

What happens in the Amygdala while we tap?

–

Insights from the German fMRI studies

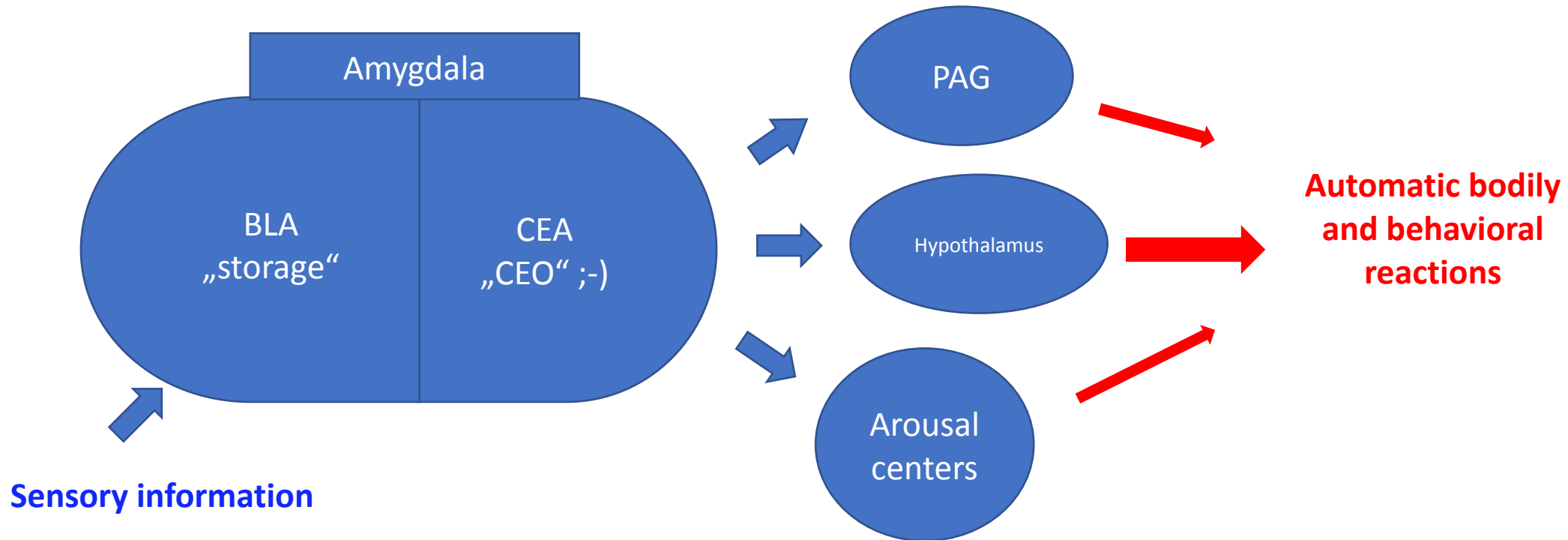
presented by Dr. Antonia Pfeiffer, MD, PhD

The Amygdala

- bilateral structure in the temporal lobe
 - part of the limbic system
 - different nuclei
 - innate fear and learned fear
 - fear memories
 - also active in surprise and happiness
 - subconscious
-
- PS: best book on the Amygdala: Joseph LeDoux „Anxious“

