Mitchel Kappen MSc

HOME:	Lange Kruisstraat 12a 9000, Ghent, Belgium	**UNIVERSITY:**	Ghent University Experimental Psyhiatry Lab Department of Head & Skin
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RESEARCH INTERESTS:

My current research is centred around novel methods of measuring physiological and psychological activity. More specifically, detecting mental states (predominantly stress) from speech fragments or facial video recordings.

EDUCATION:

2019 – date **PhD in Life Sciences**
Ghent University – Experimental Psychiatry Lab, Belgium
Supervised by Professor Marie-Anne Vanderhasselt
Due for submission September 2023

Projects:

- Detecting stress from speech fragments. Developing new paradigms to record speech in a naturalistic way in a controlled setting whilst simultaneously collecting high quality physiological data and querying psychological constructs to develop models using phonetic and prosodic features of speech.
- Relapse prevention after ECT using CCT for treatment resistant depression. Relapse after a successful electroconvulsive therapy happens at high prevalence. In our RCT we offer a two-week cognitive intervention after ECT is concluded after which patients are biweekly monitored over a 6-month time period.
- Stress, rumination, and (im/ex)plicit emotion regulation during the different phases of the menstrual cycle in women with premenstrual syndrome and healthy controls. Premenstrual symptoms occur in more than 60% of the women, however its origin is still debated. We conducted an online study with 500+ participants, consisting of both women with PMS and healthy controls and conducted questionnaires and an experiment consisting of rating emotional stimuli whilst their faces are recorded. This enables us to compare one's capabilities of introspective capabilities with regards to their emotions as well as group differences in women with PMS as compared to healthy controls.

2018 – 2019 **MSc in Applied Cognitive Psychology (Magna Cum Laude)**
Utrecht University, the Netherlands

Thesis (9/10): Predicting Person-Organization and Person-Job Fit Objectively: Stress, motivation, and Nervousness During a Video-Based Pre-hire screening
Supervisor: Prof. Marnix Naber

EDUCATION (CONT.):

2013 – 2018 **BSc in Cognitive and Neurobiological Psychology**
Utrecht University, the Netherlands

Thesis (8.5/10): Are Visuo-spatial Working Memory and Fragile Memory Qualitatively Different Memory Systems?
Supervisor: Paul Zerr

2006 – 2012 **Bilingual grammar school**
International Baccalaureate English Higher Level (Near Native)
Elde College, Schijndel, the Netherlands

RESEARCH EXPERIENCE (IN ADDITION TO EDUCATION):

Oct 2022 - Dec 2022 **UCLA Laboratory for Stress Assessment and Research, Stanford University, United States**

As part of my PhD I am visited prof. dr. George M. Slavich at Stanford University. During this stay, I expanded my knowledge into life time stressors and adverse childhood experiences (ACEs). We wrote a viewpoint on speech in precision psychiatry and started a multi-year collaboration on a state wide research on ACEs, precision psychiatry interventions, and a first endeavor to investigate whether speech contains information on chronic or early life stressors.

Feb 2019 - Sep 2019 **Alpha.One / Expoze.io, Rotterdam, the Netherlands**

I worked here as a junior researcher in which I was responsible for setting up online experiments enabling us to test implicit behaviors as well as collect training data for our predictive eye tracking models. In addition, collected and analyzed EEG data, all tasks were ordered by Erasmus school of management and big commercial companies.

Sep 2018 – Feb 2019 **Neurolytics, Utrecht, the Netherlands**

In this start-up I helped develop the testing environment and first models in predicting the match between an employer and applicant. Using numerous metrics such as human resource questionnaires, facial coding, and remote PPG.

Aug 2017 - July 2018 **Krigolson Lab, University of Victoria, Canada**

While I was visiting the University of Victoria for an exchange semester, I volunteered at the Krigolson Lab as a research assistant. I gained experience with conducting and analysing EEG, eye-tracking, and physiological data. After graduation I stayed for another semester to commit full-time to set-up my own project at this lab.

ADDITIONAL WORK HISTORY:

2012 – 2019 **Jobs next to studies**

I have had numerous jobs in sales, recruitment, administration, and hospitality in the evening and weekend hours varying from 10 to 32 hours a week.

In addition, I worked for 5 years at a smartphone and computer refurbishing companies doing customer support, sales, and search engine optimalization, as well as assisting in repairs.

2012 – 2022 Extracurriculars

Participated in numerous committees organizing extracurricular activities. Took one full-time board year (student faculty association) in which I was responsible for acquisition, PR, and team coordination as well as a part-time board year (Utrecht University fund) in which my job was assessing grants for student initiatives. Furthermore, I acted as the vice-president of the UVic Bitcoin Club and have participated in scientific outreach activities (Let's Talk Science, Canada) teaching elementary school children about the brain and organizing symposia on neuroscience for high school students. Moreover, I was a founding committee member for the multi-university 2-day workshop on Machine Learning in Psychiatry.

