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RESEARCH FOCUS

Cognitive Neuroscience of Language, Psycholinguistics, Machine Learning, Speech Perception

ACADEMIC APPOINTMENTS

Sep 2019 – Present	Postdoctoral Research Fellow in the Department of Neurology, Massachusetts General Hospital, and Harvard Medical School, Boston, MA, USA.
Aug 2012 – Apr 2017	Research Assistant, Department of Foreign Languages, Turkish Military Academy, Ankara, Turkey.

EDUCATION

Sep 2014 – Aug 2019	PhD	University of Delaware Doctor of Philosophy, Linguistics, GPA: 3.77/4.00 Newark, Delaware, United States Advisors: Prof. Arild Hestvik & Jeffrey Heinz
Sep 2014 – May 2016	MA	University of Delaware Master of Arts, Linguistics and Cognitive Science, GPA: 3.71/4.00 Newark, Delaware, United States
Sep 2011 – Aug 2014	MSc	Middle East Technical University Master of Science, Cognitive Science, GPA: 3.61/4.00 Ankara, Turkey Advisors: Prof. Cem Bozsahin & Deniz Zeyrek
Sep 2007 – Jun 2011	BA	Hacettepe University Bachelor of Arts, Linguistics, GPA: 3.52/4.00 Ankara, Turkey

PUBLICATIONS

Journal Articles

1. **Avcu, E.**, Hwang, M., & Brown, K., & Gow, D. W. (2023). [A Tale of Two Lexica: Investigating Computational Pressures on Word Representation with Neural Networks](#). *Front. Artif. Intell.* 6:1062230. doi: 10.3389/frai.2023.1062230.
2. **Avcu, E.**, Newman, O., Ahlfors, S. P., & Gow Jr, D. W. (2023). [Neural evidence suggests phonological acceptability judgments reflect similarity, not constraint evaluation](#). *Cognition*, 230, 105322. doi: 10.1016/j.cognition.2022.105322

3. Gow, D. W., **Avcu, E.**, Schoenhaut, A., Sorensen, D., & Ahlfors, S. P. (2022). [Abstract representations in temporal cortex support generative linguistic processing](#). *Language, Cognition and Neuroscience*, 1-14. doi: 10.1080/23273798.2022.2157029.
4. **Avcu, E.**, & Rhodes, R. (2022). [Experimental linguistics: bridging subregular linguistics and cognitive neuroscience](#), *Theoretical Linguistics*, vol. 48, no. 3-4, pp. 185-198. doi: 10.1515/tl-2022-2038.
5. Rhodes, R., **Avcu, E.**, Han, C., Hestvik, A. (2022). [Auditory predictions are phonological when phonetic information is variable](#), *Language, Cognition and Neuroscience*, 1-16. doi: 10.1080/23273798.2022.2043395
6. Gow, D. W., Schoenhaut, A., **Avcu, E.**, & Ahlfors, S. P. (2021). [Behavioral and neurodynamic effects of word learning on phonotactic repair](#). *Frontiers in psychology*, 12, 494. doi: 10.3389/fpsyg.2021.590155
7. **Avcu, E.** & Hestvik, A., (2020). [Unlearnable phonotactics](#), *Glossa: a journal of general linguistics* 5(1): 56. doi:10.5334/gjgl.892
8. Sorensen, D., **Avcu, E.**, Lynch, S., Ahlfors, S. P., & Gow, D. W. (Under review with PBR). Neural representation of phonological wordform in bilateral posterior temporal cortex.

Book Chapters

9. Hohenberger A., Altan, A., Kaya, U., Tuncer, O.K., **Avcu, E.**(2016). [Sensitivity of Turkish infants to vowel harmony: Preference shift from familiarity to novelty](#). *The Acquisition of Turkish in Childhood*, pp.29-56. doi: 10.1075/tilar.20.02hon.