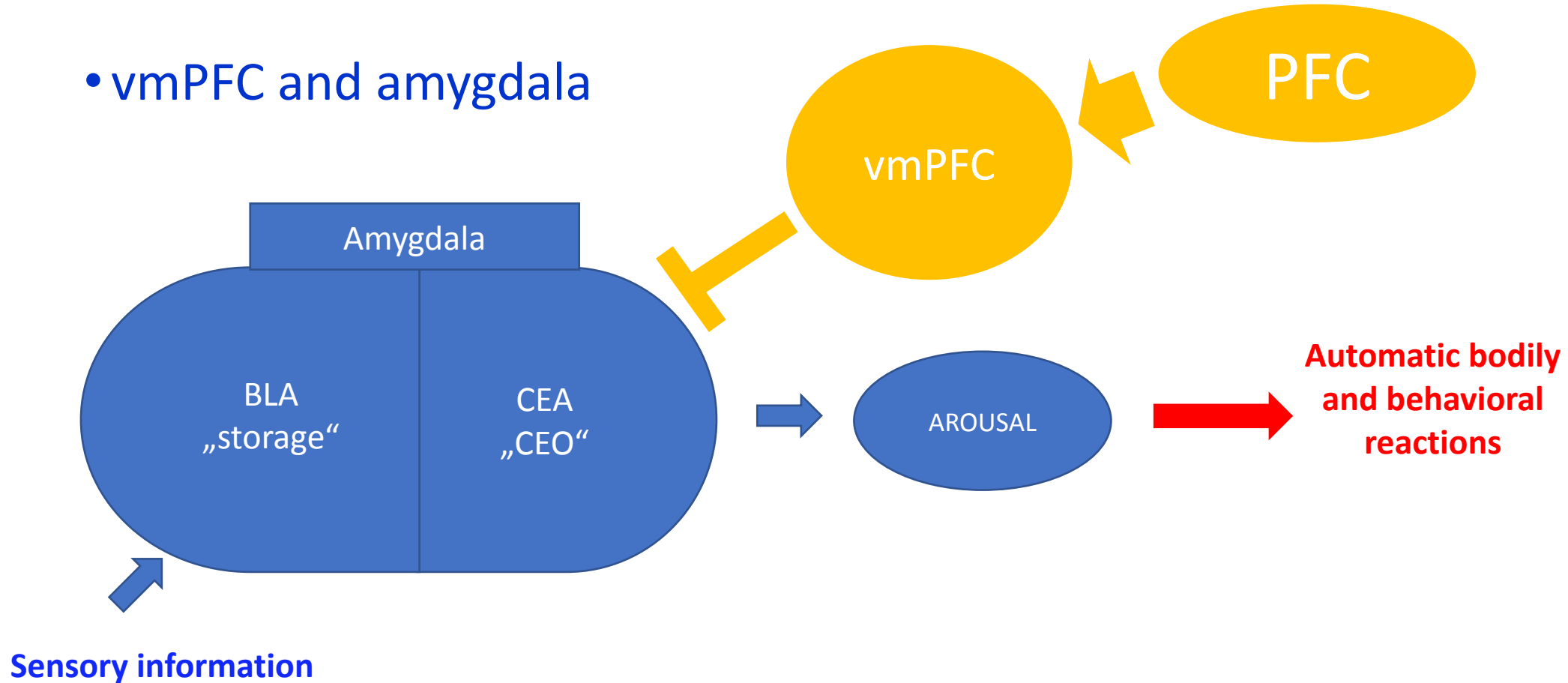
Fear memories in the Amygdala?

