

Colloquium/Seminar

Progress in Brain Language Research

Friedemann Pulvermüller

2 SWS, Seminar/Colloquium, SoSe 2023

Zeit/Time: Mi/Wed 16-18 h (start: 16:15h)

Ort/Location: FU Berlin, room KL 32/102 (Habelschwerdter Allee 45)

On Webex: <https://fu-berlin.webex.com/fu-berlin-en/j.php?MTID=m17a644d7e793f72e6dcb94677381fea8>

Colloquium/Seminar *Progress in Brain Language Research*

This seminar is for BA, MA and PhD students and for researchers interested in language science. The course will focus on reviewing and discussing recent progress in the cognitive neuroscience of language and in the fields of semantics and pragmatics. The seminar has four main strands:

1. BA and MA candidates working in the field of semantics, pragmatics or brain language research will present their work plans and first results,
2. Researchers at the FU Berlin's Brain Language Laboratory will present their ongoing work and explain their recent findings or summarize their recent publications,
3. Recently published remarkable research articles in the fields of brain language research, semantics and pragmatics will be reviewed by the participants to highlight the progress in the field,
4. National and international expert speakers will present their research in cognitive neuroscience of language and linguistics.

This term, there will be a focus on research related to the ongoing ERC Advanced Grant Project *Material Constraints Enabling Human Cognition (MatCo)*, where we are trying to specify the mechanistic neuronal circuits underlying human language use. Ongoing research from a range of other current research endeavors will also be featured. Work from the EU's International Training Network *Conversational Brains (CoBra)* and the French-German research initiative on *Phonological Networks in Speech Production and Understanding (PhoNet)*, will be in focus in two sessions jointly held with Prof Kristof Strijker's group at the CNRS Laboratoire Parole et Langage of Université Aix-Marseille. In addition, work from the DFG-projects on *Brain Signatures of Communication (BraiSiCo)*, *The Sound of Meaning (SOM)* and *Intensive Language Action Therapy of Aphasia (ILAT)* will be covered. Generous funding support by the European Research Council, the European Union and the Deutsche Forschungsgemeinschaft is kindly acknowledged.

Most presentations will be given in English, but presentations in German are welcome too. Students and researchers who are interested to participate in this colloquium are kindly requested to contact Verena.Arndt@fu-berlin.de or Friedemann Pulvermüller.

Seminar related recent publications:

Boux, I. P., Margiotoudi, K., Dreyer, F. R., Tomasello, R., & Pulvermüller, F. 2022. Cognitive features of indirect speech acts. *Language, Cognition and Neuroscience*, 135, 1-25. doi:

<https://doi.org/10.1016/j.cortex.2020.11.008>

Constant, M., Pulvermüller, F., & Tomasello, R. 2023. Brain constrained modelling explains fast mapping of words to meaning. *Cerebral Cortex*, in press.

Grisoni, L., & Pulvermüller, F. 2022. Predictive and perceptual phonemic processing in articulatory motor areas: A prediction potential & mismatch negativity study. *Cortex*, 155, 357-372. doi:

10.1016/j.cortex.2022.06.017

Henningsen-Schomers, M. R., Garagnani, M., & Pulvermüller, F. 2023. Influence of language on perception and concept formation in a brain-constrained deep neural network model. *Philosophical Transactions of the Royal Society B: Biological Sciences*. doi: <https://doi.org/10.1098/rstb.2021.0373>

Tomasello, R., Grisoni, L., Boux, I., Sammler, D., & Pulvermüller, F. 2022. Instantaneous neural processing of communicative functions conveyed by speech prosody. *Cerebral Cortex*, 32 (21), 4885-4901. doi:

10.1093/cercor/bhab522

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Technicalities

The course is part of the teaching offered by the Freie Universität's FB Philosophy and Humanities and by the Berlin School of Mind and Brain at the Humboldt Universität. It is open to interested students from all departments. It will be chaired by Friedemann Pulvermüller under the admin support of Verena Arndt.

To obtain a certificate of attendance, it is necessary to

- attend most of the sessions (maximum misses: three),
- pre- and reprocess the session content by reading the recommended key papers, and
- present a key paper, own research or a research plan addressing language related topics.

