

Joint UK NEQAS (BTLP)/BBTS Annual Meeting 2012

The Psychology of Distraction

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My original formulation

Distractors:

Environmental

Interpersonal

Intrapersonal

Lab visit

- **Environmental:** - policies exist to reduce
 - view through windows irrelevant
 - phone calls, porters ringing bell distracting
- **Interpersonal:** occasional pressure/rudeness from doctors
- **Intrapersonal:**
 - 'waiting for the next emergency'
 - Tiredness – impact of shift patterns?

SHOT data 2011 - learning points

Within lab

- Sample identification at every stage
- Don't interrupt
- Use SOPs
- No short cuts
- *Negotiate unreasonable demands*
- *Request clinical history if anomalies*

General

Communication: ward-lab;
patient notes (eg need irradiated)

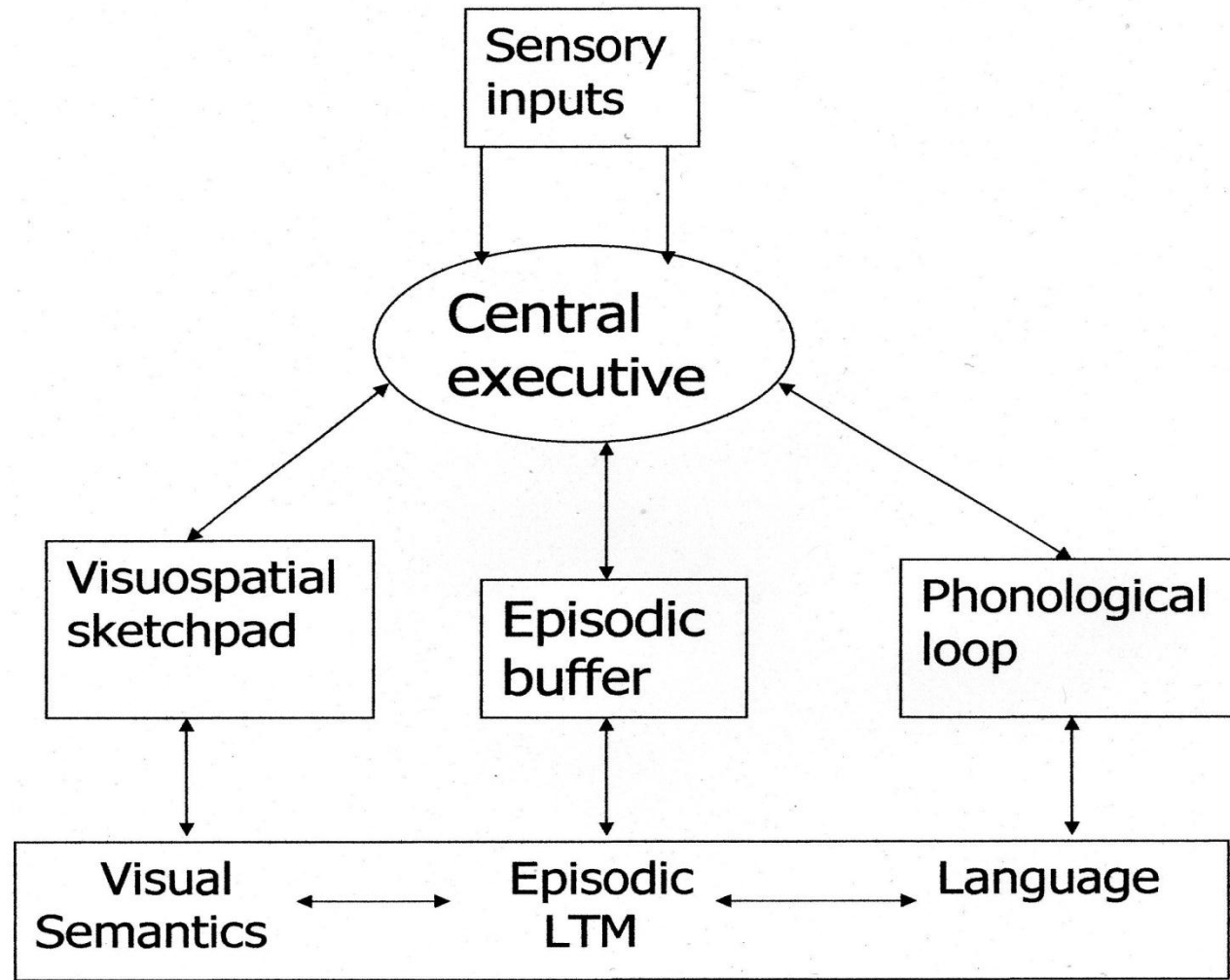
Error & miscommunication increase in emergencies

Strategies for *distraction, tiredness, repetitive tasks*

How can psychology help?