- Subconscious fear memory in the Amygdala



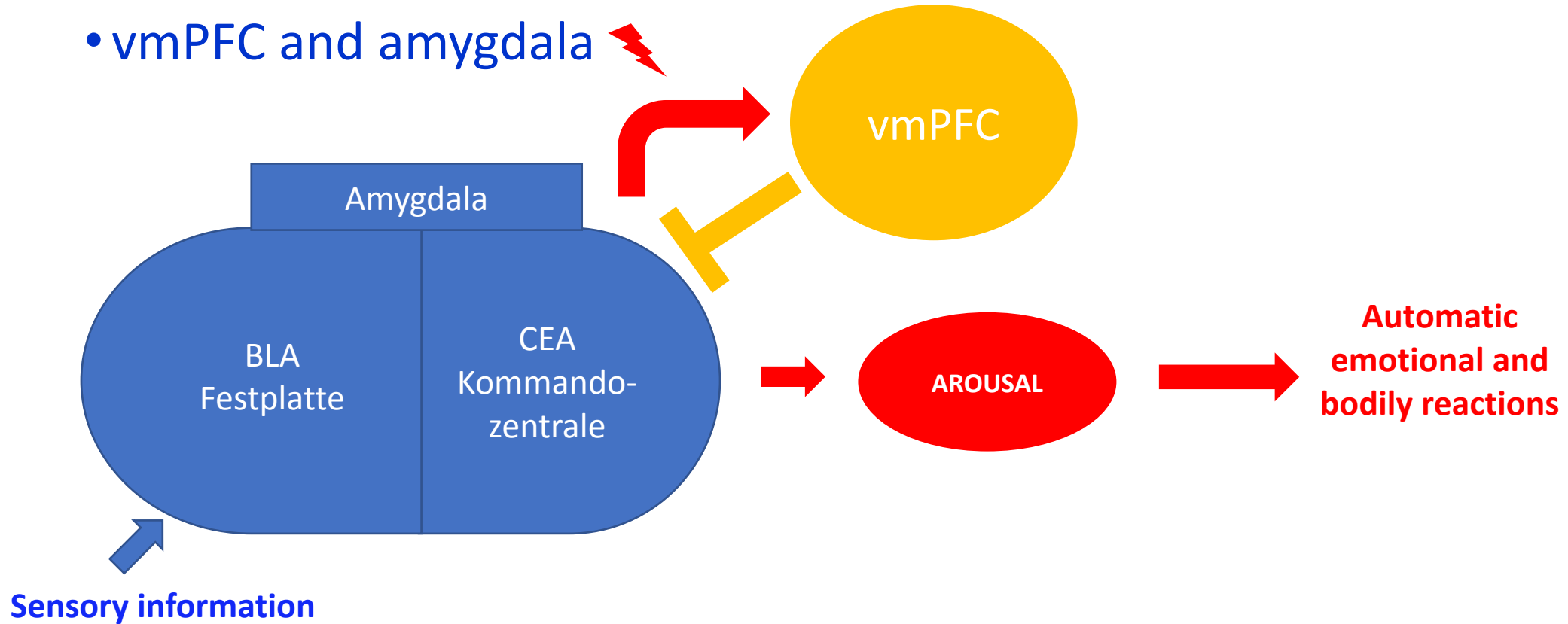
cognitive emotionregulation

- vmPFC and amygdala



Emotionregulation in PTSD/stress?

- vmPFC and amygdala



Phobia of small animals (Wells et al. 2003)

- single 30 min. session EFT (n=18) vs. diaphragmatic breathing (DB) (n=17)
- fear in the direct confrontation with the animal: EFT: -60% DB: -28%
- results remain stable after 6-9 months

Agoraphobia – fear of open spaces

- 5 sessions of TFT (N=36) vs. 12 sessions of CBT (N=36)
- TFT and CBT both significantly better than no-treatment-waitlist
- follow-up after 9 months:
 - anxiety: TFT: -45% vs CBT: -46%
 - avoidance: TFT: -49% CBT: -49%

 - but 7 sessions less in the TFT group

Veteran PTSD Studies

- 11-30% of veterans have PTSD, 66% of veterans with PTSD have chronic pain
- Church et al. 2013: 6h of EFT (N=30) vs. standard care (N=29)
- veterans with long-standing PTSD: second world war until Afghanistan
- EFT: Trauma-Symtoms: -41%
 - pain: -41%
 - sleep-disorder: -45%
- Church et al. 2016: traumatic brain injury: -50%, sleep-disorder: -50%
- Church et al. 2018: epigenetic changes

A question....

If you had never heard of Tapping before and you saw it for the first time?

What would you consider important effect mechanisms of tapping?

Abstract

- 3 fMRI Studies that were conducted between 2014 and 2018 in the Medical University of Hannover.
- They share one central question: What happens when we tap while we focus on emotional pictures?
- What happens **DURING** Tapping?

The Team behind the studies

- Dr. Michael Bohne, the founder of PEP[®]



- Dr. Dina and Dr. Matthias Wittfoth



Methods I

- Confrontation with emotional pictures in the Scanner:
neutral, disgust, fear, phobia related pics
- Functional data: first **8 -12 seconds** of either:
 - Condition A: viewing
 - Condition B: tapping while viewing

Methods II

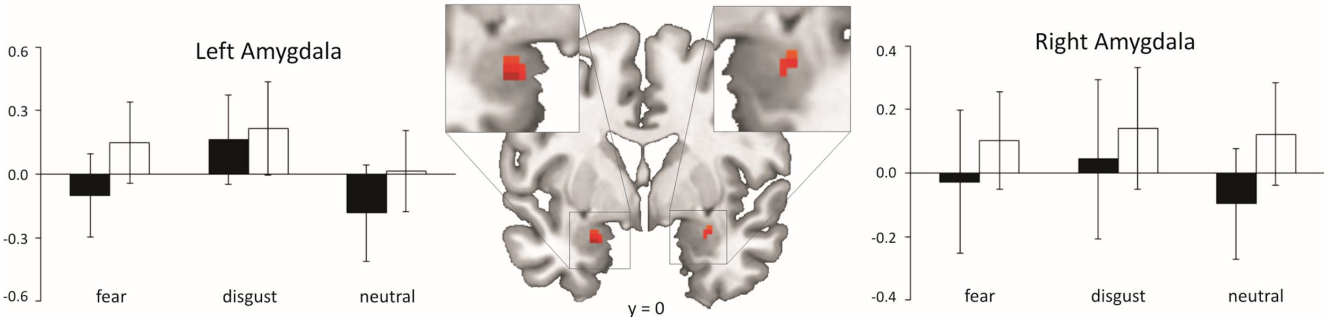
- Exclusion of all aspects that could enhance the effect of tapping via „placebo“:
- Knowledge of acupuncture points □ Study I, II, III: Tapping was presented as an „exercise“, no one talked of acupoints