Refereed Conference Proceedings

10. **Avcu, E.**, Rhodes, R. & Hestvik, A. (2019). [Neural Underpinnings of Phonotactic Rule Learning](#). In Katherine Hout, Anna Mai, Adam McCollum, Sharon Rose & Matt Zaslansky (eds.), Supplemental Proceedings of the 2018 Annual Meeting on Phonology. Washington, DC: Linguistic Society of America.
11. **Avcu, E.** (2018). [Experimental Investigation of the Subregular Hypothesis](#). In Proceedings of the 35th West Coast Conference on Formal Linguistics, ed. Wm. G. Bennett et al., 77-86. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3377.
12. **Avcu, E.**, Shibata, C., Heinz, J. (2017). [Subregular Complexity and Deep Learning](#). In Proceedings of the Conference on Logic and Machine Learning in Natural Language (LaML), ed. Simon Dobnik and Shalom Lappin, volume 1, 20-34. Gothenburg, Sweden. CLASP Papers in Computational Linguistics. <https://gupea.ub.gu.se/handle/2077/54911>.
13. Altan, A., Kaya, U., Tuncer, O.K., **Avcu E.**, Hohenberger, A. (2014). 6 ve 10 aylık bebeklerin kök ek dizilişlerinde Türkçedeki ünlü uyumuna duyarlılığı. In Proceedings of the 27th National Linguistics Conference, ed S. Nalan Buyukkantarcioğlu et al., Hacettepe University, Turkey.

Manuscripts in Progress

1. **Avcu, E.**, Rhodes, R., Hestvik, A. The effect of explicit and implicit learning on the acquisition of long-distance phonotactic patterns.
2. **Avcu, E.**, Lynch, S., Ahlfors, S. P., & Gow, D. W. Lexical Mediation of Reduplication Effects in Arabic Speakers: Implications for Associationist Accounts of Word Formation.
3. **Avcu, E.**, Rhodes, R. and Hestvik, A. Locality matters: neural responses show local, but not piecewise, learning

Technical Reports and Arxiv Preprints

1. **Avcu, E.**, Newman, O., & Gow, D. W. [A Tale of Two Lexica Testing Computational Hypotheses with Deep Convolutional Neural Networks](#), arXiv.
2. **Avcu, E.** (2014) [A Cross-Sectional Design to Test When and in Which Order the Acquisition of Morphologically Complex Verbal Forms Occur in Turkish](#). Science Journal of Turkish Military Academy, 24(1):1–19, 2014.

Theses

1. [Using Cognitive Neuroscience to Understand Learning Mechanisms: Evidence from Phonological Processing](#). 08/2019, Degree: Ph.D., Supervisor: Arild Hestvik (University of Delaware).
2. [Nouns-First, Verbs-First, and Computationally-Easier First a Preliminary Design to Test the Order of Acquisition](#). 08/2014, Degree: M.Sc., Supervisor: Cem Bozsahin (Middle East Technical University).

INVITED TALKS

- 2022 Neural bases of phonological rule learning. Will be Presented at the Language Acquisition and Language Processing Lab at NTNU, Trondheim.
- 2020 Using Cognitive Neuroscience to Understand Learning Mechanisms: Evidence from Phonological Processing. Presented at the MIT Phonology Circle at Massachusetts Institute of Technology.
- 2020 Using Cognitive Neuroscience to Understand Learning Mechanisms: Evidence from Phonological Processing. Presented at the MIT EvLab Meeting at Massachusetts Institute of Technology.
- 2017 Evolution of Neural Networks. Presented at the MathLing group meeting at Stony Brook University.

CONFERENCE PRESENTATIONS

- 2022 David Gow, **Enes Avcu**, Adriana Schoenhaut, David Sorensen, Skyla Lynch, Seppo Ahlfors. Neural Basis of Linguistic Variables in Temporal Cortex. Talk at the 63rd Psychonomic Society Annual Meeting in Boston, Massachusetts, November 2022.
- 2022 **Enes Avcu**, Michael Hwang, Kevin Brown and David Gow. Task-optimized deep learning models reveal computational pressures for the specialization of lexical representation. Talk at the 63rd Psychonomic Society Annual Meeting in Boston, Massachusetts, November 2022.
- 2022 **Enes Avcu**, Michael Hwang, Kevin Brown and David Gow. A Tale of Two Lexica: Investigating Computational Pressures on Word Representation with Deep Neural Networks. Talk at the International Conference on the Mental Lexicon 2022 in Niagara-on-the-Lake, Ontario, Canada, October 2022
- 2022 **Enes Avcu**, Michael Hwang, Kevin Brown and David Gow. Computational pressures behind the development of parallel dorsal and ventral stream lexica. Poster at the 14th Annual Meeting of the Society for the Neurobiology of Language, SNL 2022, in Philadelphia, October 2022.
- 2022 **Enes Avcu**, Skyla Lynch, Seppo Ahlfors and David Gow. Lexical Mediation of Reduplication Effects in Arabic Speakers: Implications for Associationist Accounts of Word Formation.

