

Academic Employment

- 2025– **Assistant Professor in Neurolinguistics**
Department of Theoretical and Applied Linguistics
University of Cambridge (Cambridge, UK)
- 2022–2025 **Juan de la Cierva Post-doctoral Fellow**
Basque Center on Brain, Cognition, and Language (BCBL) | Advisor: Manuel Carreiras
- 2021–2025 **Consultant**—SAVANT project (ESRC)
Queen Mary University of London, UK | PI: Linnaea Stockall

Education

- 2022 **Ph.D. in Psychology** | *Cognition & Perception program*
New York University | Neuroscience of Language Lab | Advisor: Alec Marantz
Dissertation: *Processing Latent Information in Language Comprehension*
- 2011 **M.Sc. in Biomedical Engineering**, *summa cum laude*
Technion–I.I.T, Haifa | Neural Interface Engineering Lab | Advisor: Shy Shoham
Thesis: *Diffraction Multiphoton Neural Interfaces*
- 2008 **B.Sc. in Biomedical Engineering**, *summa cum laude*
Technion–I.I.T, Haifa | Major: Medical imaging and biological signal processing

Honors, Awards, and Grants

- 2026 Cambridge Language Sciences Incubator Fund (£5,000)
- 2024 Human Sentence Processing annual meeting Travel Award (\$400)
- 2023–2025 *Juan de la Cierva* postdoctoral fellowship—Spain's State Research Agency (€30,000/year)
- 2023–2026 Spain's Ministry for Science and Innovation—*Plan Nacional* funding (PI: Brendan Costello)
Free association norms for LSE: mapping the semantics of the mental lexicon in Spanish Sign Language
- 2021–2023 Voted Society for the Neurobiology of Language's student & post-doc representative
- 2020–2021 NYU's GSAS Dean's Dissertation Fellowship (\$29,500/year)
- 2020 Abstract Merit Awards, honorable mention—Society for the Neurobiology of Language
- 2019 NYU's GSAS Dean's Student Travel Grant (\$500)
- 2018 Cold Spring Harbor Labs' *Genetics & Neurobiology of Language* course funding (\$700)
- 2018 Society for the Neurobiology of Language Travel Award (\$550)
- 2018 NYU's GSAS Dean's Student Travel Grant (\$500)
- 2016–2022 NYU's GSAS MacCracken Fellowship (\$29,000/year)
- 2012 Winner of Young Palestinian Writer Award—A. M. Qattan Foundation, Ramallah (\$2000)
- 2011 Graduated *summa cum laude* (1st) from M.Sc. in Biomedical Engineering, Technion–I.I.T
- 2009–2011 Excellence Scholarship during M.Sc.—Council for Higher Education (\$20,000/year)
- 2008 Graduated *summa cum laude* (1st) from B.Sc. In Biomedical Engineering, Technion–I.I.T
- 2004–2008 President's Honor Roll for scholastic achievement, 8 B.Sc. semesters, Technion–I.I.T

