

# **Attention**

Selective Attention

Divided Attention

# Selective Auditory Attention

Cherry's (1953) shadowing studies

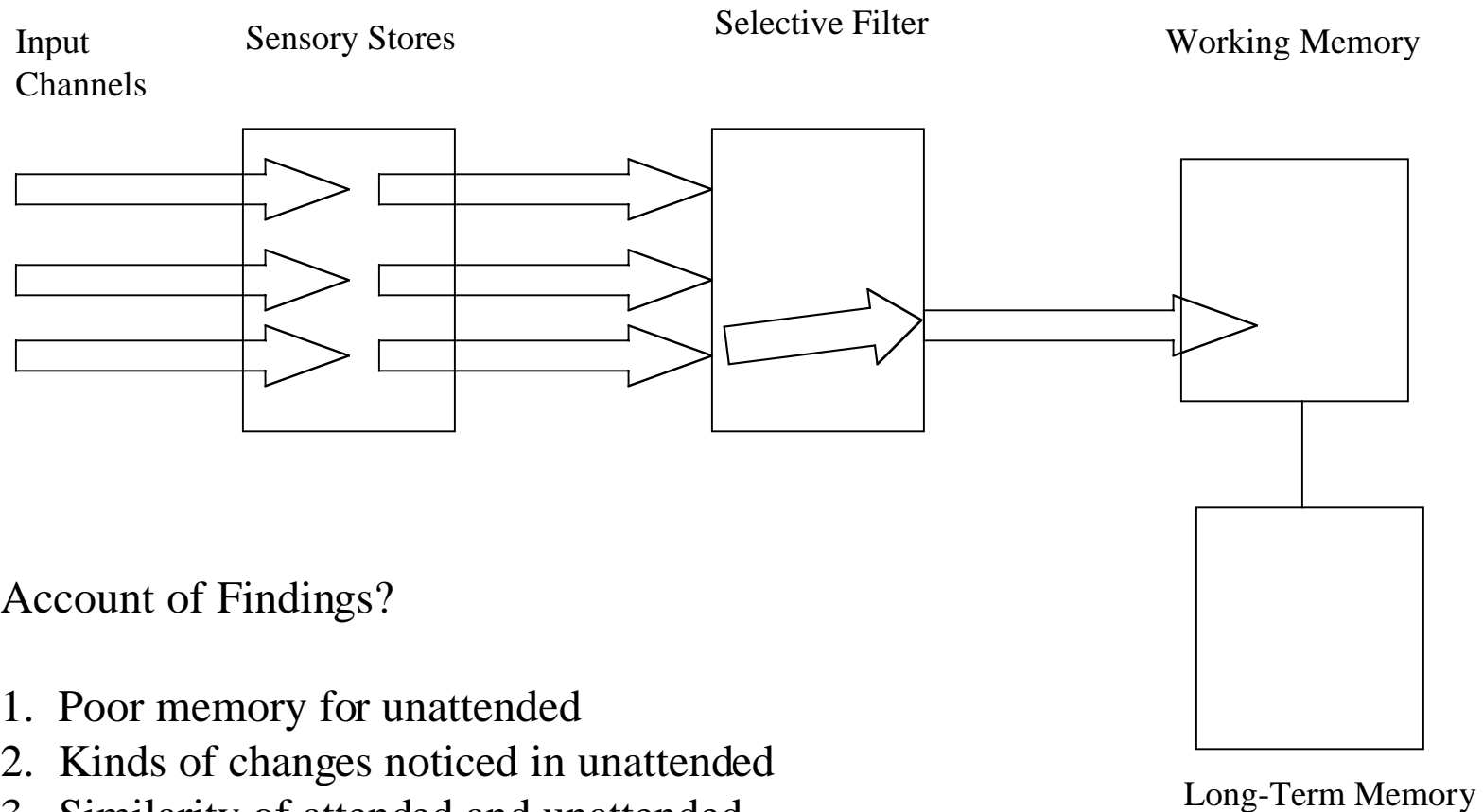
Variations in unattended message

1. Switch from male to female speaker
2. Switch from person to tone
3. Switch language with same speaker
4. Switch topic with same speaker

