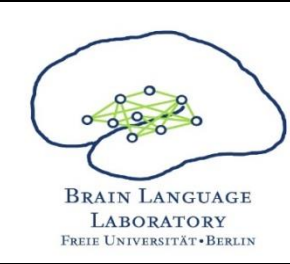


# *Language and the Brain*

Lecture series, Berlin School of Mind and Brain,  
summer term 2023

Pia Knoeferle, Humboldt Universität zu Berlin  
Friedemann Pulvermüller, Freie Universität Berlin

Tutorial: Johanna Knechtges and Angela Patarroyo



## *Language and the Brain:*

# Introduction: Technicalities & Admin

Friedemann Pulvermüller & Pia Knoeferle

# Overview

- Lecture series at the Berlin School of Mind and Brain:  
82851 (HUzB), 16857 (FUB)
- Open to MA students berlinwide, incl FUB, HUzB, TUB
- Time: Monday, 12:15 – 13:45  
(First Lecture: 24.4.2023)

# Overview

- Venues:
  - **Lectures by Prof. Friedemann Pulvermüller (first half):**  
**In person:** FUB, lecture hall KL 32/123 (*Habelschwerdter Allee 45*)  
**Online:** Via Zoom or via Livestreaming at HU
  - **Lectures by Prof. Pia Knoeferle (second half):**  
**In person:** HUzB, Bernstein Center for Computational Neuroscience (*Philippstraße 13/Haus 6, Raum 114*)  
**Online:** Via Zoom (*you can use KL 32/123 to attend at FU remotely via your own devices*)
  - **Exam practice and exam (2 last sessions)**  
**In person:** HUzB, Bernstein Center for Computational Neuroscience (*Philippstraße 13/Haus 6, Raum 114*)

# Zoom Information

- Meeting Link: <https://hu-berlin.zoom.us/j/67226169682?pwd=Z1Z4UVE5SnAzMktRN0N4SEplNDlYQT09>
- Meeting-ID: 672 2616 9682
- Password: 835873

Language has been investigated from a range of perspectives, rooted in diverse disciplines such as the humanities and philosophy, psychology, and neuroscience. These disciplines have focused on different aspects such as on language as a formal system relating sound to meaning, on the language-related behavior of humans, on how the language system is acquired, and on the ways how language is implemented in the brain. In this course, we will outline linguistic and neurocognitive perspectives on the architecture of language, from phonology to syntax to semantics and pragmatics. We will give an introduction into the major psycholinguistic findings concerning the processing of language, such as the recognition of words, the parsing of sentences, and the computation of the intended meaning. And we will give an overview of what is known about the neural mechanisms underlying language processing in the human brain, also addressing their failure in language disorders. Throughout, students will be familiarized with current research questions in the field of brain language research and with current methods and paradigms in psycho- and neurolinguistics.

# How do I get access to the lecture materials?

HUzB moodle:

- Link: <https://moodle.hu-berlin.de/course/view.php?id=118749>
- Password: LangAB.23

For FUB students:

- You can use Moodle by creating an account with your FUB or private email-address (it only takes 2 minutes):

# How do I get access to lecture material?

## LOGIN INFORMATION FOR FU STUDENTS:

1. Please register at HU Moodle (you can use any Email address)  
<https://moodle.hu-berlin.de/login/index.php>
2. Self-enroll by using the link & password shown before

## If you can not register yourself:

1. Check our detailed instructions on [https://www.geisteswissenschaften.fu-berlin.de/v/brainlang/teaching/SoSe23/VL\\_LangBrain/index.html](https://www.geisteswissenschaften.fu-berlin.de/v/brainlang/teaching/SoSe23/VL_LangBrain/index.html)
2. Get in contact with [j.knechtges@fu-berlin.de](mailto:j.knechtges@fu-berlin.de)



# Tutorial

- Offered by Johanna Knechtges and Angela Patarroyo
- **Time: Fridays, 15:00-16:30 h** (First Tutorial: 28.04.)
- Venue: Bernstein Center for Computational Neuroscience, *Philippstr. 13., 10115 Berlin, House 6, Lecture Hall (ground floor)*
  
