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## Leonard E. van Dyck

### Academic Education

#### PhD in Psychology (Computational Cognitive Neuroscience)

*Justus Liebig University Giessen*

- Supervisors: Dr. Katharina Dobs & Prof. Martin Hebart

Giessen, Germany

09/2023 - today

#### MSc in Psychology (Cognitive Neuroscience)

*University of Salzburg*

- Grade: 1.06 (with Distinction)
- Thesis: "Unraveling top-down and bottom-up processes in theory of mind with layer fMRI"
- Supervisors: Prof. Mario Braun & Prof. Martin Kronbichler

Salzburg, Austria

10/2020 - 02/2023

#### BSc in Psychology

*University of Salzburg*

- Grade: 1.73
- Thesis: "Seeing eye-to-eye? A comparison of object recognition performance in humans and deep convolutional neural networks under image manipulation"
- Supervisor: Dr. Walter Gruber

Salzburg, Austria

10/2017 - 07/2020

### Work Experience

#### Guest Researcher

*Max Planck Institute for Human Cognitive and Brain Sciences*

- Group Leader: Prof. Martin Hebart

Leipzig, Germany

10/2023 - today

#### Laboratory Manager

*Centre for Cognitive Neuroscience, University of Salzburg*

- Group Leaders: Prof. Manuel Schabus & Prof. Kerstin Hödlmoser
- Method Unit EEG

Salzburg, Austria

10/2020 - 02/2023

#### Teaching Assistant

*Department of Psychology, University of Salzburg*

- Bachelor's Seminar "Artificial Intelligence"

Salzburg, Austria

03/2021 - 07/2022

#### Research Assistant

*Laboratory for Sleep, Cognition, and Consciousness Research,  
University of Salzburg*

- Group Leader: Prof. Kerstin Hödlmoser
- Sleep Research

Salzburg, Austria

03/2020 - 07/2020

## Research Internship

Department of Psychology, University of Salzburg

- Supervisor: Prof. Katherine Hertlein (University of Nevada, Las Vegas)
- Clinical and Family Therapy

Salzburg, Austria  
04/2019 - 07/2019

## Grants and Awards

### Doctoral Scholarship

German Academic Scholarship Foundation

10/2023 - today

### Merit Scholarship

University of Salzburg

2023

### ECVP22 Travel Grant

Donders Institute for Brain, Cognition, and Behaviour

2022

### Biology Future Prize

Stiftung Natur, Mensch, Kultur

2016

## Scientific Contributions

Google Scholar: <https://scholar.google.com/citations?user=5neRr6EAAAJ>

ORCID: <https://orcid.org/0000-0002-6006-8539>

OA: Open Access

## Peer-Reviewed Publications

5. **van Dyck, L. E.**, Bremmer, F., & Dobs, K. (2024). Artificial intelligence meets body sense: task-driven neural networks reveal computational principles of the proprioceptive pathway. *Signal Transduction and Targeted Therapy*, 9(1), 171.  
<https://doi.org/10.1038/s41392-024-01870-9> [OA]
4. **van Dyck, L. E.** & Gruber, W. R. (2022). Modeling biological face recognition with deep convolutional neural networks. *Journal of Cognitive Neuroscience*, 35(10), 1521–1537.  
[https://doi.org/10.1162/jocn\\_a\\_02040](https://doi.org/10.1162/jocn_a_02040) [OA]
3. **van Dyck, L. E.**, Denzler, S. J., & Gruber, W. R. (2022). Guiding visual attention in deep convolutional neural networks based on human eye movements. *Frontiers in Neuroscience*, 16.  
<https://doi.org/10.3389/fnins.2022.975639> [OA]
2. **van Dyck, L. E.**, Kwitt, R., Denzler, S. J., & Gruber, W. R. (2021). Comparing object recognition in humans and deep convolutional neural networks – An eye tracking study. *Frontiers in Neuroscience*, 15.  
<https://doi.org/10.3389/fnins.2021.750639> [OA]
1. Hertlein, K. M. & **van Dyck, L. E.** (2020). Predicting engagement in electronic surveillance in romantic relationships. *Cyberpsychology, Behavior, and Social Networking*, 23(9), 604-610.  
<https://doi.org/10.1089/cyber.2019.0424>

## Conference Proceedings

\*equal contribution; presenter

7. **van Dyck, L. E.**, Hebart, M. N.\*, & Dobs., K.\* (2024). Core neural dimensions of functionally selective areas in the human visual cortex. **Poster** presented at *Neuro-AI-Talks (NEAT)*, September 02-03, Osnabrück, Germany.