Variations in similarity of attended and unattended

1. Difference in pitch
2. Difference in spatial location
3. Difference in topic

# Broadbent's Filter Theory (Early selection)



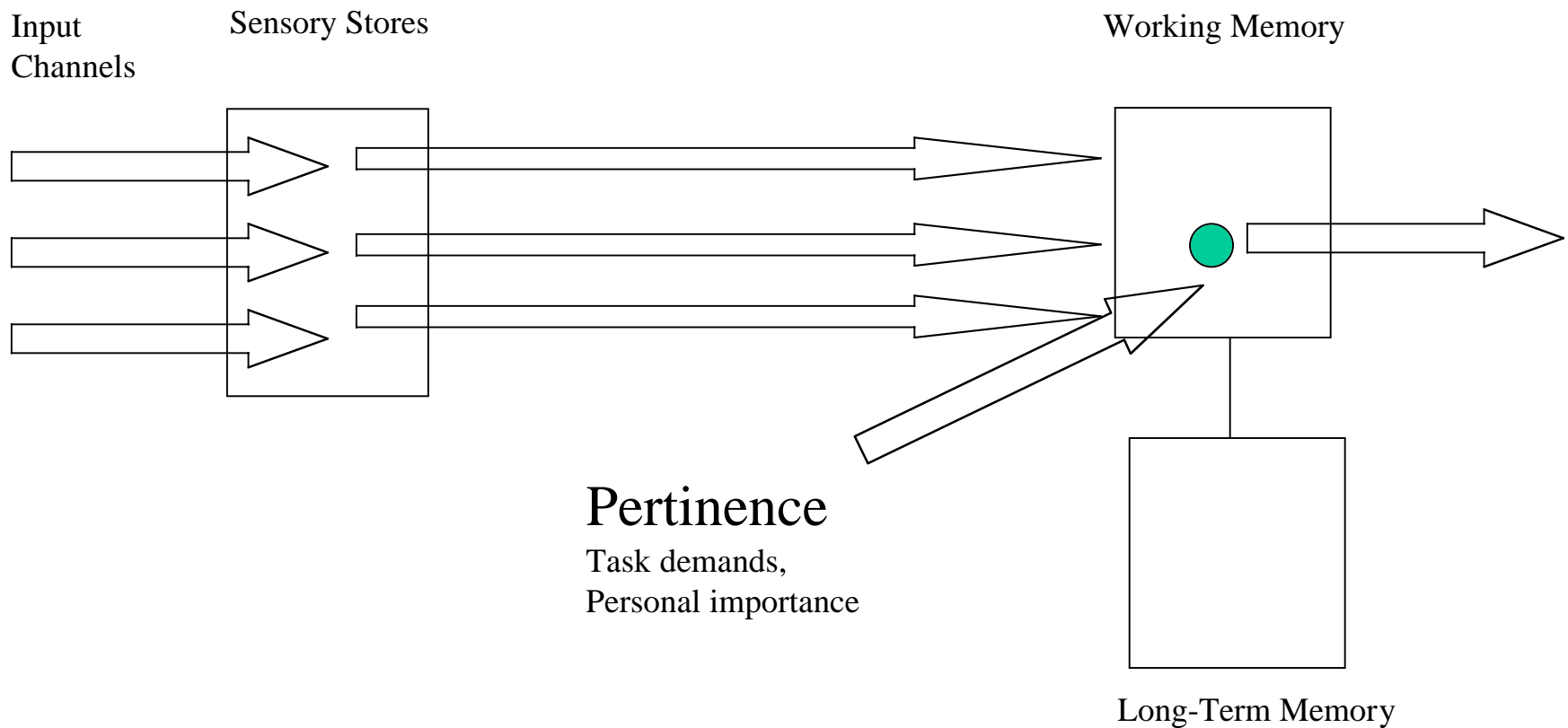
## **Problems for Early Selection?**

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1. Memory for unattended may depend on familiarity, importance to subject  
(e.g., subject's own name - Moray, 1959)
2. Effects of practice on detecting information in unattended -  
E.g. detect digit in unattended for naïve and practiced subjects
3. Implicit but not explicit memory for unattended -  
Words paired with shock on unattended cause GSR when presented later
4. Subjects can shadow meaningful message that switches from ear to ear (dog six fleas - one ear, eight scratch two- other)
5. Better memory for unattended when modality distinct from attended (e.g., pictures vs. words in unattended when shadowing words)

