Rosario Tomasello

Substitute professorship & Post-doctoral research

Short bio:
From 2014 to 2016, Rosario held a research assistant position in Neurocomputational Modelling of Language Learning for the interdisciplinary [BABEL project](#) between Plymouth, Manchester and Berlin universities; 2016-2019, Rosario pursued his PhD at the Brain Language Laboratory (Freie Universität Berlin), which was founded by the [Berlin School of Mind and Brain](#) (M&B, Humboldt Universität zu Berlin), where he also completed the doctoral M&B program.

Currently, Rosario is holding a 50% replacement professorship for "Cognitive Modeling" at the [Institute Cognitive Science](#) at the University of Osnabrück alongside a 50% Lecture position as a replacement for a W3-Professorship for "Neuroscience of Language and Pragmatics" at the [Freie Universität Berlin](#). He continues is work started as a research fellow (2019-2024) at the Cluster of Excellence [Matters of Activity](#) (DFG EXC2025/1) and as Project leader in the subproject "Cutting" of the Humboldt Universität zu Berlin. Additionally, he is also handling editor at the [Cognitive Processing](#) journal of the publisher Springer Nature.

Research interests
Rosario's primary research interests encompass two main domains: (i) the neural underpinnings of **semantic processing**, with a focus on how different word categories (e.g. animal, tool, action) are processed, stored, and acquired in healthy and deprived brains, and (ii) the **neural correlates underlying pragmatic information of communicative functions** in the context of speech, intonation, and gestures, taking into account social interactions and common ground.

To this end, Rosario coordinates neuroscience experiments (behavioral and electroencephalography EEG) to advance our understanding of the architecture of the language system and its functions in social interactions. He is also responsible for developing precise mathematical brain models of active neural matter capable of processing different aspects of cognition (language, symbols, thought).

Teaching:
Rosario has given seminars and lectures on *Introduction to Linguistics*, *Neuropragmatics*, *Neurosemantics*, *Language Evolution*, *Language Acquisition, Computational modeling*, and *Language and Brain Research* with a particular focus on linguistic, neuroscientific and digital humanities methods, i.e., computer-based simulations of the cortex, EEG, fMRI, TMS, Dialogue Transcriptions, Rating Study etc.

He has taught in both German and English for BA German Philology, BA Educational Science and, MA Linguistics at the Freie Universität Berlin, the MA/Ph.D. programs of the Berlin School of Mind and Brain at Humboldt Universität zu Berlin and BA/MA Linguistics at the University of Vienna. Currently, he is teaching seminars on language evolution and pragmatics as well as on current trends in language and brain research at Osnabrück University for the BA/MA Cognitive Science program.

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Publications

- **Tomasello, R.**, Carriere, M., & Pulvermüller, F. 2024. The impact of early and late blindness on language and verbal working memory: A brain-constrained neural model. *Neuropsychologia*, 108816.
- *Barthel, M., **Tomasello, R.,** Liu, M., 2024. Conditionals in Context: Brain signatures of prediction in discourse processing, *Cognition*. ***Both authors contributed equally to this work***
- *Carriere, M., Tomasello, R., & Pulvermüller, F. 2023. Can Human Brain Connectivity explain Verbal Working Memory?, Preprint*
- Constant, M., Pulvermüller, F. **Tomasello, R.** 2023. Brain-constrained neural modeling explains fast mapping of words to meaning. *Cerebral Cortex*, bhad00.
- **Tomasello, R**. 2023. Linguistic signs in action: The neuropragmatics of speech acts. *Brain & Language* 236:105203.
- Shebani, Z., Carota, F., Hauk, O., Rowe, J.B., Lawrence, W.B., **Tomasello, R**., & Pulvermüller, F. 2022. Brain correlates of action word memory revealed by fMRI. *Sci Rep* 12:16053.
- Boux, I., Margiotoudi, K., Dreyer, F., **Tomasello, R**., & Pulvermüller, F. 2022. Cognitive features of indirect speech acts, *Language, Cognition and Neuroscience*, 1-25.
- **Tomasello, R**., Grisoni, L., Boux, I., et al. 2022. Instantaneous Neural Processing of Communicative Functions Conveyed by Speech Prosody. *Cerebral Cortex*.
- Barthel M., **Tomasello R.**, Mingya L. 2022. Online interpretation of conditionals in context: A self-paced reading study on *wenn* (if) and *nur wenn* (only if) in German. *Linguistics Vanguard*.

- Picht, T., Le Calve, M., **Tomasello, R.,** Fekonja, L., Gholami, F., Bruhn, M., Zwick, C., Rabe, J., Müller-Birn, C., Vajkoczy, P., Sauer, I., Zachow, D., Nyakatura, J., Ribault, P., & Pulvermüller, F. 2021. Letter: A note on neurosurgical resection and why we need to rethink cutting. *Neurosurgery*.

- Pulvermüller, F., **Tomasello, R.**, Henningsen-Schomers, MR., Wennekers, T. 2021. Biological constraints on neural network models of cognitive function. *Nature Review Neuroscience*.
- Boux, I.*, **Tomasello, R**.*, Grisoni, L., Pulvermüller, F. 2021. Brain signatures predict communicative function of speech production in interaction. *Cortex 135,* 127-145. ***Both authors contributed equally to this work.***
- Grisoni, L., **Tomasello, R.** Pulvermüller, F., 2020. Correlated Brain Indexes of Semantic Prediction and Prediction Error: Brain Localization and Category Specificity. *Cerebral Cortex.*
- Schilling, A., **Tomasello, R.**, Henningsen-Schomers, M.R., Zankl, A., Surendra, K., Haller, M., Karl, V., Uhrig, P., Maier, A., Krauss, P., 2020. Analysis of continuous

neuronal activity evoked by natural speech with computational corpus linguistics methods. *Language, Cognition and Neuroscience* 1–20.

- **Tomasello, R**., Kim, C., Dreyer, F. R., Grisoni, L., & Pulvermüller, F. 2019. Neurophysiological evidence for rapid processing of verbal and gestural information in understanding communicative actions. *Scientific Reports*, 9(1), 16285.

- **Tomasello, R.,** Garagnani, M., Wennekers, T., Pulvermüller, F. 2019. Recruitment of visual cortex for language processing in blind individuals is explained by Hebbian learning. *Scientific Reports* 9(1):3579.

- **Tomasello, R.,** Garagnani, M., Wennekers, T. & Pulvermüller, F. 2018. A neurobiologically constrained cortex model of semantic grounding with spiking neurons and brain-like connectivity. *Frontiers in Computational Neuroscience* 12, 88.

- Shebani, Z., Carota, F., Hauk, O., Rowe, J.B., Barsalou, L.B., **Tomasello, R.,** Pulvermuller, F. 2018. Brain correlates of action word memory. bioRxiv 412676.

- **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, 98:111–29*

- Garagnani M, Lucchese G, **Tomasello R**, Wennekers T, Pulvermüller F. 2017. A Spiking Neurocomputational Model of High-Frequency Oscillatory Brain Responses to Words and Pseudowords. *Frontiers in Computational Neuroscience* 10:1–19.