Personal information

Name:	Frei
First name:	Vanessa Laura
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Date of Birth:	25th July 1992
Nationality:	Swiss
Visa Status:	J-1 Research Scholar visa (valid for up to 5 years)

I study the neural mechanisms underlying speech perception, language processing, and socio-emotional cognition in aging. My work combines EEG, MRI, and psychophysiological methods to identify early biomarkers and modifiable risk factors of cognitive decline. Through naturalistic, multimodal paradigms and translational interventions, I aim to promote cognitive resilience and bridge basic and applied neuroscience in healthy and at-risk older adults.

Education

2025 – 2027	**Postdoctoral researcher** (starting in July 2025), Social-Cognitive and Affective Development Lab, Department of Psychology, University of Florida, United States of America
2024 – 2025	**Postdoctoral researcher** (focus: collaborative project with industry partner Logitech AG, evaluation of a mobile EEG device for increased ecological validity) at Computational Neuroscience of Speech and Hearing, University of Zurich, Switzerland
2021 - 2024	**PhD in Computational Linguistics** (Summa cum laude. Focus: Cognitive Neuropsychology, ageing, age-related hearing loss & cognitive decline, auditory cognitive training, multisensory immersion, age-related bilateral compensation), Computational Neuroscience of Speech and Hearing (led by Prof. Nathalie Giroud), University of Zurich, Switzerland
2021 - 2024	**PhD program attendee**, International Max Planck Research School "the Life Course: Evolutionary and Ontogenetic Dynamics (LIFE)", Berlin, Germany
2019 – 2021	**Master of Science in Psychology** (focus: cognitive neuroscience & gerontological psychology) & Master Thesis at the Department of Cognitive Neuropsychology with focus on Body, Self, and Plasticity (supervision: Prof. Bigna Lenggenhager), University of Zurich, Switzerland
,2012 – 2018	**Bachelor of Science in Psychology** (Major), modern history (minor), University of Zurich, Switzerland

Funding

Spring 2024	Vontobel Award for Aging Research 2025 *Immersive auditory-cognitive training improves speech-in-noise perception in older adults with varying hearing and working memory* Total Funding: $36,500 (**pending**)
Fall 2024	Research Collaboration with Logitech S.A. Europe *A systematic assessment of a mobile in-ear EEG in comparison with a traditional scalp EEG* PI: Nathalie Giroud Total Funding: $40,000
Spring 2023	Excellence Award Competence Center Language & Medicine *Multisensory immersion as a platform for studying sensory and cognitive speech processing in older adults with hearing impairment* Total Award: $6,000

Academic teaching experience

Spring 2023/2025	Brain, Language, Experiments (guest lecturer), Master lecture (part of Linguistics & Evolutionary Language Science), main lecturer: Prof. Martin Ernst Meyer, University of Zurich, Switzerland.
Fall 2023	A Neuropsychological View on Speech and Language Disorders (Guest lecturer), interdisciplinary Master lecture (part of Linguistics, Computational Linguistics and Language Technology), main lecturer: Prof. Nathalie Giroud, University of Zurich, Switzerland.
Fall 2023	Cognitively enhanced NLP (Guest lecturer), interdisciplinary Master lecture (part of digital linguistics, linguistics and Computational Linguistics and Speech Technology) main lecturer: Prof. Lena Jäger, University of Zurich, Switzerland.

Oral and Written Contributions to Peer Reviewed Journals & Conferences

Publications

Ho, J., Niedernhuber, M., **Frei, V**., Scattolin, M., Bekrater-Bodmann, R., Lesur, M.R., Waibel, F., Lenggenhager, B. (under review). *Behavioral and neural effects of virtual embodiment in individuals with Body Integrity Dysphoria*. Journal of Psychiatric Research. IF: 3.7

Frei, V., Mainar, P., Fritz, T., Chardon, J.M., Giroud, N. (under review). *A systematic assessment of a mobile in-ear EEG in comparison with a traditional scalp EEG.* Journal of Neural Engineering. IF: 3.7

Frei, V., & Giroud, N. (accepted for publication). *Presenting natural continuous speech in a multisensory immersive environment improves speech comprehension and reflects the allocation of processing resources in neural speech tracking*. Journal of Cognitive Neuroscience. IF: 3.2 https://doi.org/10.21203/rs.3.rs-4705830/v1

Frei, V., Giroud, N. (2025). *A short-term immersive auditory-cognitive training improves speech in noise perception in older adults with varying hearing acuity and working memory capacity*. npj Science of Learning. IF: 3.6 DOI: 10.1038/s41539-025-00306-5

Frei, V., Schmitt, R., Meyer, M., Giroud, N. (2024). *Processing of Visual Speech Cues in Speech-in-Noise Comprehension Depends on Working Memory Capacity and Enhances Neural Speech Tracking in Older Adults With Hearing Impairment*. Trends in Hearing. IF: 3.49 https://doi.org/10.1177/23312165241287622

Talks

Frei, V., Giroud, N. (2024, June). Using a multisensory immersive environment to investigate allocation of sensory and cognitive processing resources in older individuals. Is this allocation reflected in behavioural- and neural speech correlates? 7th International Conference on Cognitive Hearing Science for Communication (CHSCOM). Linköping, Sweden.

