Sharot et al (2007)

Sharot et al studied the biological basis of flashbulb memory. You can use this study for the following learning objectives:

- Explain how biological factors may affect one cognitive process.
- Discuss the use of technology in investigating cognitive processes.
- With reference to relevant research studies, to what extent is one cognitive process reliable?
- Evaluate one theory of how emotion may affect one cognitive process.

The original study is available here.

**Aim**

To determine the potential role of biological factors on flashbulb memories.

**Procedure**

This case study was conducted three years after the 9/11 terrorist attacks in Manhattan. The sample was made up of 24 participants who were in New York City on that day. Participants were put into an fMRI. While in the scanner, they were presented with word cues on a screen. The list of words is listed in the chart below. In addition, the word "Summer" or "September" was projected along with this word in order to have the participant link the word to either summer holidays or to the events of 9-11. Participants’ brain activity was observed while they recalled the event. The memories of personal events from the summer served as a baseline of brain activity for evaluating the nature of 9/11 memories.
After the brain scanning session, participants were asked to rate their memories for vividness, detail, confidence in accuracy and arousal. Participants were also asked to write a description of their personal memories. Only half of the participants actually reported having what would be called "flashbulb memories" of the event - that is, a greater sense of detail and a strong confidence in the accuracy of the memory. Those that did report having flashbulb memories also reported that they were closer to the World Trade Centre on the day of the terrorist attack. Participants closer to the World Trade Centre also included more specific details in their written memories.

**Results**

Sharot and her team found that the activation of the amygdala for the participants who were downtown was higher when they recalled memories of the terrorist attack than when they recalled events from the preceding summer, whereas those participants who were further away from the event had equal levels of response in the amygdala when recalling both events. The strength of amygdala activation at retrieval was shown to correlate with flashbulb memories. These results suggest that close personal experience may be critical in engaging the neural mechanisms...
that produce the vivid memories characteristic of flashbulb memory.

**Evaluation**

- The study is correlational in nature and does not establish a cause and effect relationship which would explain how the memory is actually attributed to activity in the amygdala.
- Research by McGaugh & Cahill supports the role of the amygdala in the creation of emotional memories.
- The environment of the fMRI and the task that the participants are being asked to do is highly artificial - and thus low in ecological validity.
- Although this study demonstrates the role of the amygdala as a result of proximity to the event, it does not explain why some people have vivid memories of seeing the events on television or the Internet.
- The sample size is small and culturally biased. This makes the findings difficult to generalize.
- As this study is a case study, it is difficult to replicate. However, there are several similar experiences - for example, the earthquake in Nepal or the tsunami in Japan - which could be studied to determine whether the results are transferable.