Publications and Proceedings

- **Matar S.**, Morcillo Ortega P., Carreiras M. (2025). Reading comprehension involves adding simple and composite discourse referents to a mental model, *Proceedings of the 2025 Cognitive Science Society Conference*. [Link](#)
- **Matar S.** & Marantz A. (2025). Neural bases of proactive and predictive processing of meaningful sub-word units in speech comprehension, *Journal of Neuroscience* 45 (7) e0781242024. [Link](#)
- Cayado K., Wray S., Chacón D., Lai M., **Matar S.**, & Stockall L. (2024). MEG evidence for left temporal and orbitofrontal involvement in breaking down inflected words and putting the pieces back together. *Cortex* 181, 101. [Link](#)
- **Matar S.** & Marantz A. (2022). Models of processing complex spoken words: the naïve, the passive, and the predictive, *Proceedings of the 2022 Conference on Cognitive Computational Neuroscience*. [Link](#)
- **Matar S.**, Dirani J., Marantz A., & Pykkänen L. (2021). Left posterior temporal cortex is sensitive to syntax within conceptually matched Arabic expressions, *Scientific Reports* 11, 7181. [Link](#)
- **Matar S.**, Pykkänen L., & Marantz A. (2019). Left occipital and right frontal involvement in syntactic category prediction: MEG evidence from Standard Arabic, *Neuropsychologia* 135, 107230. [Link](#)
- †Farah N., †Zoubi A., †**Matar S.**, Golan L., Marom A., Butson C.R., Brosh I. & Shoham S. (2013). Holographically patterned activation using photo-absorber induced neural–thermal stimulation, *Journal of Neural Engineering* 10(5) 056004 [tequal contribution]. [Link](#)
- **Matar S.**, Golan L. & Shoham S. (2011). Reduction of two-photon holographic speckle using shift-averaging, *Optics Express* 19(27), 25891-25899. [Link](#)
- **Matar S.**, Golan L., Farah N., Reutsky I. & Shoham S., Holographic photo-stimulation for dynamic control of neuronal population activity, *Proceedings of the IEEE EMBS 4th International Conference on Neural Engineering*. [Link](#)

Manuscripts

- **Matar S.**, Morcillo P., & Carreiras M. (*under review*) Language comprehension involves distinctly establishing simple and composite discourse referents in a mental model.
- Kukushkina E., Carreiras M., & **Matar S.** (*in preparation*) Hierarchically deeper discourse referents take longer to read.

Invited Talks

- 2026/05: Reading comprehension involves distinct cognitive operators for establishing simple and composite discourse referents in a mental model. *Cambridge Linguistics Forum* (Cambridge, UK)
- 2026/04: Language comprehension involves multiple levels of structure processing. *Department of Linguistics and Translation, City University of Hong Kong* (CUHK; Hong Kong)
- 2026/04: Language comprehension involves multiple levels of structure processing. *Department of Linguistics, Hong Kong University* (HKU; Hong Kong)
- 2025/02: Structure processing in language comprehension from a computational and experimental view. *Department of Linguistics, Queen Mary University of London* (QMUL; London, UK)
- 2024/02: Modern Standard Arabic morphology as a window into how the brain comprehends language. *Invited panelist in Arabic Morphology as a Window into How the Brain Processes Language*, at the 37th Annual Symposium on Arabic Linguistics (ASAL; New York)
- 2024/02: Processing latent structural information in language comprehension. MRC Cognition and Brain Sciences Unit, *University of Cambridge* (Cambridge, UK)
- 2024/02: Neural basis of structure processing in language comprehension. *Department of Linguistics, Queen Mary University of London* (QMUL; London, UK)
- 2023/10: Temporal response functions (TRFs) and how to use them in cognitive neuroscience. *CuttingEEG: Donostia–San Sebastián Garden*
- 2023/03: How the brain processes latent information in language comprehension. *Department of Linguistics, University of Maryland* (UMD; College Park, Maryland, USA)
- 2022/04: Processing latent information in language comprehension. *The Basque Center on Cognition, Brain and Language* (BCBL; Donostia–San Sebastián, Spain)

- 2021/04: Left posterior temporal cortex is sensitive to syntax within conceptually matched Arabic expressions. *The BCBL* (Donostia–San Sebastián, Spain)