Methods III

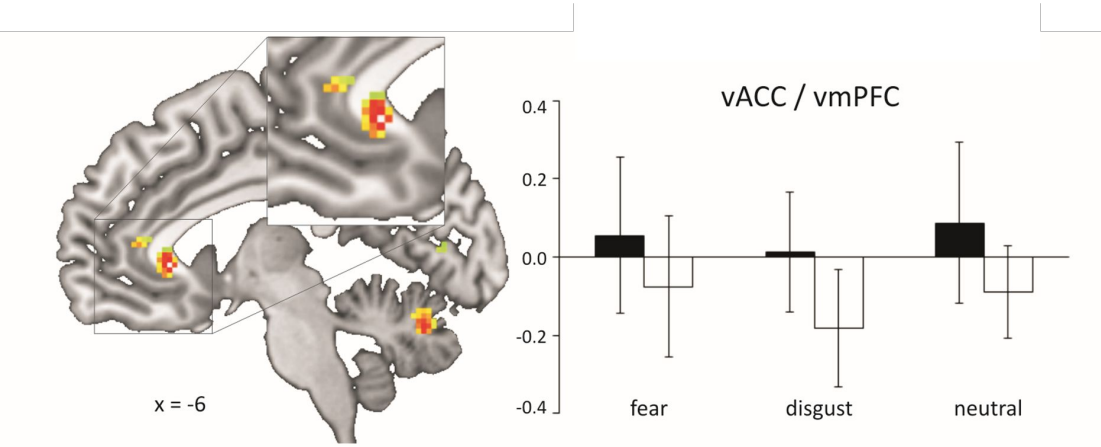
- Study I: healthy students (N = 17), imagined tapping
- Study II: Parkinson Patients (N = 19), imagined tapping
- Study III: Patients with fear of flying (N=29), real body tapping on the breast bone (sternum)

Study I: fMRI results

- Tapping > Viewing: Amygdala activation



- Viewing > Tapping: vmPFC activation



Conclusion

- Tapping directly engages emotional processing in the **Amygdala**

Effect mechanism: physiological regulation

- „Emotional“ mechanoreceptors in the skin: **CT-Afferents: Oxytocin**
- **Safety signals** via the posterior Insula
- **Vagus Stimulation**

Update of the fear memory in the amygdala

- Tapping protocol resembles memory reconsolidation protocol:
 - Reactivation + mismatch + new embodied experience of the old memory that contradicts the old learning
- **David Feinstein's article 2018 in Explore**
- fMRI memory reconsolidation studies:
 - Amygdala activation and vmPFC deactivation during the procedure (Schiller et al., 2013)
 - Amygdala deactivation after the procedure that persists after 18 month follow up (Agren et al. 2012, Björkstrand et al. 2015)

Thank you for your attention!

- Antonia Pfeiffer Antonia-Pfeiffer@outlook.de
- MD, PhD on neurohumoral Mechanisms of Tapping



- Study I: Wittfoth, D., Pfeiffer, A., Bohne, M. *et al.* (2020): Emotion regulation through bifocal processing of fear inducing and disgust inducing stimuli. *BMC Neuroscience* 21 (1): 47.
Study II: Wittfoth, D., Klietz, A., Sanchez, J. M. (unpublished) bifocal processing with early stage Parkinsons Disease.
Study III: Wittfoth, D., J. Beise, J. Manuel, M. Bohne a. M. Wittfoth (2022): Bifocal emotion regulation through acupoint tapping in fear of flying, *NeuroImage: Clinical* 34: 102996,