Frei, V., Giroud, N. (2024, May). Naturalistic multisensory immersion as a platform for studying the association between auditory perception and cognition in older adults with hearing impairment. International Max Planck Research School on the Life Course (LIFE), organized by the University of Virgina. Charlottesville, United States of America.

Frei, V., Giroud, N. (2023, November). The potential of immersive auditory-cognitive training as a platform for studying hearing-loss and cognitive decline. International Max Planck Research School on the Life Course (LIFE). Zurich, Switzerland

Frei., V., Meyer, M., & Giroud, N. (2022, June). The facilitative role of visual speech cues in older individuals with hearing impairment – how is audio-visual speech processed in hearing aid users? 6th International Conference on Cognitive Hearing Science for Communication (CHSCOM). Linköping, Sweden.

Poster presentations

Frei, V., Giroud, N. (2024, February). Supporting speech comprehension in ageing: The impact of an immersive environment on behavioural and neural correlates of spoken communication. Burghoelzli Psychiatry Meeting, Zurich, Switzerland.

Frei, V., Giroud, N. (2023, August). The potential of immersive auditory-cognitive training as a platform for studying hearing-loss and cognitive decline. International Symposium on Auditory and Audiological Research, Nyborg, Denmark.

Frei, V. & Giroud, N. (2023, July). The potential of immersive auditory-cognitive training as a platform for studying hearing-loss and cognitive decline. Alzheimer's Association International Conference, Amsterdam, Netherlands.

Frei, V., Giroud, N. (2023, May). Naturalistic multisensory immersion as a platform for studying the association between auditory perception and cognition in older adults with hearing impairment. International Max Planck Research School on the Life Course (LIFE), organized by the University of Michigan. Ann Arbor, United States of America.

Frei, V., & Giroud, N. (2022, October). Individual differences in benefit of visual speech cues for older adults with hearing impairment. International Max Planck Research School on the Life Course (LIFE), organized by the Max Planck Institute for Human Development. Berlin, Germany

Frei, V., & Giroud, N. (2022, June). Neural speech tracking in age related hearing loss as a function of hearing aid use. Language & Medicine Market (L&M), Zürich, Switzerland.

Frei, V., & Giroud, N. (2022, June). Neural speech tracking in age related hearing loss as a function of hearing aid use. HEaring Across the Lifespan (HEAL), Lake Como, Italy.

Frei, V., & Giroud, N. (2022, January). Neural speech tracking in age related hearing loss as a function of hearing aid use. 13th Speech in Noise Workshop (SPIN).

Additional scientific experience

2021 - present	Member of competence center Language & Medicine, Competence Center of Medical Faculty and Faculty of Arts and Sciences, University of Zurich, Switzerland
2018	Research internship, Department of Work & Organizational Psychology, University of Zurich, Switzerland
2015	Research internship, Department of Cognitive Neuropsychology , University of Zurich, Switzerland
2010	English exchange, Dublin, Ireland

Skills

Electroencephalographic (EEG) assessment

- Time-domain analysis (event-related potential)
- Power Spectral Density, Time-Frequency Analysis (e.g., Morlet Wavelets, Short-Time Fourier Transform)
- Inter-Trial Phase Coherence
- Phase-Amplitude Coupling
- Neural speech tracking / entrainment
- Independent Component Analyses
- Mobile EEG assessment

Virtual Reality & stimuli recording

- Canon EOS R5 (stereoscopic recording)
- HP Reverb G2 Virtual Reality HMD (stimuli presentation)
- NBS presentation and Steam (synchronization between EEG and VR recording)

Analysis & Coding

- MNE Python
- EEG/ERP data processing in EEGLAB & FieldTrip toolbox in MATLAB
- NBS Presentation
- Praat (computational phonetics)
- R/R-Studio, SPSS
- Microsoft Excel, Word, PowerPoint

Advanced Training

2025	Neuroimaging course at the Department of Neurology, University Hospital Zurich, Prof. L. Michels
2023	Advanced Analyses of EEG Data Using Matlab by Prof. Andreas Keil
2022	Introduction to Mixed Models in R by Prof. Bertolt Meyer
2022	Colloquium Neuroscience of Speech & Language
2021	Introduction to Biosemi EEG and Training (by NEUROSPEC AG, Marc Mosimann)
2022	2nd Healthy Longevity Innovation Days at the University of Zurich
2021	1st Healthy Longevity Innovation Conference at the University of Zurich
2021	Cognition and Natural Sensory Processing Workshop