Selected Conference Talks

- **Matar S.** & Marantz A., Neural bases of proactive and predictive processing of meaningful sub-word units in speech comprehension. *Spanish Society for Experimental Psychology (SEPEX) 2024 annual meeting*; 2024 October 23-25; Almería, Spain.
- **Matar S.** & Marantz A., Early cortical sensitivity to ambiguous morpheme boundaries in speech: MEG evidence from Arabic. 28th edition of *Architectures and Mechanisms for Language Processing Conference (AMLaP)*; 2022 September 7-9; York, UK.
- **Matar S.**, Dirani J., Marantz A. & Pykkänen L., Dissociating syntactic processing and semantic composition in the left temporal lobe: MEG evidence from Standard Arabic. *12th annual meeting of the Society for the Neurobiology of Language (SNL)*; 2020 Oct 21-24 (virtual).
- **Matar S.**, Dirani J., Pykkänen L. & Marantz A., Syntactic category prediction during reading: MEG evidence from adjectival modification in Standard Arabic. *Experimental Arabic Linguistics Conference 2018 (EXAL18)*; 2019 Oct 28-29; Al Ain, United Arab Emirates.
- **Matar S.**, Dirani J., Pykkänen L. & Marantz A., Syntactic category prediction during reading: MEG evidence from adjectival modification in Standard Arabic. *1st Workshop on Predictive Processing*; 2018 Jun 20-22; San Sebastián, Spain.

Selected Poster Presentations

- **Matar S.**, Morcillo P., & Carreiras M., Reading comprehension involves adding simple and composite discourse referents to a mental model. *Cog Sci 2025*; 2025 Jul 30–Aug 2; San Francisco, USA.
- **Matar S.**, Morcillo P., & Carreiras M., Reading comprehension involves adding simple and composite discourse referents to a mental model. *International Symposium of Psycholinguistics (ISP)*; 2025 May 26-28; Barcelona, Spain.
- **Matar S.**, Morcillo P., & Carreiras M., The behavioral cost of building composite referents in reading comprehension. *Human Sentence Processing (HSP)*; 2025 March 27-29; College Park, MD, USA.
- **Matar S.** & Marantz A., MEG evidence for predictive and proactive speech segmentation into morphemes. *Human Sentence Processing (HSP)*; 2024 May 16-18; Ann Arbor, USA.
- **Matar S.**, Wray S., Bou Dargham S., Marantz A., & Stockall L., Getting to the ‘root’ of semantic and syntactic processing of morphologically complex words: MEG evidence from Arabic. *HSP*; 2024 May 16-18; Ann Arbor, USA.
- Wray S., **Matar S.**, Bou Dargham S., Stockall L., & Marantz A., Getting to the ‘root’ of semantic and syntactic processing of morphologically complex words: MEG evidence from Arabic. *Society for the Neurobiology of Language (SNL)*; 2023 Oct 24-26; Marseille, France.
- Hernández Gutiérrez D., Pastureau R., **Matar S.**, Lizarazu M., Molinaro N., Neural dynamics of high-level linguistic predictions during natural audiovisual discourse processing. *SNL*; 2023 Oct 24-26; Marseille, France.
- Wray S., **Matar S.**, Bou Dargham S., Stockall L., & Marantz A., Away from the edge: Early automatic decomposition of morphologically complex words in Visual Word Form Area. *Architectures and Mechanisms for Language Processing (AMLaP)*; 2023 Aug 31–Sep 2; San Sebastián, Spain.
- **Matar S.** & Marantz A., Bilateral temporal involvement in predictive morphological segmentation and processing during spoken word comprehension: MEG evidence from Arabic. *Neuroscience*; 2022 Nov 12-16; San Diego, USA.
- **Matar S.** & Marantz A., Bilateral temporal involvement in predictive morphological segmentation and processing during spoken word comprehension: MEG evidence from Arabic. **Poster and Blitz**. *SNL*; 2022 Oct 5-8; Philadelphia, USA.
- Wray S., **Matar S.**, Marantz A., Stockall L., Localizing early visual word processing for Arabic script. *SNL*; 2022 Oct 5-8; Philadelphia, USA.
- **Matar S.** & Marantz A., Models of processing complex spoken words: the naïve, the passive, and the predictive. *Conference on Cognitive Computational Neuroscience (CCN)*; 2022 August 25-28; San Francisco, USA.
- †Tulling M., †**Matar S.**, Abrams E., Gueguera R., Hauptman M., Parrish A., Phillips S., & Pykkänen L., Naturalistic Expository Discourse Processing in School-Aged Children and Adults. *SNL*; 2020 Oct 21-24 (virtual). [tequal contribution].
- **Matar S.**, Dirani J., Marantz A. & Pykkänen L., Lower LIFG activation for higher syntactic complexity: MEG evidence from conceptually-matched Arabic stimuli. *SNL*; 2019 Aug 20-22; Helsinki, Finland.

