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Memory and Memory Disorders: Organic and Psychic Correlates

An overview over current subdivisions of memory along time and contents-based dimensions is provided on the basis of data from brain damaged patients, patients with psychic amnesias and based on results obtained in normal subjects by modern functional brain imaging techniques such as positron emission tomography and functional magnetic resonance imaging.

Brain regions relevant for information processing along the various systems are explained. As the four principal long-term memory systems episodic-autobiographic memory is distinguished from the fact representing general knowledge system, procedural memory (as largely motor-based) and the non-conscious priming system. It is argued that the learning of new information occurs via brain networks which differ from those engaged in the recall of old memories. Furthermore, especially for the episodic memory system its relatedness to affect is emphasized.

Special emphasis is laid on describing and relating amnesia caused by psychic events or conditions. It is proposed that the various amnesic conditions which have been named 'psychogenic amnesia', 'psychogenic fugue', 'hysteria' and so on, have basic similarities to amnesia caused by direct brain damage. Furthermore, it is assumed that psychogenic forms of amnesia can be caused by stressful life situations and by the release of stress hormones on the brain level, leading to a block in the normal conditions of information flow.

Evidence from the brain site is provided which shows that psychic and organic forms of amnesia can lead to very similar changes in brain metabolism and that therapeutic interventions may lead to a re-instatement on both the neural and behavioral levels.