- Model of attention & effects of distraction
 - How stress affects performance
 - Influence of emotions
 - Research on tiredness
- Blocks to assertive communication

Baddeley's model of Working Memory



Effects of distraction on working memory

Central executive receives inputs from:

- Sensory stimuli
- Visual scratchpad
- Phonological loop
- Episodic buffer
- Long term memory

The system has limited capacity

More interference from same modality

Phonological loop can over-ride distraction -

Visuo-spatial can't as easily

*Count how many times the word 'anomalous'
appears in the following slides*

manifolds

ambitious

distinctions

Mississippi

automatic

archbishop

peregrines

anomalous

zoological

astronomical

manganese

politicians

autonomous

additives

Ganges

horticultural

adventurous

containers

trapezium

artificial

autocues

Thames

barbarous

anomalous

anomalous

evidential

autonomous

dangerous

haematite

amorous

Danube

generous

anomalous

believable

popularity

adventures

ammunition

androgynous

autumnal

aboriginal

1. How many times did 'anomalous' appear?
2. Write down any other words you remember seeing

*Count how many times the word 'anomalous'
appears in the following slides*

avaricious

environment

Sandwich

dishwasher

Audible

acoustics

ancestral

wardrobes

automobile

Worcester

warehouse

elephants

overcoats

androids

Edinburgh

battalion

electrical

managers

anomalous

mannequin

dexterity

appetising

terracotta

scandalise

Bulgaria

champagne

autoclave

anomalous

arboreal

tangerine

novelists

Budapest

CHOCOLATE

advertise

apartments

universal

feminine

scientists

boisterous

anomalous

1. How many times did 'anomalous' appear?
2. Write down any other words you remember seeing

1. How many times does the word 'anomalous' appear?

And

2. How many words beginning with 'f' are there?

magnificent

machines

secretive

seventeen

Appalachian

anomalous

flirtatious

banshees

demanding

fundamental

Appenine

doctors

anomalous

franchises

automate

chickens

anomalous

meanders

frisbees

coronation

autonomy

avalanche

boulders

adenoids

Pyrenees

portable

fingers

examine

magical

potters

jumbalaya

assistants

Himalayas

fallible

sideboard

tortellini

potatoes

fractions

architects

autocrats

1. How many times did 'anomalous' appear?
2. Write down any other words you remember seeing

The first trial was fairly easy – the *perceptual load* was LOW as was the *cognitive load*

The second trial had the same level of *cognitive load*, but a busier visual input made the *perceptual load* HIGH

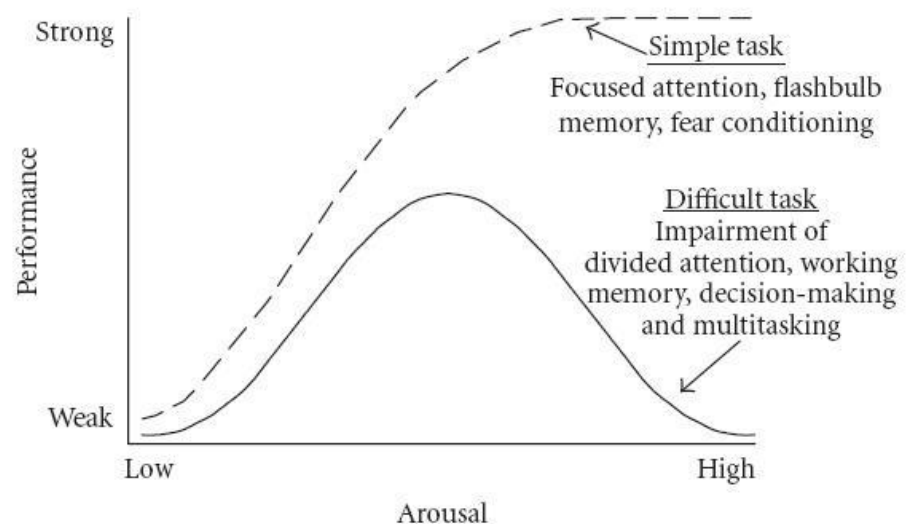
The final trial was back to a LOW *perceptual load*, but the *cognitive load* was HIGH

How stress affects performance (Yerkes-Dodson curve)

Stress is more likely when situation is one or more of:

- novel
- unpredictable
- outside individual's control
- likely to cause social disapproval/rejection

