16886 Colloquium / Seminar
**Progress in Brain Language Research**
Friedemann Pulvermüller
2 SWS, Seminar/Colloquium
Zeit: Wed/Mi, 16-18 h; first session: 19.04.2017
Ort: JK 31/102 Geschäftszimmer (Habelschwerdter Allee 45)

Seminar/Colloquium: Progress in Brain Language Research

This research seminar focuses on reviewing and discussing recent progress in the cognitive neuroscience of language. It has four main strands. 1) External speakers will set the stage for focused discussion of cutting edge research in the field. 2) In depth reviews of research publications will provide insights into recent progress in brain language research. 3) Researchers at the FU Berlin's Brain Language Laboratory will present their own research plans and aspects of their ongoing research to open discussion of future research perspectives. 4) BA and MA students from the Arbeitsbereich 'Neuroscience of Language and Pragmatics' will introduce their project plans and results to receive comments, assistance and guidance.

Hot topics that will form the seminar's foci in the new semester include the neural manifestations of linguistic-semantic and -pragmatic prediction (see Grisoni et al.), mapping words semantics onto the brain (see Carota et al.), the simulation of brain language mechanisms using mathematical models (see Schomers et al.) and language therapy after stroke (Stahl et al., Lucchese et al.).

Recommended reading:

Carota, F., Nili, H., Kriegeskorte, N., & Pulvermüller, F. (2017). Representational similarity mapping of distributional semantics in left inferior frontal, middle temporal and motor cortex. Cereb Cortex, in press.

Grisoni, L., McCormick-Miller, T., & Pulvermüller, F. (2017). Neural correlates of semantic prediction and resolution in sentence processing. Journal of Neuroscience, in press.

Lucchese, G., Pulvermuller, F., Stahl, B., Dreyer, F. R., & Mohr, B. (2016). Therapy-Induced neuroplasticity of language in chronic post stroke aphasia: A Mismatch Negativity study of (a)grammatical and meaningful/less mini-constructions. Front Hum Neurosci, 10, 669.

Schomers, M., Garagnani, M., & Pulvermüller, F. (2017). Neurocomputational consequences of evolutionary connectivity changes in perisylvian language cortex. J Neurosci, 3(11), 3045–3055.

Stahl, B., Mohr, B., Dreyer, F. R., Lucchese, G., & Pulvermuller, F. (2016). Using language for social interaction: Communication mechanisms promote recovery from chronic non-fluent aphasia. Cortex, 85, 90-99.

Tomasello, R., Garagnani, M., Wennekers, T., & Pulvermüller, F. (2017). Brain connections of words, perceptions and actions: A neurobiological model of spatio-temporal semantic activation in the human cortex. Neuropsychologia, in press.

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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 and co-organised by Tally McCormick-Miller 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 the language mechanisms of the human brain. Presentations can be brief or last up to 30'.

Contact and more information:

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Friedemann Pulvermüller, 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.brainlang.fu-berlin.de/talks

**Seminar Program**

Unless otherwise noted, the Seminar will be held on Wednesdays, from 16:15 – 17:45 h in room JK 31/122 of the main building of the Freie Universität Berlin, Habelschwerdter Allee 45, 14195 Berlin.

**21.2. Guest lecture:**

**Nicola Crook, University of Sheffield**
**ILAT in the NIH environment – a research plan**

**22.2. Guest lecture:**

**Dr Kristof Strijkers, CNRS and Université Aix-Marseille**
**Word as neural assemblies**

19.04. Seminar overview and planning of the summer term

**26.04. Guest lecture:**

**Dr. Olaf Hauk, MRC Cognition & Brain Sciences Unite, Cambridge University**
**Human cognitive neuroscience of language: how she is taught (and how she should be)**

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03.05. Research talk:

*Dr. Jeff Hanna, BLL, FUB: Nonlinear, spatio-temporal description of neurophysiological responses to language revealed by convolutional neural networks: toward a new paradigm in brain-language research*

*Konstantina Margiotoudi, BLL, FUB: Sound Symbolism*

10.05. no seminar (Düsseldorf talk)

**17.05. Guest lecture:**

**Prof. Dr. John Nyakatura, Humboldt Universität zu Berlin**
**Motor Resonance in Picture Perception**

24.05. no seminar (European Stroke Conference, Berlin)

31.05. Research report

*Isabella Boux & Rosario Tomasello, BLL, FUB: First results from a speech act production experiment*

*Natasha Janzen Ulbricht: Teaching tool codified gestures – can more pupils learn more?*

**07.06. Guest lecture:**

**Dr. Bert Cappelle, Université Lille 3**
**A linguist's look at brain data**

**14.06., 17:00 h: Guest lecture, Großer Konferenzraum, Klinik für Psychiatrie, Charite CBF:**

**Prof. Dr. Brigitte Rockstroh, Universität Konstanz**
**Train the brain - change the (dysfunctional) brain? - Wirkungen Neuroplastizitäts-basierter Trainings auf kognitive Defizite bei schizophrenen Störungen**

21.06. no seminar (Dresden workshop on brain dynamics)

**Tuesday, 27.06., 17:30 h: Guest lecture at the Berlin School of Mind & Brain, Luisenstr. 56:**

**Dr. Gesa Hartwiggsen, MPI for Human Cognitive Neuroscience, Leipzig**
**Modulating language networks with transcranial magnetic stimulation: Functional relevance, adaptive plasticity and effective connectivity on the systems level**

28.06. Research talk/Guest lecture:

*Dr Malte Schomers, BLL, FUB: A neurobiologically inspired computational model of sensorimotor grounding of abstract semantics*

*Dr Luigi Grisoni, BLL, FUB: Functional relationships between the predictive and evaluative brain responses (or between RP and MMN)*

**Tuesday, 04.07.** Research talk:

*Francesca Carota, BLL, FUB:* The neural encoding of semantic relationships between and within words: evidence from representational similarity analyses of fMRI data

*Rosario Tomasello & Lea Doppelbauer, BLL, FUB: Brain lesion simulations*

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05.07. no seminar (Groningen conference on speech motor control)

**12.07. Guest lecture:**

**Dr. Olga Iljina, Universität Freiburg**
**Investigations of spontaneous, real-world speech production using ECoG**

**19.07. Guest lecture:**

**Dr. Milena Rabovsky, Humboldt Universität zu Berlin**
**N400 amplitudes as change in an implicit probabilistic representation of meaning: A neural network model**

Seminar evaluation and outlook
Planning of program for the semester break and winter term

**5.9. European Society for Cognitive Psychology Conference Potsdam, Grounded Semantics Symposium**

**7.9. Berlin School of Mind & Brain: Panel Discussion on Grounded Semantics**

| Name | Suggested dates | topic |
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Suggestions for discussion papers:

Chen, L., Ralph, M. A. L., & Rogers, T. T. A unified model of human semantic knowledge and its disorders. Nature Human Behaviour, 1, 0039.

Ralph, M. A., Jefferies, E., Patterson, K., & Rogers, T. T. (2017). The neural and computational bases of semantic cognition. Nat Rev Neurosci, 18(1), 42-55.

Binder, J. R., Conant, L. L., Humphries, C. J., Fernandino, L., Simons, S. B., Aguilar, M., & Desai, R. H. (2016). Toward a brain-based componential semantic representation. Cogn Neuropsychol, 33(3-4), 130-174. doi:10.1080/02643294.2016.1147426

Walker, G. M., & Hickok, G. (2016). Bridging computational approaches to speech production: The semantic-lexical-auditory-motor model (SLAM). Psychon Bull Rev, 23(2), 339-352.