*this series of experiments points to the* ***posterior parietal cortex as a key neural locus*** *of our impoverished mental representation of the visual world.*

-Ventral (what) and dorsal stream (where)

-Experiment where Ps had to determine if 1 of 2 shown gratings (lines) held in STM were rotated left or right: V1-4 activity predicted which grating was being held in memory.

-Models of **working memory**

-Association cortices

-TVA: also studies VSTM *encoding* speed

**Criticism:** Brain imaging is based on correlations

-Areas of IPS associated with visual control of hand, **another button pressing or hand-eye coordination area?**

-Subject age not stated, fully developed brains?

**Experiment 5**: ACC and V4 show up with lowered threshold

-BOLDr increased with set sizes above 4

-Did not show sustained response during maintenance

-**Activity may be due to response and perceptual functions**

-AKA button pressing and colour processing areas

**Experiment 2:** Could IPS/IOS activity be percept/iconic rep. of objects in scene rather than number of objects stored in VSTM? (scene complexity rather than items stored)

**Method:** Like exp. 1 w/o verbal task + only center position

-No retention or probe

-Minimal and equal VSTM demands across set sizes

**Results:** performance near ceiling for all set sizes (96-98%)

-Lower BOLD response and no effect of set size

**-IPS/IOS is not sensitive to perceptual load**

**-IPS/IOS only concerns number of objects encoded in VSTM**

**Experiment 1: fMRI data**

VSTM capacity areas should show BOLD response mirroring *K* function; fMRI data analysed for voxels in which activity is ‘explained’ by *K*-weighted set size coefficients.

-**IPS/IOS** fit this criteria (0.3 % sign. Change) **(Fig 2)**: both BOLDr and *K* increase w/ set size but level off at set size 3-4

-**Fig. 3a**: Time-course analysis confirms **association between IPS/IOS BOLDr and objects encoded**

-BOLDr not related to task difficulty: same response above 3-4

-Not saturated: higher sign. change (0.4%) observed due to summation of overlapping response in different experiment

**Experiment 4**: IPS/IOS still active in only object identity task?

**Method:** Like exp. 1 but probe at fixation, location irrelevant

**Results:** IPS/IOS activity still load dependent and correlated with *K*: **IPS/IOS involved in several forms of VSTM storage**

**Experiment 3**: Longer retention to distinguish phases of VSTM

**Method**: Same as exp. 1 but only set size 1 and 3

-Maintenance/retention phase from 1200 to 9200 ms

**Results (Fig 4.):** IPS/IOS more active at larger set sizes during encoding + retention but no difference during maintenance

**The IPS/IOS is sensitive to WM load mainly during encoding and maintenance rather than retrieval**

**What is STM/WM?**

-Memory held briefly in mind

-Most models agree STM distinct from (and earlier than) LTM

-VSTM: briefly holds visual information (not iconic memory)

**Experiment 1: Method and behavioural data**

Authors aim to find an area correlated with the capacity of VSTM using fMRI

**Method (Fig. 1)**

-**Dual-task paradigm** in fMRI scanner: phonological loop occupied by remembering digits presented via audio

-Memory set: 1-8 coloured discs for 150 ms, then **1200 ms retention** (to reduce both decay and iconic memory benefit)

-Probe: colour and position, then digit probe

**Results**: Verbal task independent from VSTM (92-94% acc)

-Acc in VSTM task declined with increased set size

-**Fig. 2**: **objects encoded estimated w/ Cowan’s *K* formula levelled off after set size 3-4.** Capacity: ~3-4 like in literature

-450ms encoding time did not affect K: Task examines VSTM capacity rather than encoding limits (e.g. TVA *C* value)

Todd & Marois: (2004). Capacity limit of visual short-term memory in [] posterior parietal cortex