## Late Selection Theory -

Everything processed to level of meaning, pertinence determines further processing and action (Deutsch & Deutsch, 1963)



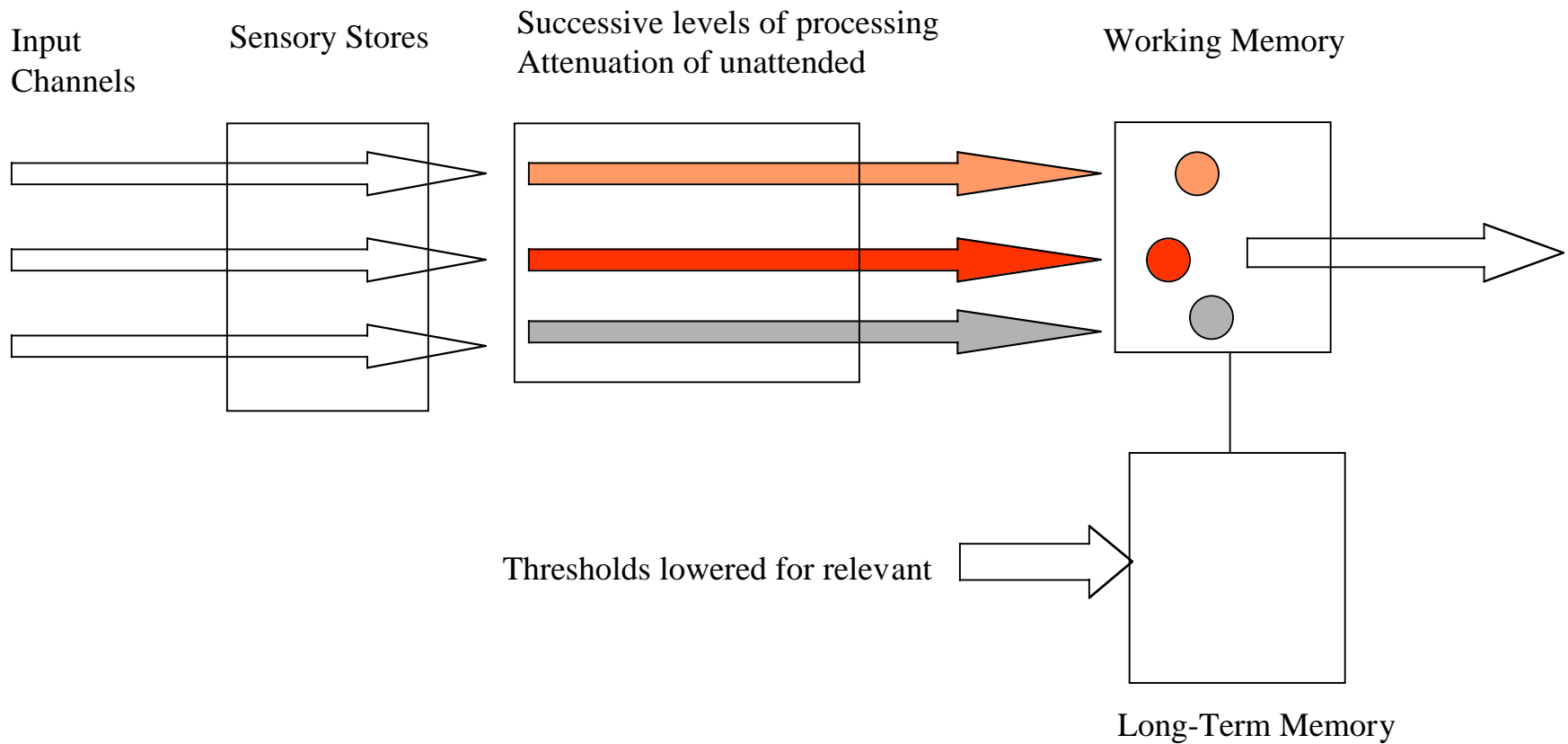
## **Problems for Late Selection?**

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1. Make digits target whether on shadowed or non-shadowed. Pertinence equated. 87% attended, 8% unattended
2. Doesn't explain similarity of attended vs. unattended
3. Neurophysiological evidence of enhanced neural processing at early stages of processing (e.g., occipital areas for visual input)



