

# Lecture 5: Attention

Dr. Tony Lambert

Reading:

UoA text, Chapter 5, *Sensation and Perception*

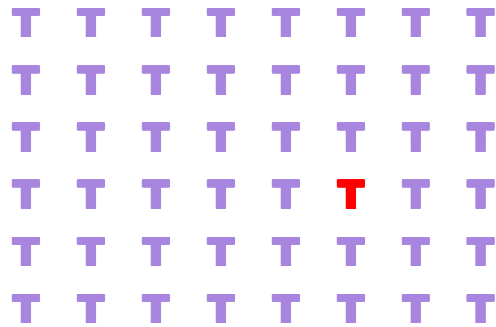
(especially pp. 151-159)

## Attention

- At any instant a myriad of stimuli arrive at our sensory receptors
- Competition for attention

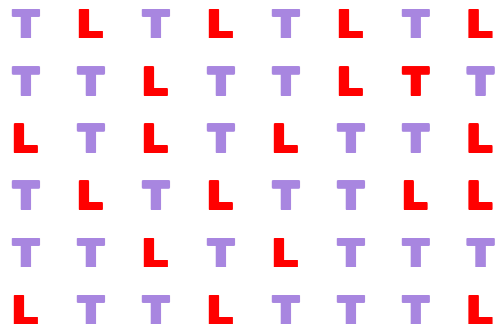
### What grabs attention?

On the next slide, locate the red T



### What grabs attention?

On the next slide, locate the red T  
(Again)



## What grabs attention?

- Objects that differ from the background in terms of one simple feature 'pop-out'
- Objects that differ from the background in terms of more than one feature do not pop out

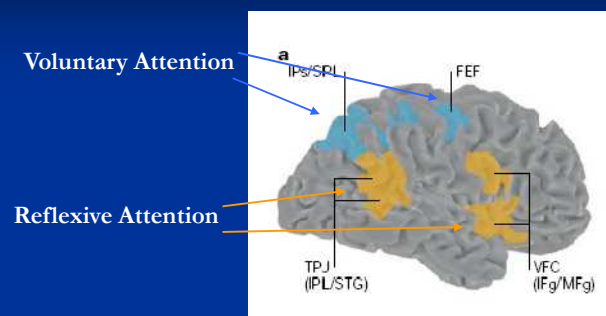
## Two kinds of attention

- Reflexive attention vs. voluntary attention
- Brain networks for shifting attention
  - The fronto-parietal attention network

## Fronto-parietal attention network

- Voluntary attention
  - Both hemispheres
  - Superior frontal cortex and parietal cortex
- Reflexive attention
  - Lateralised to right hemisphere
  - Inferior frontal cortex & junction of parietal and temporal cortex

## Fronto-parietal attention network



## Perception without awareness

- Blindsight
- Lesion in occipital lobe – primary visual cortex - V1
- Cortical blindness

## Blindsight

- Term introduced by L. Weiskrantz
  - Patients: DB & GY
- Forced choice responding
- Can discriminate line orientation in 'blind' field
- Can discriminate striped patterns from grey patches

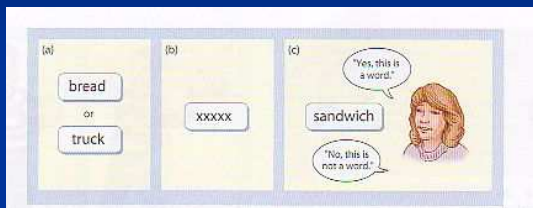
## Blindsight

- Good performance – but participant insists that he sees nothing.
- Responses are *pure* guesswork

## Perception without awareness

- Subliminal perception & the semantic priming effect
- Marcel's studies
  - Pattern masking

## Marcel's experiments



- Problems of replication

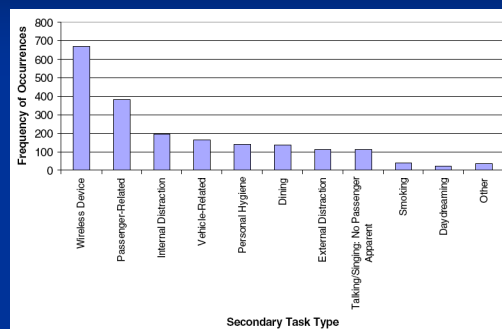
## Forms of transient blindness

- Change blindness

## Forms of transient blindness

- Inattentional blindness

## Crash liability & inattention



## Attention & conscious perception

- *“Attention provides the key that unlocks the gate dividing unconscious perception ... from conscious perception.”*
- *Without this key there simply is no awareness of the stimulus.”*
- Mack and Rock 1998

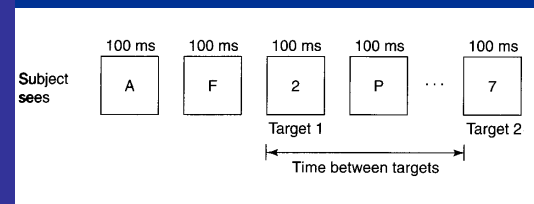
## Forms of transient blindness

Repetition blindness and the attentional blink

## The attentional blink

- RSVP (rapid serial visual presentation) technique
- Sequence of 10-20 items presented for 100ms each
- Look for numbers in the rapid sequence

## The attentional blink



## The attentional blink

- Second target is often not seen if it follows the first within about 500ms
- Detection of first target – obligatory capture of attentional resources for about 500ms

## Summing Up

- Two forms of attention
  - The fronto-parietal attention network
- Is perception without awareness possible?
  - Blindsight
  - Subliminal & semantic priming
- In the absence of attention, perception can fail in surprising ways