- **Matar S.**, Dirani J., Marantz A. & Pylkkänen L., Left inferior frontal gyrus less active for greater syntactic complexity: MEG evidence from minimal Arabic phrases and sentences. *Cognitive Neuroscience Society (CNS)*; 2019 Mar 23-26; San Francisco, USA.
- **Matar S.**, King R., Leong W., & Pylkkänen L., Interaction of morphological and long-distance dependency processing: MEG evidence. **Poster and Blitz**. *SNL*; 2018 Aug 16-18; Québec, Canada.
- **Matar S.**, Dirani J., Pylkkänen L. & Marantz A., Syntactic category prediction during reading: MEG evidence from adjectival modification in Standard Arabic. *CUNY Sentence Processing Conference*; 2018 Mar 15-17; Davis, California.

Academic Teaching (G=Graduate | UG=Undergraduate)

University of Cambridge

2025–26 Psychology of language processing and learning (UG supervision)

Winter 2026 Seminar in neurolinguistics (G)

Fall 2025 Research methods (G) , General seminar (G)

University of the Basque Country (UPV/EGU) | Basque Center on Cognition, Brain, and Language (BCBL):

Spring 2023 Advanced Neuroimaging Methods (*Master in Cognitive Neuroscience of Language*, G)

New York University (NYU):

Spring 2022 *Introduction to Psychology* | Psychology, UG | Instructor: Andrei Cimpian

Fall 2021 *Perception* | Psychology, UG | Instructor: Michael Landy

Spring 2021 *Introduction to Psychology* | Psychology, UG | Instructor: Eric Knowles

Fall 2020 *Introduction to Psychology* | Psychology, UG | Instructor: Jay Van Bavel

Fall 2019 *Cognitive Neuroscience* | Psychology, UG | Instructor: Pascal Wallisch

Fall 2018 *Cognition* | Psychology, UG | Instructor: Pascal Wallisch

Fall 2017 *Language and Mind* | Psych & Linguistics, UG | Instructors: Brian McElree, Ailís Cournane

The Technion—I.I.T.:

Winter 2010 *Analysis of Biological Signals* | Division of Advanced Education, G | Instructor: Shy Shoham

Fall 2009 *Medical Instrumentation* | Biomedical Engineering, UG/G | Instructor: Alex Vilensky

Mentorship and Supervision

2024–2025 *Evgenia Kukushkina*, Master's student (BCBL's MSc in Cognitive Neuroscience of Language)
Thesis: *Processing information across sentences during reading comprehension*

2023–2024 *Paloma Morcillo*, Master's student (BCBL's MSc in Cognitive Neuroscience of Language)
Thesis: *Processing simple and complex referents when reading naturalistic discourse*

2020–2021 *Abdelrahim Qaddoumi*, Research Assistant, New York University
Project: *Towards a model of automatic diacritization of Arabic speech-to-text output*

2020–2021 *Michael Marinaccio*, Research Assistant, New York University
Project: *Annotation of naturalistic speech at different levels of linguistic hierarchy*

2017 *Wesley Leong*, Intern, New York University
Project: *Interaction between morphological complexity and long-distance dependencies in reading comprehension*