# Filter attenuation theory (Triesman, 1964)



## Selective Visual Attention

Visual attention as spotlight - **spatial** basis

Zoom lens - spotlight can be smaller or larger depending on task

Spatial attention movement can be covert - not tied to eye movements

## **Posner cueing paradigm**

Detection of target - spot of light appearing on one side of screen

Pre-cue: exogenous (peripheral box outline)  
          endogenous (central arrow)

Varied proportion of valid and invalid cues

Valid exogenous trial

+









Invalid exogenous trial

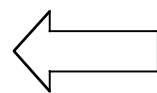
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Valid endogenous trial

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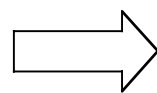






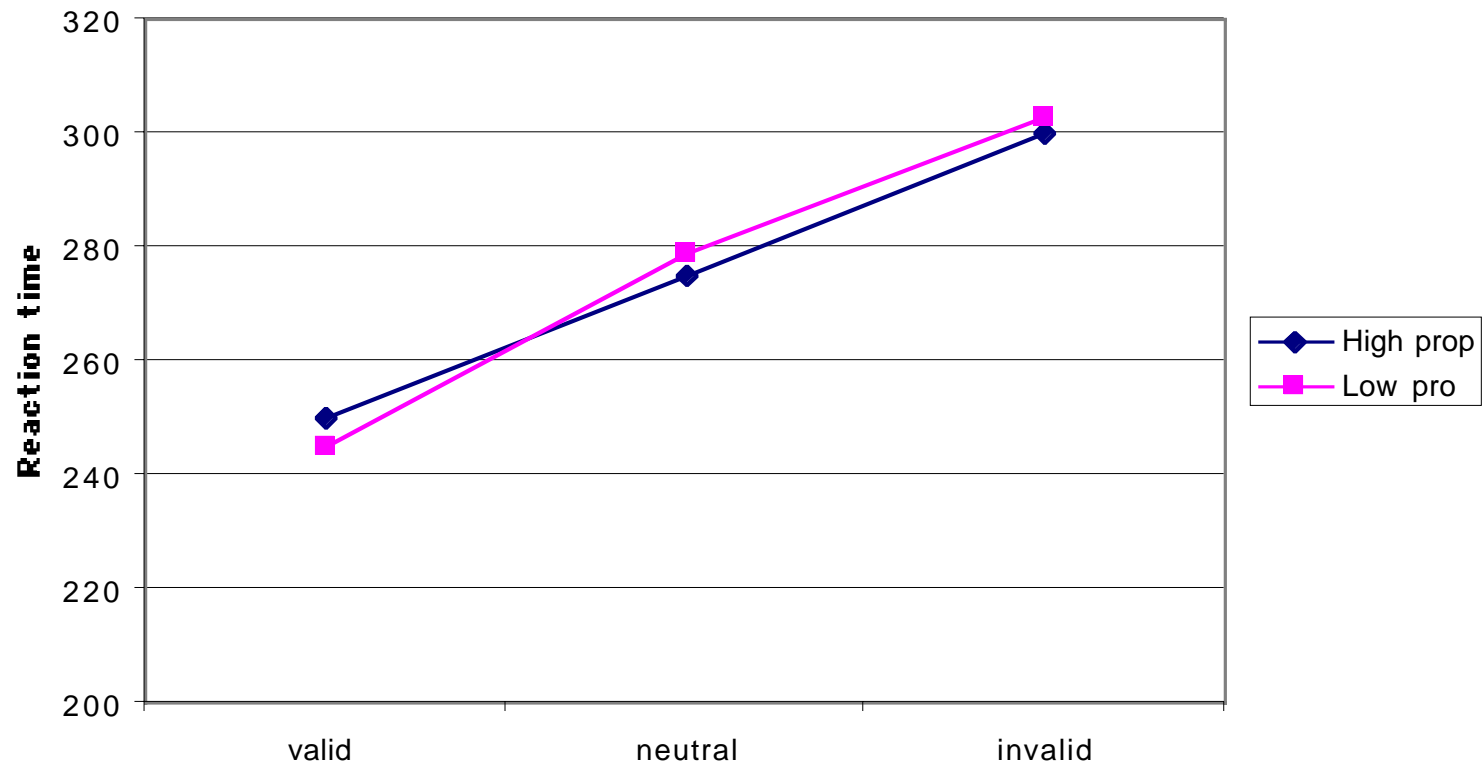
Invalid endogenous trial

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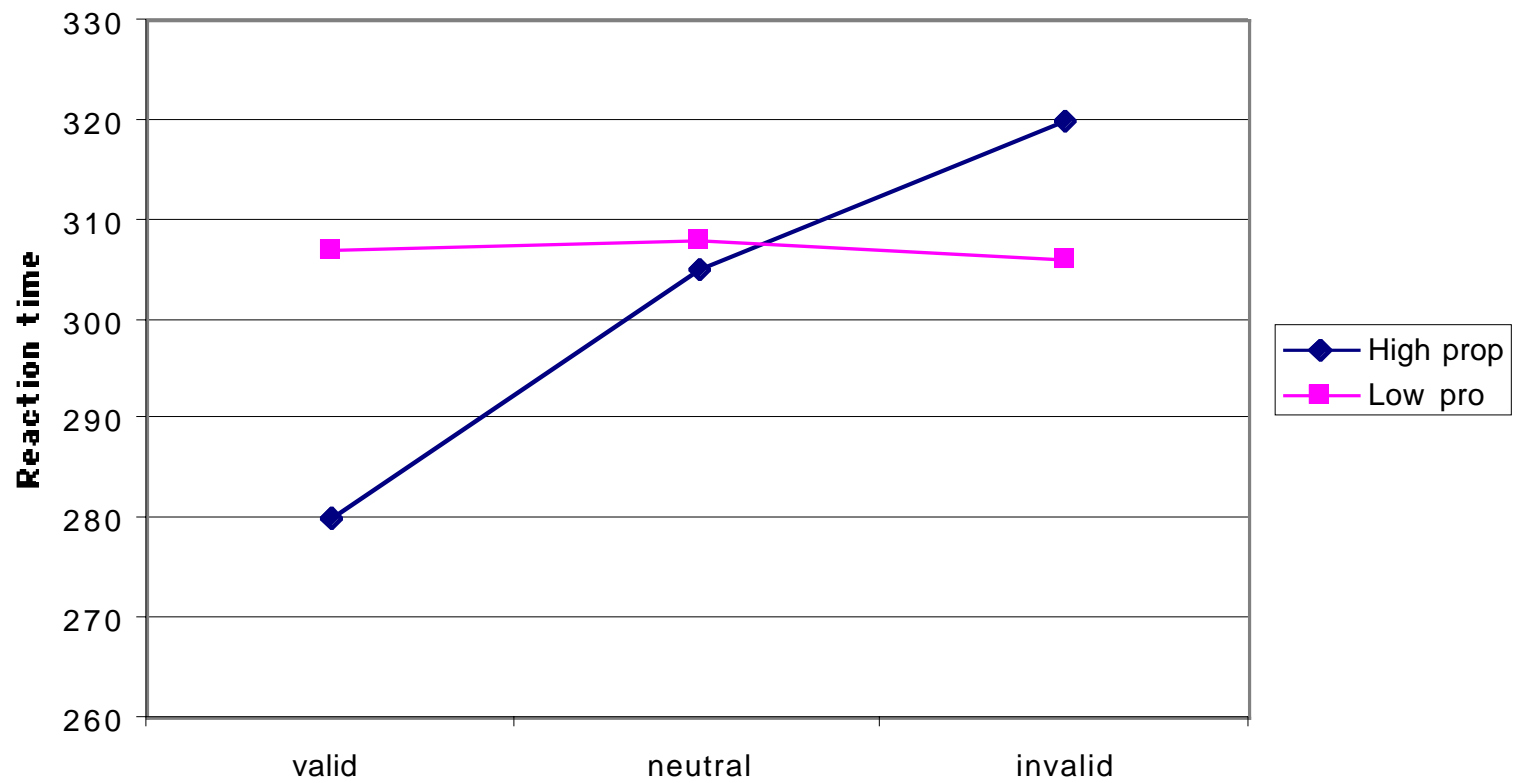