S K I L L S :

Languages

- Dutch (mothertongue)
- English (near native)
- German (basic)

Software & Programming (https://github.com/mitchelkappen)

- Python
- R
- Matlab
- JavaScript
- Machine Learning
- Brainvision Analyser & EEGLab
- Photoshop
- InDesign

Research

- Remote measures
  - Speech analysis (acoustic + semantic), rPPG, (automated) FACS, portable EEG systems (e.g. MUSE)
- ECG
- EDA
- Respiration
- EEG (Brainvision, BioSemi, Muse, EGI)
- Eyetracking (EyeLink 2, EyeLink 1000, Webcam tracking)

R E F E R E N C E S :

Professor Marie-Anne Vanderhasselt, Ghent University, Belgium, marie-anne.vanderhasselt@ugent.be
Professor Olave Krigolson, University of Victoria, Canada, krigolso@uvic.ca
Professor Marnix Naber, Utrecht University, the Netherlands, m.naber@uu.nl

P U B L I C A T I O N S :

Kappen, M., Vanderhasselt, M. A., & Slavich, G. M. (2023). Speech as a Promising Biosignal in Precision Psychiatry. *Neuroscience & Biobehavioral Reviews*, 105121.

De Smet, S., Ottaviani, C., Verkuil, B., **Kappen, M.**, Baeken, C., & Vanderhasselt, M. A. (2023). Effects of non-invasive vagus nerve stimulation on cognitive and autonomic correlates of perseverative cognition. *Psychophysiology*, e14250.

Razza, L. B., Luethi, M. S., Zanão, T., De Smet, S., Buchpiguel, C., Busatto, G., Pereira, J., Klein, I., **Kappen, M.,** Morena, M., Baeken, C., Vanderhasselt, M. A., & Brunoni, A. R. (2023). Transcranial direct current stimulation versus intermittent theta-burst stimulation for the improvement of working memory performance. *International Journal of Clinical and Health Psychology*, 23(1), 100334.

Kappen, M., Raeymakers, S., Weyers, S., & Vanderhasselt, M. A. (2022). Stress and Rumination in Premenstrual Syndrome (PMS): identifying stable and menstrual cycle-related differences in PMS symptom severity. *Journal of Affective Disorders.* Preprint available: https://psyarxiv.com/nhvb2

Xu, Y., **Kappen, M.,** Peremans, K., De Bundel, D., Van Eeckhaut, A., Van Laeken, N., De Vos, F., Dobbeleir, A., Saunders, J. H., & Baeken, C. (2022). Accelerated HF-rTMS Modifies SERT Availability in the Subgenual Anterior Cingulate Cortex: A Canine [11C] DASB Study on the Serotonergic System. *Journal of clinical medicine*, 11(6), 1531.

Kappen, M., Hoorelbeke, K., Madhu, N., Demuynck, K., & Vanderhasselt, M. A. (2022). Speech as an indicator for psychosocial stress: A network analytic approach. *Behavior Research Methods*, 54(2), 910-921.

Kappen, M., & Naber, M. (2021). Objective and bias-free measures of candidate motivation during job applications. *Scientific reports*, 11(1), 1-8.

Zerr, P., Gayet, S., van den Esschert, F., **Kappen, M.,** Olah, Z., & Van der Stigchel, S. (2021). The development of retro-cue benefits with extensive practice: Implications for capacity estimation and attentional states in visual working memory. *Memory & Cognition*, 1-14.

Van de Velde, N., **Kappen, M.,** Koster, E. H., Hoorelbeke, K., Tandt, H., Verslype, P., ... & Vanderhasselt, M. A. (2020). Cognitive remediation following electroconvulsive therapy in patients with treatment resistant depression: randomized controlled trail of an intervention for relapse prevention–study protocol. *BMC psychiatry*, *20*(1), 1-12.

Williams, C. C., **Kappen, M.,** Hassall, C. D., Wright, B., & Krigolson, O. E. (2019). Thinking theta and alpha: Mechanisms of intuitive and analytical reasoning. *NeuroImage*, *189*, 574-580.

In review:

Vanhollebeke, G., **Kappen,** M., De Raedt, R., Baeken, C., van Mierlo, P., & Vanderhasselt, M. A. (2023). In Search Of The "Social" In Psychosocial Stress: An EEG Source Imaging Study.

Kuipers, M., **Kappen, M.,** Naber, M. (2022). How nervous am I? How computer vision succeeds and humans fail in interpreting nervous facial behavior. *Motivation and Emotion.*

Li, Z., Pulopulos, M., Allaert, J., De Smet, S., **Kappen**, M., Puttevils, L., ... & Vanderhasselt, M. A. (2022). Resting HRV as a trait marker of rumination in healthy individuals? A large cross-sectional analysis. *Authorea Preprints.*

Oral presentations:

Kappen, M., Van der Donckt, J., Vanhollebeke, G., Van Hoecke, S., Vanderhasselt, M.A. (2022, September). How your Speech Responds to Stress: the Validation of Acoustic, Prosodic, and Semantic Speech Features in a Multi-Paradigm Stress-Induction Task, Society for Psychophysiological Research, Vancouver, BC, Canada.

