

# Stimulating Episodic Memory Using SenseCam

## What is SenseCam?

### A new concept for digital cameras

- Wearable, wide-angle lens
- Automatic capture
- Additional sensing ability

### Sensors

- Tri-axis accelerometer
- Passive IR (body heat)
- Temperature
- RGB light intensity

### Viewer software for PC

- Rapid serial visual presentation (RSVP)
- Sensor data display

## Properties of SenseCam Images that are Similar to Episodic Memory Images

- They represent short time slices of experience
- They are temporally ordered
- They are visual, but samples rather than continuous
- They are not taken intentionally
- They have a 'field' perspective, i.e. are from the viewer's perspective
- They are triggered by sensory changes that may correspond to event boundaries

## Using SenseCam as an autobiographical memory aid

### Study design

- SenseCam (experimental) or written diary (control) or no memory aid (baseline) used to record special personal events

### Procedure

- Information reviewed every 2 days for 2 weeks
- Memory of the event tested before each review
- Long-term recall tested

## Case Study 1

Mrs B – limbic encephalitis (Berry et al., in press)

- Cambridge Memory Clinic
- 63 year old, well educated woman
- Limbic encephalitis in 2002 (see figure 1)
- Severe episodic memory impairment
- No recall of an event within 3 to 5 days



figure 1



## Case Study 2

Mrs F – Alzheimer's disease

- Cambridge Memory Clinic
- 67 year old woman, living alone
- Alzheimer's disease diagnosed in 2000
- Now in 'moderate' stages of disease
- Marked memory impairment

## Case Study 3

Mr D – Alzheimer's disease

- Cambridge Memory Clinic
- 75 year old, married man
- Diagnosed with Mild Cognitive Impairment in 2005 & Alzheimer's disease in 2006
- Marked memory impairment
- Relatively intact other cognitive functioning

## What patients say about SenseCam:

- 'Looking at the images is definitely helpful... they cue memories of things I would normally just forget'
- Sharing experiences again was a 'sheer pleasure'
- Different to ordinary camera as 'you see exactly what you saw'
- 'I have more confidence'
- 'SenseCam is a Godsend... everyone should have one!'

## Conclusions

- SenseCam powerfully stimulated the recall and consolidation of detailed autobiographical memories that would have otherwise been forgotten
- SenseCam images are particularly strong cues: characteristics of SenseCam 'movies' may be very similar to characteristics of visual imagery in episodic memory
- SenseCam images may stimulate hippocampal networks responsible for episodic memory storage