Additional Training

Summer 2022	Deep Learning Course — <i>NeuroMatch Academy</i> Project: <i>Detecting anti-immigration bias in different news sources using word embeddings</i>
Winter 2022	Level 3 Operator of MRI (Siemens Prisma 3T, New York University)
Winter 2020	Transcranial Magnetic Stimulation (TMS) Workshop (Instructor: Chrysa Papadaniil) — NYU
Spring 2019	Diffusion MRI and Tractography workshop series (Instructor: Pablo Ripollés) — NYU
Fall 2018	<i>Science Communication Course</i> — Arthur L. Carter Journalism Institute — NYU
Summer 2018	<i>Genetics & Neurobiology of Language Course</i> — Cold Spring Harbor Laboratories, New York
Spring 2014	<i>Examiner Certificate, Spanish as a Foreign Language</i> — Instituto Cervantes, Spain
2012–2013	<i>Teacher Certificate, Spanish as a Foreign Language</i> — Instituto Cervantes, Spain

Service

University service	2026– PhD Director (University of Cambridge, Theoretical and Applied Linguistics) - Master's thesis committees: - Milena Fassea (2023/08; UPV/BCBL Master in Cognitive Neuroscience of Language) - Madeline Bartels (2023/09; UPV/BCBL Master in Cognitive Neuroscience of Language) - Mentor for three junior PhD students—NYU Psychology Department (2020–2022) - Judge on annual NYU Masters Psychology Research Conference (2019–2022)
Elected representative	<i>Society for the Neurobiology of Language</i> (SNL) 2021–2023 Student and post-doc representative to the SNL Board
Conference organization	- Program committee: 14th (2022/10, Philadelphia) & 15th (2023/10, Marseille) annual meetings of the <i>Society for the Neurobiology of Language</i> (SNL) - Organizing committee: Neuroscience of Language (Abu Dhabi, 4/2019)
Peer review	- Journals: <i>Scientific Reports</i>; <i>NeuroImage</i>; <i>Neurobiology of Language</i>; <i>Journal of Cognitive Neuroscience</i>; <i>Cognitive Science</i>; <i>Language, Cognition & Neuroscience</i>; <i>Brain & Language</i>; <i>Language & Cognition</i>; <i>Journal of Neurolinguistics</i>; <i>Attention, Perception, & Psychophysics</i> - Conferences: <i>Human Sentence Processing</i> (HSP); <i>Society for the Neurobiology of Language</i> (SNL); <i>Cognitive Science</i> (CogSci); <i>International Symposium on Bilingualism</i>; <i>Psycholinguistics in Iceland—Parsing and Prediction</i> (PIPP)
Outreach	2025/05 <i>Pint of Science</i> (Donostia—San Sebastián) Public talk titled: Comprehension is about weaving linguistic structures
Knowledge transfer	- The Basque Center on Cognition, Brain, and Language (2023–2024) Organized bi-weekly <i>Brown Bag Meetings</i> for postdoctoral researchers - Neuroscience of Language Lab (2021–2022) Organized weekly <i>Methods Meetings</i> for horizontal knowledge transfer

Research and Technical Skills

- Programming languages ▪ Python | MATLAB | R | C++ | SQL | Fortran | Pascal
- Data acquisition and analysis ▪ Electrophysiological data using MEG and EEG
▪ Functional, structural, and diffusion MRI volumes
▪ Machine learning and deep learning methods for data analysis
▪ In-person and online (Amazon MTurk | Gorilla | Prolific) behavioral data
▪ *In vitro* stimulation and imaging (two-photon, calcium) of neurons
- Graphics ▪ Adobe Illustrator, InkScape, Photoshop, Imageready, InDesign
- Other software ▪ Praat | Simulink | Solidworks

Language Skills

Arabic	Fluent	English	Fluent	Hebrew	Fluent
Spanish	Fluent (C2*)	French	Proficient (B2*)	Catalan	Proficient (B2*)
Italian	Intermediate (B1)	Polish	Beginner (A2)	Basque	Beginner (A2)

* Official diploma obtained in accordance with the Common European Framework of Reference for Languages.

Literary Publications

- **North of Andalusia, West of the Homeland** (شمال الأندلس، غرب الوطن)—a collection of short stories. Al-Ahliyya Publishing—Amman, Jordan (2014).
Winner of the 2012 Young Palestinian Writer Award (A. M. Qattan Foundation, Ramallah).