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Neuromodulation of cognitive-behavioral control

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Citation

Jongkees, B. J. (2019, February 21). *Neuromodulation of cognitive-behavioral control*. Retrieved from <https://hdl.handle.net/1887/68577>

Version: Not Applicable (or Unknown)

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<http://hdl.handle.net/1887/68577>

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Title: Neuromodulation of cognitive-behavioral control

Issue Date: 2019-02-21

Stellingen behorende bij het proefschrift

Neuromodulation of cognitive-behavioral control

Door Bryant J. Jongkees

1. The eyes are windows to the dopaminergic brain, and measuring spontaneous eye blink rate can serve as a non-invasive method of determining individual differences in dopamine activity.
2. The food we eat affects our brain, and under the right circumstances certain food supplements can enhance cognitive-behavioral performance.
3. Researchers need to be cautious when generalizing the effects of pharmacological manipulation of a neurotransmitter system to the effects of naturally-occurring variation in this system.
4. Learning and performing serial sequences of movement is integral to daily life, and depends on the level of neuronal excitability.
5. Goal-directed behavior requires the stable maintenance of task-goals as well as the flexible switching between them. Instead of trying to enhance one of these strategies, research should focus on improving the ability to adaptively switch between stability and flexibility.
6. Researchers need to combine different experimental paradigms to test their hypotheses, and investigate whether the opposite of their hypotheses can also be proven.
7. Because the effects of performance-enhancing techniques often depend on individual differences, researchers need to be careful not to overstate their efficacy.
8. Future work on motor sequence learning should include follow-up assessments, in order to distinguish between changes in motor behavior observed during practice ('performance') and the resilience of this change that is sustained over time ('learning').
9. In order for science to grow, researchers must start appreciating quality over quantity by aiming to (conceptually) replicate their own findings.
10. Although correlational research can serve as an interesting starting point, more useful knowledge can be gathered from experimental manipulations.