Contact and more information:

Verena Arndt (Sekretariat), online or rm JK 31/234; phone: +49 (0)30 838 58140 E-mail:

verena.arndt@fu-berlin.de

Friedemann Pulvermüller, online or rm JK 31/232; Office hour: Wed 12-13 h

For more information and updates, please visit:

<http://www.brainlang.fu-berlin.de/teaching>

<http://www.geisteswissenschaften.fu-berlin.de/v/brainlang/teaching/index.html>

Comments on the Seminar Program

This term, most of the seminars will be held at the Freie Universität 'in-presence'; however, some sessions where speakers cannot come to Berlin will be 'virtual' seminars (as indicated by *blue text*). We will start with a session on Webex (<https://fu-berlin.webex.com>). In preparation, please install the free version of 'Cisco Webex Meetings' available from the FU website if you haven't already done so, and make sure that you have communicated your email address to verena.arndt@fu-berlin.de!

You can partake in the virtual sessions by clicking the link:

<https://fu-berlin.webex.com/fu-berlin-en/j.php?MTID=m17a644d7e793f72e6dcb94677381fea8>

For non-virtual 'in Präsenz' sessions of this seminar, the following time slot and room have been reserved: **Wednesdays, 16:15 – 17:45 h, in room KL 32/102 of the main building of the Freie Universität Berlin, Habelschwerdter Allee 45, 14195 Berlin**. For lectures with external speakers, other locations may be booked. It may be possible to attend in-presence sessions via webex.

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Seminar Program

sessions will be **virtual only (blue)** or in real life ('in presence')

Webex link to the colloquium and lecture room: see header above.

19.04. Introduction, Seminar Planning (via webex)

Introduction and Planning of this semester's colloquium program

26.04. Research talk by Dr Alex Miklashevsky, FU Berlin and Universität Potsdam

Processing sensorimotor language: Contextual flexibility and individual variability

03.05., 16hct via webex (virtual only!): PhoNet/CoBra joint lab meeting with Dr Kristof Strijkers' group, CNRS Aix-Marseille University:

Research talk by Xenia Dmitrieva

Research talk by Salomé Antoine

10.05. BA research plan presentation by Nina Krautien

Die Beteiligung des visuellen Kortex an der Sprachverarbeitung bei congenital Blinden

17.05. Guest lecture by Prof Dr Ad Aertsen, Bernstein Center Freiburg and Department of Biology, Universität Freiburg

Mechanisms underlying the generation of spatio-temporal sequences in spiking neuronal networks

24.05. Research talk by Agata Feledyn, BLL

Whole-brain model of neural dynamics under the effect of a psychedelic drug (Dimethyltryptamine, DMT)

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31.05. Guest lecture by Phuc Nguyen

A brain-constrained neural network model of proper names and category terms

07.06. - no seminar -

14.06. Progress report by Maxime Carriere

TBC

21.06. Project presentation by Fynn Dobler

Language related structural changes to abstract concept representations in a brain-constrained neural network model (possibly with report on syntax simulations)

28.06. Guest lecture by Dr Felix Dreyer, Universität Bielefeld

On a move from Science to Science Support: First-Hand experience from the early stages of a Service Center for Medical Data Science

Fr., 30.06., 14hct via webex (virtual only!): PhoNet/CoBra joint lab meeting with Dr Kristof Strijkers' group, CNRS Aix-Marseille University:

Research talk by Emilia Kerr on brain activity during communicative interaction

Research talk by Salomé Antoine on brain indexes of prediction in communicative interaction

05.07. Practice talk for viva by Isabella Boux

Communication beyond form

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12.07. Project presentation by Dr Luigi Grisoni

'4ways' experiment for the 'PhoNet' project: interaction of phonology, semantics, pragmatics and language modality?

Practice talk by Tally Miller

Investigating causal effects of verbal labels on tactile discrimination

19.07. Project presentation by Isabella Boux and Milena Osterloh

Brain indexes of statements vs internal state expressions

Course evaluation, planning of future seminar program

Fr, 28.07., 16h: Guest lecture by Prof Andreas Knoblauch, Fachbereich Informatik, Hochschule Albstadt-Sigmaringen

Learning mechanisms in neural networks and in artificial intelligence (preliminary)