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## Vulnerability of memory function and the hippocampus

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Memory greatly shapes how we define ourselves and how we relate to the past, present, and future. Memory is also one of several cognitive functions needed to perform everyday tasks, and to successfully interact with and navigate the world. The human memory system is particularly vulnerable to damage and degeneration. The aim of this dissertation was to study distinct conditions that affect memory function and the hippocampus, which is the brain structure primarily involved in memory formation and retrieval.

As we age, our memory function declines. There are, however, individual differences in the degree of cognitive aging, which raises the question which factors determine if someone experiences more memory impairments than others. The research presented in this dissertation shows that certain lifestyle factors and personality traits can impact memory function in older adults, but do not influence the rate of decline. We also examined the effect of posttraumatic stress disorder and early life stressors on two closely connected brain structures involved in memory function and processing of emotions such as fear and threat: the hippocampus and the amygdala.

Study findings may help identify older adults who are at a greater risk for memory deficits and promote lifestyle choices that are beneficial for cognitive health. In addition, this work shows the significant role that smart technology can play in the management of memory disorders.