### Exogenous cue - Peripheral box



### Endogenous cue (arrows)



## **Implications**

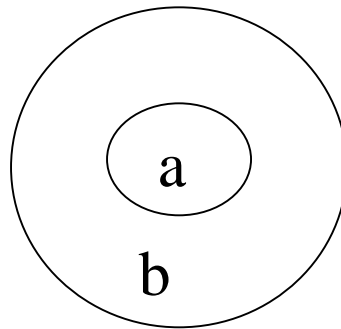
Attention to side of space speeds processing in that location

For exogenous cues, attention drawn despite intentions



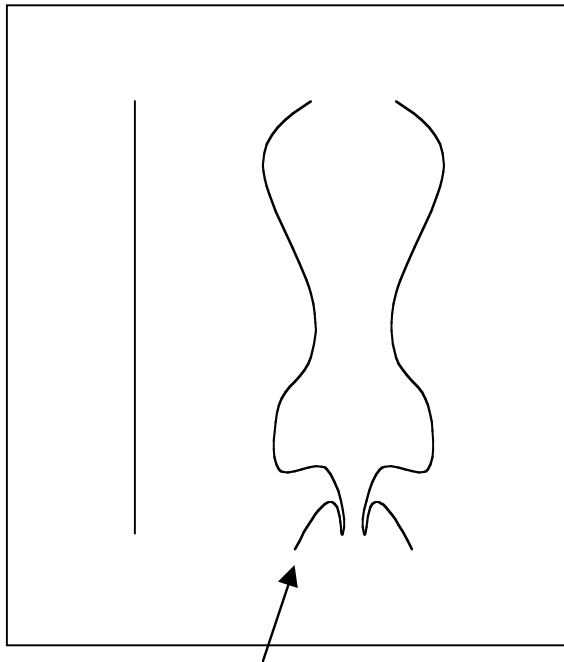
## **Problems for spotlight view of visual attention**

Juola, Bowhuis, Cooper, & Warner (1991)

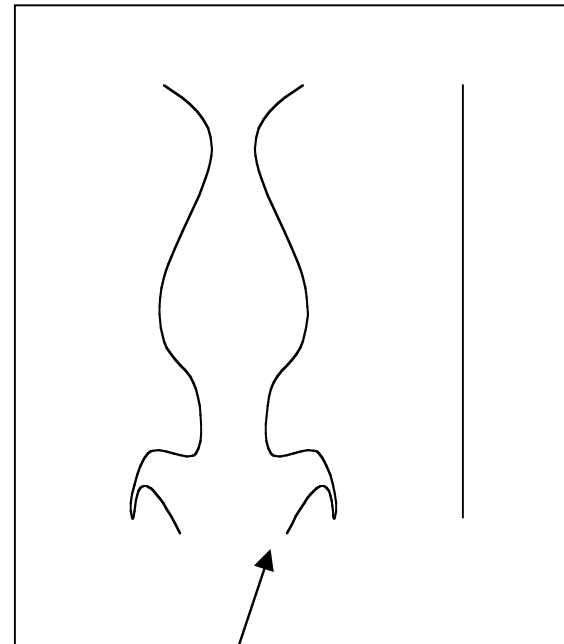


## Attention to objects - neglect patients

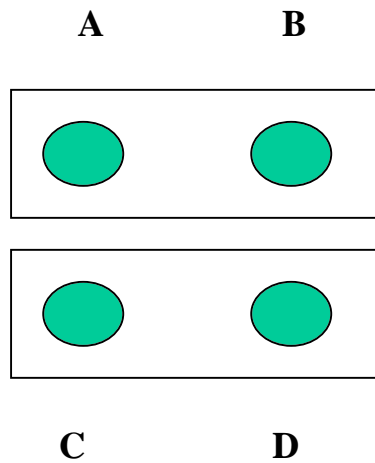
Neglect left side of space



Target line

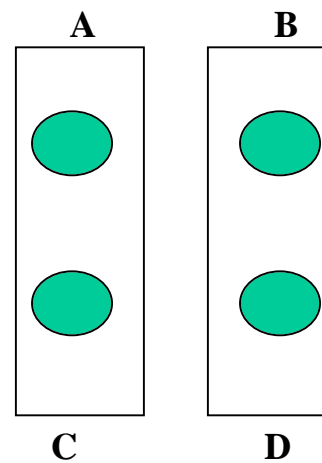


Target line



Pre-Cue with Location B

More facilitation for A than D



Pre-Cue with Location B

More facilitation for D than A