The influence of sex hormones on memory and neuronal activities in the brain

In an educative model project which constitutes a part of the joint project *"gender-sensitive research concepts in neuroscience"* (01FP1060/1061) funded by the Federal Ministry of Education and Science for a period of 3.5 years (2011- June 2014), we will analyse how sexual steroids such as testosterone or oestrogen can influence the memory performance of men and women. Young and older men and women, as well as men with testosterone deficiency, will be examined. By means of functional magnetic resonance imaging (fMRI), the influence of these sexual steroids on neuronal activities during visual-spacial and verbal paradigms involving the short- and long-term memory will be analysed.

We intend to find answers to the following questions:

Is there a gender-specific neuronal activity pattern in the brain?

Which impact does age have?

Which influence does a testosterone deficiency have on the brain function?

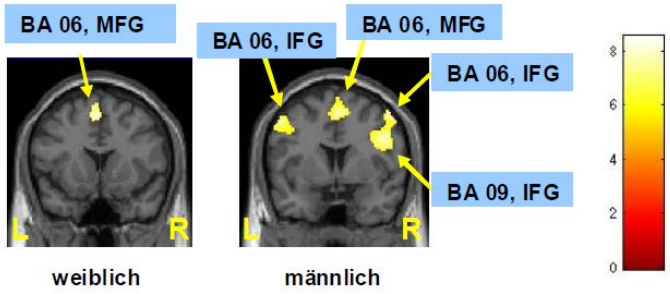

Figure: Activated cluster in the brain during the storage (encoding) of new verbal information with a p-value of 0.005 (corrected). The example shows the single activation of a female and male study participant respectively. The image illustrates that different brain areas in men and women are activated during the same task. (MFG= medial frontal gyrus; IFG= inferior frontal gyrus) (Dr. med. Anne Kreifels, dissertation, medical faculty, university of Münster, Germany).

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