- Mandatory for M&B students
- Aim:
  - Complementing the lecture series
  - Deepen the lecture contents
  - Discussing specific relevant articles with theoretical & experimental focus

# Moodle & Contact Tutorial

Moodle:

- Link: <https://moodle.hu-berlin.de/course/view.php?id=118754>
- Password: TULangAB

If you have questions concerning the tutorial please contact

- Johanna Knechtges ([j.knechtges@fu-berlin.de](mailto:j.knechtges@fu-berlin.de))
- Angela Patarroyo ([patarroa@hu-berlin.de](mailto:patarroa@hu-berlin.de))

# Qualification, Contribution, Grading

- There will be an exam in the last session of the course. Students are also expected to actively participate in online quizzes and QA sessions.
- Contribution & Grading:
  - Lecture: 25 h + 35 h study: 2 LP
    - Obligatory and suggested before & reading after the sessions
    - Active participation in most (at least n – 3) sessions
  - Tutorial: 25 h + 35 h study: 2 LP (for M&B students)
  - Module exam: 1 LP for all (graded for M&B) students
  - Additional essay: for modules (e.g., neuro/cognit linguistics/research) of the FUB's MA Sprachwissenschaft/Linguistics

# Preparatory Readings:

- Fromkin, V., Rodman, R., & Hyams, N. (2013). An introduction to language. Wadsworth: Cengage Learning.
- Hickok, G., & Small, S. L. (Eds.). (2016). Neurobiology of Language. Amsterdam: Elsevier.
- Pulvermüller, F., & Fadiga, L. (2016). Brain language mechanisms built on action and perception. In G. Hickok & S. L. Small (Eds.), Neurobiology of language (pp. 311-324). Amsterdam: Elsevier.
- Pulvermüller, F. (2018). Neural reuse of action perception circuits for language, concepts and communication. Progress in Neurobiology, 160, 1-44. doi: 10.1016/j.pneurobio.2017.07.001

# Lecture Schedule

01. FP	From Brain Structure to Linguistic Function	24.04.
03. FP	Meaning in mind and brain	08.05
04. FP	Speech Acts and Communication	15.05
05. FP	Language Breakdown and Therapy	22.05
06. FP	Brain Constrained Neural Language Modelling	05.06.
07. PK	Knowledge and processing	12.06.
07. PK	Methods: Eye-tracking and ERPs	19.06
08. PK	Processing syntactic structure	26.06
09. PK	Semantic interpretation	03.07.
10. PK	Social aspects in language processing	10.07
11. PK & FP	Exam Review (at HU)	17.07
12.	Final exam (at HU)	24.07

Language has been investigated from a range of perspectives, rooted in diverse disciplines such as the humanities and philosophy, psychology, and neuroscience. These disciplines have focused on different aspects such as on language as a formal system relating sound to meaning, on the language-related behavior of humans, on how the language system is acquired, and on the ways how language is implemented in the brain. In this course, we will outline linguistic and neurocognitive perspectives on the architecture of language, from phonology to syntax to semantics and pragmatics. We will give an introduction into the major psycholinguistic findings concerning the processing of language, such as the recognition of words, the parsing of sentences, and the computation of the intended meaning. And we will give an overview of what is known about the neural mechanisms underlying language processing in the human brain, also addressing their failure in language disorders. Throughout, students will be familiarized with current research questions in the field of brain language research and with current methods and paradigms in psycho- and neurolinguistics.

# Background? Embedding?

- Range of perspectives on language:
  - Humanities
  - Philosophy
  - Psychology
  - Neuroscience
- Focus on different aspects of language:
  - Language as a formal system relating sound to meaning
  - language-related behavior of humans
  - Acquisition of the language system
  - ways how language is implemented in the brain

# This lecture provides

- Outline of linguistic and neurocognitive perspectives on the architecture of language (*from phonology to syntax to semantics and pragmatics*)
- Introduction into major psycholinguistic findings concerning the processing of language such as
  - Recognition of words
  - Parsing of sentences
  - Computation of intended meaning
- Overview of neural mechanisms underlying language processing (and their failure)
- Insight into current research questions in the field of brain language research
- Overview of current methods & paradigms in psycho- & neurolinguistics



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