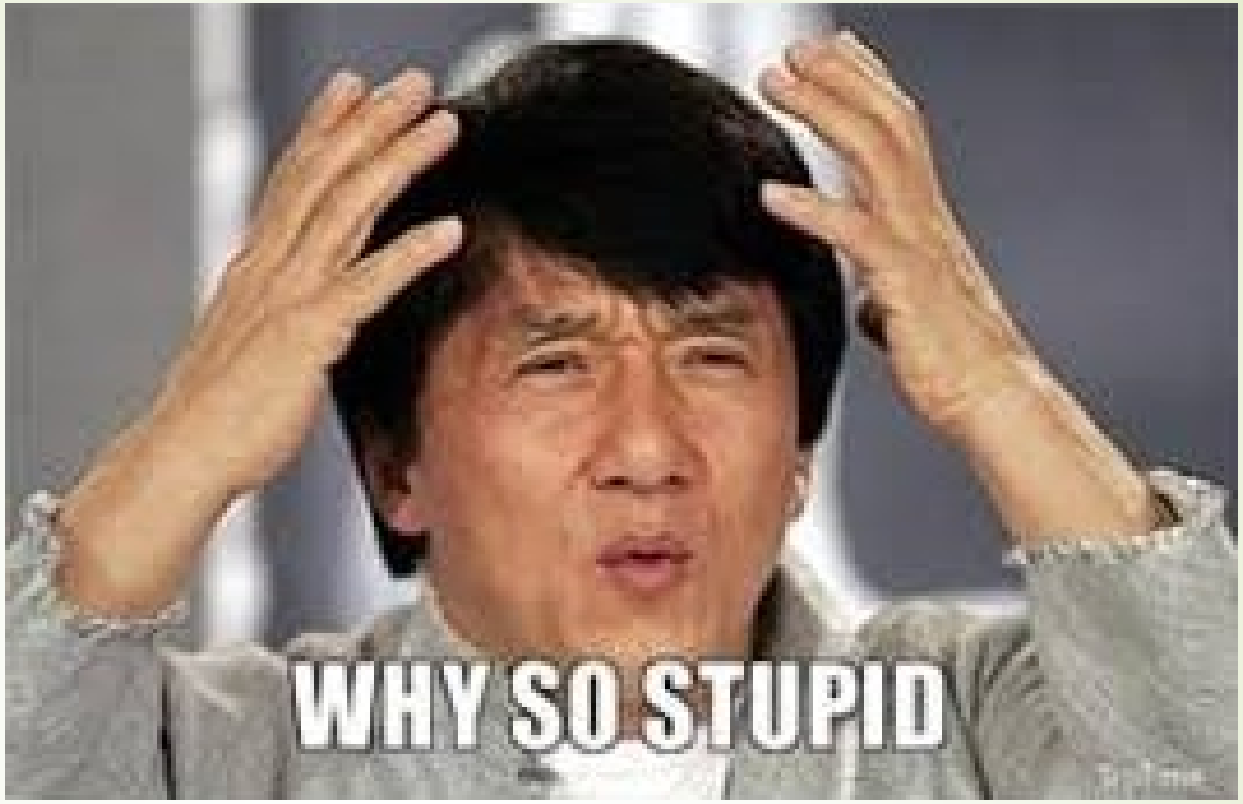

Hacking the stress system: the stress response as an adaptive trait that can work for or against you

V – Why stress makes you stupid, most of the time

The focus of stress: speed!

What does the stress response do? And is it useful in an argument?