Kappen, M., Vanhollebeke, G., Van der Donckt, J., Coquyt, I., Van Hoecke, S., & Vanderhasselt, M.A. (2022, June). The Effects of Stress on the Voice: Acoustic Features from Semi-Spontaneous Speech in a Multi-Paradigm Stress Induction Task, 2022 Annual Meeting of the Belgian Association of Psychological Sciences, Leuven, Belgium.

Kappen, M., Kuipers, M., & Naber, M.M. (2022, April). Where Computers Outperform Humans: Objective and Bias-Free Measures of Complex Emotions and Mental States using Facial Nonverbal Behavior, 18th NVP Winter Conference on Brain and Cognition, Egmond aan Zee, the Netherlands.

Naber, M. M., Kuipers, M., & **Kappen, M.** (2021, December). Interpreting facial features to determine an observer's attention to a video. In PERCEPTION (Vol. 50, No. 1_ SUPPL, pp. 97-97).

Kappen, M., Hassall, C.D., & Krigolson, O.E. (2018). Electroencephalographic Correlates for Risk Taking and Aversion in Financial Decision Making. University of Victoria's Making Waves, Victoria, BC, Canada.

Poster presentations:

Kappen, M., Van der Donckt, J., Vanhollebeke, G., Van Hoecke, S., Vanderhasselt, M.A. (2022, September). How your Speech Responds to Stress: the Validation of Acoustic, Prosodic, and Semantic Speech Features in a Multi-Paradigm Stress-Induction Task, Society for Psychophysiological Research, Vancouver, BC, Canada.

Kappen, M., DeSmet, S., Allaert, J., Schoonjans, E., VanderDonckt, J., Raeymakers, S., & Vanderhasselt, M. A. (2022). The Interaction of Transcranial Direct Current Stimulation (tDCS) and Pace Breathing on Acoustic and Lexical Speech Features in the Context of Stress. Psychiatria Danubina, 34(suppl 3), 35-35.

Xu, Y., **Kappen, M.,** Peremans, K., DeBundel, D., VanEeckhaut, A., VanLaeken, N., De Vos, F., Dobbelei, A., Saunders, J. H., & Baeken, C. (2022). Sert Availability Modified by Accelerated HF-rTMS in the Subgenual Anterior Cingulate Cortex: a Canine [11C]-DASB Positron Emission Tomography Study. *Psychiatria Danubina*, *34*(suppl 3), 44-44.

Naber, M., & **Kappen, M.** (2021). How motivated do I look? How humans fail and computer vision succeeds in interpreting facial behavior. Journal of Vision, 21(9), 1978-1978.

Williams, C.C., **Kappen, M.,** Hassall, C.D., Wright, B., & Krigolson, O.E. (2018). Cognitive Control and Attention: Neurocognitive Mechanisms of System 1 and System 2 Thinking. Society for Psychophysiological Research Meeting, Quebec City, QC.

Kappen, M., Hassall, C.D., & Krigolson, O.E. (2018). Electroencephalographic Correlates for Risk and Ambiguity in Financial Decision Making. Canadian Neuroscience Annual Meeting, Vancouver, BC, Canada.

Kappen, M., Hassall, C.D., & Krigolson, O.E. (2018). Neurophysiological Representations of Risk Taking and Risk Aversion. Northwest Cognition and Memory 2018, Richmond, BC, Canada.

Powell, G., **Kappen, M.,** Berman, T., Colino, F.L., & Krigolson, O.E. (2018). The Effect of Feedback Frequency on the P300 for Motor Learning. Northwest Cognition and Memory 2018, Richmond, BC, Canada.

M E D I A :

Libelle (2022, September 14). Wat vertelt je menstruele cyclus over je gezondheid? De expert legt uit. https://www.libelle.be/gezond/cyclus-en-gezondheid/

Goed gevoel, DPG media (2022, July 20). Had ik dat maar eerder geweten! Physical print.

Knack (2021, January 6). Het premenstrueel syndroom is nog steeds een ongekende problematiek. https://www.knack.be/nieuws/gezondheid/het-premenstrueel-syndroom-is-nog-steeds-een-ongekende-problematiek/

EOS Wetenschap (2020, December 10). 'Ik krijg vaak te horen dat ik overdrijf'. https://www.eoswetenschap.eu/psyche-brein/ik-krijg-vaak-te-horen-dat-ik-overdrijf

VRT Media, Radio 2 (2020, October 30). Wat doet een menstruatiecyclus met het hoofd van de vrouw? UGent onderzoekt het met gezichtsanalyse. https://www.vrt.be/vrtnws/nl/2020/10/30/wat-doet-een-menstruatiecyclus-met-het-hoofd-van-de-vrouw-ugent/

F O L L O W M E :

Google Scholar: https://scholar.google.nl/citations?user=CWCQD9UAAAAJ&hl=en&oi=ao

Research Gate: https://www.researchgate.net/profile/Mitchel-Kappen

Twitter: https://twitter.com/KappenMitchel

Github: https://github.com/mitchelkappen

OSF: https://osf.io/4xet9

Bio: https://www.gheplab.ugent.be/labmembers/mitchel-kappen/

Projects:

https://www.gheplab.ugent.be/projects/stress-speech

https://www.gheplab.ugent.be/projects/menstrual-cycle-info/