

Go with the flow

Citation for published version (APA):

Janssens, S. E. W. (2022). *Go with the flow: Multimodal brain research on communication in the vision-attention network*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20220701sj>

Document status and date:

Published: 01/01/2022

DOI:

[10.26481/dis.20220701sj](https://doi.org/10.26481/dis.20220701sj)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

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- The final published version features the final layout of the paper including the volume, issue and page numbers.

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Propositions of the thesis

Go with the flow:

Multimodal brain research on communication in the vision-attention network

Shanice Janssens

- I. Signal propagation in the human brain can be captured by a variety of neuroscientific methods, but the combination of transcranial magnetic stimulation, electroencephalography, and functional magnetic resonance imaging offers a unique perspective. (*This thesis*)
- II. Spontaneous fluctuations in neuronal oscillations contribute to the between- and within-subject variability in the immediate and longer-lasting effects of transcranial magnetic stimulation. (*This thesis*)
- III. Individual calibration of the rhythmic stimulation frequency based on electroencephalography data is superior to using a standard frequency, and resting state electroencephalography data along with a “Gaussian fit” estimation method is ideally suited for this purpose. (*This thesis*)
- IV. Transcranial alternating current stimulation based on a *range* of frequencies from the individual electroencephalography power spectrum is practically feasible and scientifically promising. (*This thesis*)
- V. Multimodal brain research should be limited to experimental designs in which it provides additional information that cannot be provided by individual neuroscientific techniques. (*The discipline*)
- VI. The cognitive neuroscience and non-invasive brain stimulation fields suffer from noisy data and inconsistent conclusions. (*The discipline*)
- VII. One of the greatest challenges of contemporary cognitive neuroscience is to understand which part of the observed variability in effects is inherent to the system (i.e., the human brain), and which part is due to factors that are under our control. (*The discipline*)
- VIII. The neurocognitive and oscillatory brain state should be taken into account when applying non-invasive brain stimulation, in research as well as clinical applications. (*Impact*)
- IX. Those who believe that women in science are taken as seriously as men in science are utterly mistaken.
- X. Science is nothing but perception – Plato.
- XI. The burned hand teaches best – J.R.R. Tolkien.