- Increased blood pressure and heart-rate to increase the transportation of
  - Fuel (glucose)
  - Oxygen
- Increased focus on speed (fight or flight
  - Mild stress
    - Enhanced cognitive function; implicit memory & declarative tasks
    - Enhanced task oriented focus
  - High acute or chronic stress
    - Impairs the formation of complex memories: enhances implicit memory
    - Repetitive tasks
- Increased immune system reactivity

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Calm down; the time to allow the system to return to baseline

- It takes time for neurotransmitters to be metabolised.
  - Continuation of conflict after resolution
  - Gender differences
    - Perceptions of stress

Downregulated functions

- Growth
- Reproduction
- Digestion

Yamamora, D. L. R., & Reid, R. L. (1990). Psychological stress and the reproductive system. *Seminars in Reproductive Endocrinology*, *8*(1), 65–72. https://doi.org/10.1055/s-2007-1021424

Toyoda, A., Iio, W., Matsukawa, N., & Tsukahara, T. (2015). Influence of chronic social defeat stress on digestive system functioning in rats. *Journal of Nutritional Science and Vitaminology*, *61*(3), 280–284. https://doi.org/10.3177/jnsv.61.280

Oroian, B. A., Ciobica, A., Timofte, D., Stefanescu, C., & Serban, I. L. (2021). New Metabolic, Digestive, and Oxidative Stress-Related Manifestations Associated with Posttraumatic Stress Disorder. *Oxidative Medicine and Cellular Longevity*, *2021*. https://doi.org/10.1155/2021/5599265

Processing stimuli; the hardware

- A stimulus is detected by one of our senses
- The amygdala relays signals if the stimulus is threatening
  - Locus coeruleus (Norepinephrine)
  - Hypothalamic adrenal axis (Cortisol)
  - Ventral tegmental area (Dopamine)
  - Medial prefrontal cortex

Autonomic nervous system

- Sympathetic nervous system
- Parasympathetic nervous system

(nor-)adrenaline / (nor-)epinephrine

- Setting the system up for movement
  - Blood pressure / heart-rate
  - Respiration rate
  - Task related focus and memory
- Heightened alertness & stressor related memory
- Three behavioural stages of nor-adrenaline
  - Movement
  - Erratic movement (panic)
  - Shutdown

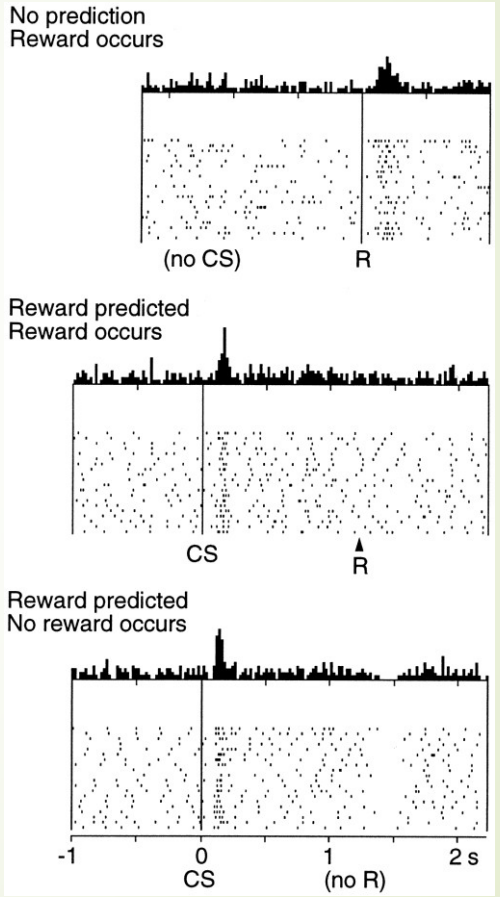
Ross, J. A., & Van Bockstaele, E. J. (2021). The Locus Coeruleus- Norepinephrine System in Stress and Arousal: Unraveling Historical, Current, and Future Perspectives. *Frontiers in Psychiatry*, *11*(January), 1–23. https://doi.org/10.3389/fpsyt.2020.601519

Cortisol

- Release glucose (fuel) from glycogen stores
  - Highest in the morning
    - Nightmares
    - Interaction with nutrition
- Suppress inflammation
- Blood pressure

What does dopamine do to the stress response

- Dopamine: the great motivator (NO, it does not do reward!!)
  - Training
  - Uncertainty



Schultz, W. (2002). Getting formal with dopamine and reward. *Neuron*, *36*(2), 241–263. https://doi.org/10.1016/S0896-6273(02)00967-4