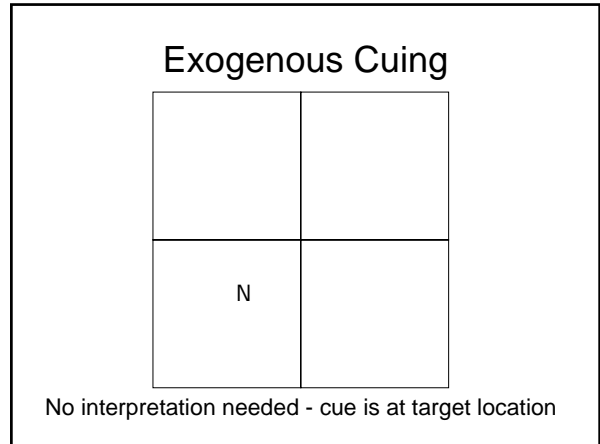
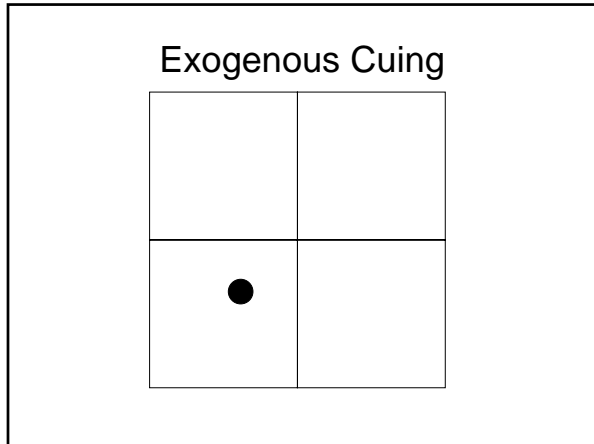


Different types of cues

- exogenous (*outside generating*)
 - low-level “reflexes”
 - sudden changes (e.g., flash or movement)
 - draws attention automatically
- endogenous (*inside generating*)
 - high-level control
 - instruction (via some kind of visual sign or pattern)
 - sends attention to requested location

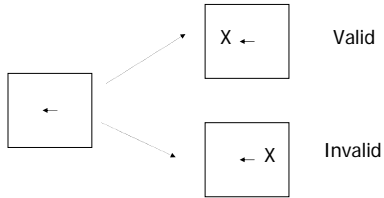
Exogenous Cuing





- Effect of Cues**
- Both types of cues control the same attentional mechanism (spotlight) but reflect different strategies
 - a) exogenous (*low-level control*)
 - bottom-up control of attention
 - based on what's actually happening in environment
 - b) endogenous (*high-level control*)
 - top-down control of attention
 - based on what observer believes

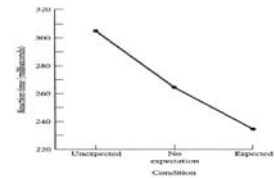
Cuing Task (Posner Task)



The Attentional Spotlight and the Fovea

The Attentional spotlight and the fovea

Posner, Nissen, and Ogden (1978)



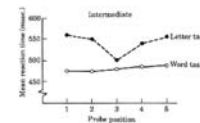
An Adjustable Width Spotlight? (zoom lens)

- Condition 1
 - Categorize the central letter of a five letter word
 - Respond to probe as quickly as possible
 - H O U S E
 - _ _ _ 7 _
- Condition 2
 - Categorize a five letter word
 - Respond to probe as quickly as possible
 - H O U S E
 - _ _ _ 7 _

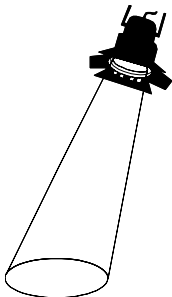
LaBerge (1983)

LaBerge (1983)

HOUSE



Visual Attention



- Can be directed at particular regions of space
 - Exogenous Cues
 - Endogenous Cues
- Facilitates/Inhibits target detection
 - Attended/Unattended
- Adjustable Width