Glucocorticoids increase memory of emotional stimulus and decrease memory of other aspects (Lupien et al, 2007)



Impact of emotions

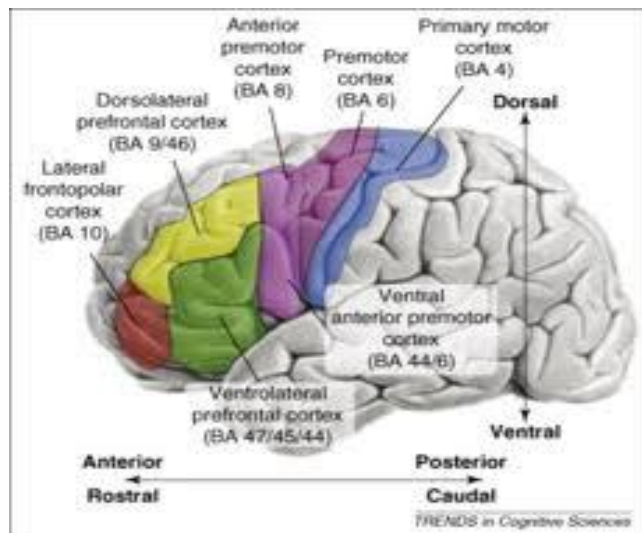
Negative emotions (eg imagining obstetric emergency/panicky porter):

- 1) increase stress (lack of control/fear of disapproval)
- 2) reduce working memory capacity

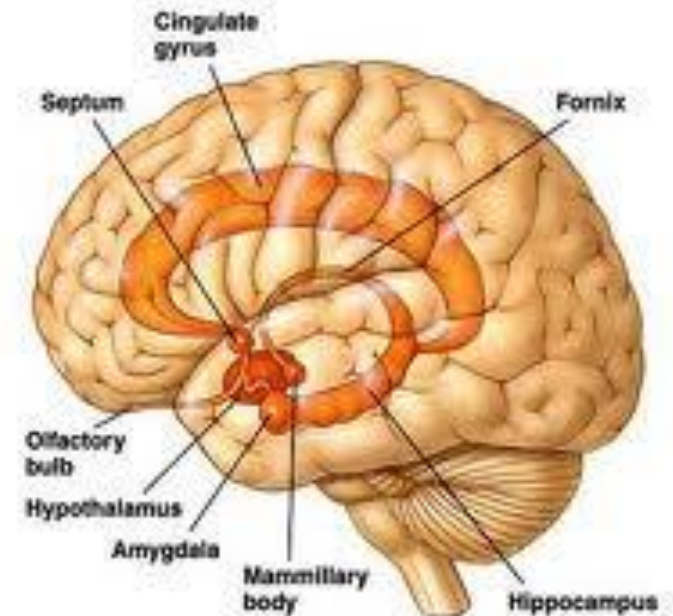


Anatomical correlates of working memory and emotional processing

Working memory associated with dorsolateral & ventromedial prefrontal cortex



► Location of Major Limbic System Structures



Emotional aspects of distraction

Anxiety (nervous apprehension) about 'when's the next emergency?' > emotional processing > decreased working memory capacity.

'Emotional regulation' techniques (reappraisal, suppression, soothing, meditation) all increase working memory capacity. Suppression less effective (reaction time remains slower after negative stimulus removed).

Ortner et al, 2012

Tiredness and concentration

**Root causes of SAEs (2011) - Human Error
(n = 788) (MHRA/Judy Langham):**

- Concentration – 29%
- Procedural steps omitted – 23%

Both likely to be impacted by tiredness

Research on shift work

AUTHORS	SUBJECTS	COMPARISONS	RESULTS
Chung et al, 2009	Many - review	Many	Women more subject to sleep disturbance; many factors influence impact of shift work on performance and health
Fido & Ghali, 2008	400 males at Kuwait Oil Company	Varying 8 hour shifts/fixed day shift	Fatigue, loss of concentration, poor work performance, more errors & accidents at work, more absences
Grosswald, 2003	2429 Americans	Day/evening/night Rotating/split	Rotating, night & split most impact on mood energy and fatigue
Gold et al, 1992	635 US nurses	Day/evening rotating	Rotating: 2x more likely: nodding off at work/on drive to or from home; errors or accidents at work; sleep disturbance

Blocks to assertive communication

Fear of:

Causing upset/hurt

Looking arrogant or unfriendly

Saying the wrong thing

Being embarrassed

Beliefs that:

Pointing out mistakes is bad or cruel

'They'll make my life difficult'

'It was probably me that made the mistake'

References

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