Emotional Memory

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An emotional or flashbulb memory refers to the memory of a personal significant event with distinctly vivid and long-lasting detailed information. These events are usually shocking and with photographic quality. Brown and Kulik, who coined the term found that many highly emotional memories can be recalled with very accurate details, even when there is a delay after the event.

A Flashbulb memory is said to be less accurate and less permanent than photographic memories, but its forgetting curve is less affected by time in comparing to other types of memories. One important aspect of flashbulb memory is that it involves emotional arousal when the event is being remembered. Therefore, this kind of memory does not have to be accurate, and the accuracy usually decreases during the first 3 months and goes up again at about 12 months.

A study conducted by Sharot et al. (2006) showed that the rating of vividness of terrorist attack on September 11, 2001, by the participants is related to the physical location of the person when the event happened.

Finkenhauer et al. (1998) provided an outline of important criteria that can help form flashbulb memories:

The event needs to be novel.
The event has to be important to the person experiencing or witnessing or hearing about it, and it has to have a significant effect on the person.
The surprising event needs to be intense enough in order to significantly trigger the person's emotional reaction.
A person needs to have an affective attitude to help understand and elaborate the event, in other words, the more background information the person has learned before the event, the more elaborate the person's memory of that event would be.
When people engage in overt rehearsal of the event by talking about it with others.
When the information of the public event is heard frequently from the media, this process can leads to overlearning of the information.

Neuroscience

The focus of the research on emotional memory is on the role of the amygdala. In one study participants watched either an emotionally arousing film or a neutral film. Results of a PET scan showed correlation between right Amygdaloid Complex (AC) activity and recall for emotional elements of the film when participants were asked to remember the film a few weeks later. Although this study demonstrates the involvement of the AC, it offers no insight as to the specific role of the amygdala. McGaugh and colleagues posit that although electrical and pharmaceutical stimulation directly to the amygdala can enhance or decrease memory, the amygdala is not the main site for any long-term memory storage. Rather, the amygdala acts as a modulator for storage processes occurring in other areas of the brain. Long-term memories are not created automatically,

they must be consolidated over time. Research indicates that it is this consolidation process in which the AC plays an assisting role (there is no evidence that it aids in retrieval). Specifically, McGaugh suggests that emotional arousal activates the amygdala, which regulates the strength of a memory, lending to enhanced memory for emotionally charged events.

The amygdala itself is a collection of nuclei with distinct functions, the basolateral AC the most involved with memory. The BL projects into the hippocampus and entorhinal cortex and stimulation of the AC functioning activates both of these areas. Further indication that the amygdala works to modulate other areas of the brain is supported by the fact that AC stimulation is mediated by the stria terminalis (ST), a major AC pathway. Lesions of the ST block AC stimulation effects.

AC and ST lesions also appear to block hormonal and adrenaline enhancements. Stress hormones produced by emotional situations influence memory storage. Memory can also be selectively enhanced by post-training administration of drugs and hormones. It is also well known that emotional situations produce an "adrenaline rush". This adrenaline, as well as cortisol (adrenocortical hormone) serve to influence an organism's response to stress, but also may aid future responding by enhancing declarative memory of them.

Many people feel that they have better memories for negative emotional experiences. This may in fact be accurate. Goddard found that retention was disrupted with electrical stimulation of AC after aversive learning, but not with appetitively motivated learning.

Drawbacks

An experience must be very arousing to an individual for it to be consolidated as an emotional memory, and this arousal can be negative, thus causing a negative memory to be strongly retained. Having a long-lasting extremely vivid and detailed memory for negative events can cause a great deal of anxiety, as seen in post traumatic stress disorders. Individuals with PTSD endure flashbacks to traumatic events, with much clarity. Many forms of psychopathology show a tendency to maintain emotional experiences, especially negative emotional experiences, such as depression and generalized anxiety disorder. Patients with phobias are unable to cognitively control their emotional response to the feared stimuli.

Although, not having the ability to use emotional memories for guiding future behaviours can be detrimental, as has been hypothesized as a potential cause to the lack of goal oriented behaviours in schizophrenic individuals.