6. **van Dyck, L. E.**, Hebart, M. N.\*, & Dobs., K.\* (2024). Core neural dimensions of functionally selective areas in the human visual cortex. **Poster** presented at *European Conference on Visual Perception (ECPV)*, August 25-29, Aberdeen, Scotland.
5. **van Dyck, L. E.**, Hebart, M. N.\*, & Dobs., K.\* (2024). Core neural dimensions of functionally selective areas in the human visual cortex. **Poster** presented at *Cognitive Computational Neuroscience (CCN)*, August 6-9, Boston, MA, USA.  
[https://2024.ccneuro.org/pdf/124\\_Paper\\_authored\\_ManuscriptAuthored.pdf](https://2024.ccneuro.org/pdf/124_Paper_authored_ManuscriptAuthored.pdf) [OA]
4. **van Dyck, L. E.**, Hebart, M. N.\*, & Dobs., K.\* (2024). Neural representational dimensions capture the nested functional organization of the human visual cortex. **Talk** presented at *SFB Workshop Categorization in Perception and Action: Minds, Models, Mechanisms*, June 30 - July 2, Marburg, Germany.
3. **van Dyck, L. E.**, Dobs., K.\*, & Hebart, M. N.\* (2024). Data-driven voxel decomposition reveals representational dimensions in functionally selective areas. **Poster** presented at *Workshop on CONCEPTS, ACTIONS, and OBJECTS (CAOs)*, May 9-11, Rovereto, Italy.
2. **van Dyck, L. E.**, Denzler, S. J., & Gruber, W. R. (2022). Analyzing and increasing the similarity of humans and deep convolutional neural networks in object recognition. **Poster** presented at *European Conference on Visual Perception (ECPV)*, August 28 - September 1, Nijmegen, The Netherlands.
1. **van Dyck, L. E.**, Denzler, S. J., Schöllkopf, C. P., & Gruber, W. R. (2022). Spatial similarities between human eye movements and deep convolutional neural network saliency maps across time. **Poster** presented at *Salzburg Mind Brain Annual Meeting (SAMBA)*, July 14-15, Salzburg, Austria.

#### Theses

**van Dyck, L. E.** (2023). *Unraveling top-down and bottom-up processes in theory of mind with layer fMRI*. [Master's Thesis].

<https://eplus.uni-salzburg.at/obvusbhs/content/titleinfo/8960559> [OA]

**van Dyck, L. E.** & Gruber, W. R. (2020). *Seeing Eye-to-Eye? A comparison of object recognition performance in humans and deep convolutional neural networks under image manipulation*. arXiv [Bachelor's Thesis].

<https://doi.org/10.48550/arxiv.2007.06294> [OA]

#### Invited Talks

1. *Two Approaches to Increasing the Human-Likeness of Visual Attention in DCNNs*  
Vision and Computational Cognition Group (PI: Prof. Martin Hebart)  
Max Planck Institute for Human Cognitive and Brain Sciences, September 29, 2022

#### Science Communication

**van Dyck, L. E.** & Dobs, K. (2023). Modellierung der biologischen Gesichtswahrnehmung mit Künstlicher Intelligenz. *DER AUGENSPIEGEL (German Journal for Ophthalmologists)*, December 2023, 50-53.

#### Ad-hoc Reviewing

*The Journal of Neuroscience, Frontiers in Neuroscience, Cognitive Computational Neuroscience Conference*

## Technical Skills

### Programming

- Languages: Python, MATLAB, R, Bash
- Machine Learning: Scikit-learn, PyTorch, MATLAB Deep Learning Toolbox
- Data Analysis: NumPy, Pandas, Matplotlib, Jupyter
- Version Control: Git

### Laboratory

- Experiment Design: PsychoPy, PsychToolbox
- Data Acquisition: EEG, fMRI, Eye Tracking, Psychophysics, Behavior
- Data Analysis: EEG/MEG (FieldTrip), fMRI (SPM, FSL, FreeSurfer, PyCortex), Eye Tracking, Psychophysics, Behavior

### Languages

- German (Native)
- English (Proficient - C1)
- French (Intermediate - B1)