EEG theta/beta ratio: a marker of executive control and its relation with anxiety-linked attentional bias for threat

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Stellingen behorend bij het proefschrift

EEG Theta/Beta Ratio: A Marker of Executive Control and its Relation with Anxiety-Linked Attentional Bias for Threat

Dana van Son, 24 April 2019

1. Increased EEG theta/beta ratio is associated with low attentional control (Chapter 1-4).

2. Individuals with lower EEG theta/beta ratio seem to have a healthy 'adaptive' attention/response to mild versus high-threatening stimuli, while individuals with higher EEG theta/beta ratio seem to have a more automatic 'maladaptive' attention/response to these stimuli (Chapter 1).

3. The effect of caffeine administration on threat-processing is likely dependent on baseline catecholamine-levels (Chapter 2).

4. Previously found relations between EEG theta/beta ratio and attentional disorders such as attention deficit hyperactivity disorder (ADHD) can be explained by the phenomenon that individuals suffering from these disorders might experience more frequent and/or more profound states of uncontrolled thought, or mind wandering, when resting-state EEG is measured (Chapter 3-4).

5. A correlation exists between functional connectivity within the *Executive Control Network* and EEG theta/beta ratio for controlled versus uncontrolled thought related-changes, indicating that EEG theta/beta ratio reflects voluntary top-down processes of executive control (Chapter 4).

6. Neurofeedback training targeting EEG theta/beta ratio will not likely provide a useful tool to study causality of EEG theta/beta ratio and related psychological functions (Chapter 5).

7. The negative found relation between TBR and anxiety suggests that TBR does not solely reflect executive control over the processing of negative information (as in Chapter 1 & 2), but also approach-motivation related processes. (Discussion)

8. Avoiding threat may cause maintenance or increase of anxiety, which can be an implication for *Attentional Bias Modification* methods. (Discussion)

9. Long-during monotonous tasks that simultaneously assess neural processes should take possible interfering uncontrolled thoughts into account.

10. EEG research should always control for caffeine use.

11. Competition and high work pressure does not contribute to qualitative science.