- Poster at the 14th Annual Meeting of the Society for the Neurobiology of Language, SNL 2022, in Philadelphia, October 2022.
- 2022 David Gow, **Enes Avcu**, Adriana Schoenhaut, David Sorensen, Skyla Lynch, Seppo Ahlfors. Causal Representation of Abstract Phonological Properties in Temporal Cortex. Poster at the 14th Annual Meeting of the Society for the Neurobiology of Language, SNL 2022, in Philadelphia, October 2022.
- 2022 David Sorensen, **Enes Avcu**, Skyla Lynch, Seppo Ahlfors, David Gow. From Sounds to Words: Evidence for Lexical Representations Distinct from Nonwords. Poster slam talk at the 14th Annual Meeting of the Society for the Neurobiology of Language, SNL 2022, in Philadelphia, October 2022.
- 2021 **Enes Avcu**, David Sorensen, Seppo Ahlfors, David Gow. Lexical neighbors support stronger decoding than non-word neighbors: Implications for the neural representation of words. Poster slam talk at the 13th Annual Meeting of the Society for the Neurobiology of Language, SNL 2021, online, October 2021.
- 2020 **Enes Avcu**, Olivia Newman, Alison Xin, David Gow. A Tale of Two Lexica: Computational Pressures for the Emergence of Dual Wordform Stores. Talk at the 61st Annual Meeting of the Psychonomic Society, online, November 2020.
- 2020 **Enes Avcu**, Olivia Newman, Alison Xin, David Gow. Are two lexica better than one? Testing computational hypotheses with deep convolutional models. Poster presentation at the 12th Annual Meeting of the Society for the Neurobiology of Language, SNL 2020, online, October 2020.
- 2020 **Enes Avcu**, Tim Giannatsis, Olivia Newman, Seppo Ahlfors, David Gow. Representing roots: A neural decoding study of the representation of Arabic root morphemes. Poster presentation at the 12th Annual Meeting of the Society for the Neurobiology of Language, SNL 2020, online, October 2020.
- 2020 **Enes Avcu**, Ryan Rhodes, Arild Hestvik. Locality matters: neural responses show local, but not piecewise, learning. Talk at the PhonolEEGy Conference: Electrophysiology and phonological theory at the Universite Cote D'Azur, April 2020.
- 2020 **Enes Avcu**, Olivia Newman, Seppo Ahlfors, David Gow. The neural bases of phonological acceptability judgments. Poster presentation at the 27th Cognitive Neuroscience Society Annual Meeting, CNS 2020, in Boston, May 2020.
- 2019 **Enes Avcu**, Ryan Rhodes, Arild Hestvik. Computational Complexity in Phonotactics Modulates Brain Response: Evidence from EEG. Poster presentation at the Annual Meeting on Phonology (AMP 2019) at Stony Brook University, New York, October 2019.
- 2019 **Enes Avcu**, Ryan Rhodes, Arild Hestvik. Neural Tracking of Implicit vs Explicit Phonotactic Learning. Talk at the 42nd GLOW conference (Generative Linguistics in the Old World) at the University of Oslo, May 2019.
- 2019 **Enes Avcu**, Ryan Rhodes, Arild Hestvik. Neural Tracking of Implicit vs Explicit Phonotactic Learning. Talk at the 43rd Annual Penn Linguistics Conference at the University of Pennsylvania, March 2019.
- 2019 **Enes Avcu**, Ryan Rhodes, Chao Han and Arild Hestvik. P300 as an Index of Phonotactic Violation. Poster presentation at the 93rd Annual Meeting of the Linguistic Society of America (LSA) in New York, January 2019.
- 2018 **Enes Avcu**, Chao Han, Ryan Rhodes and Arild Hestvik. Neurophysiological Signature of Phonotactic Rule-Learning. Poster presentation at the 59th Psychonomic Society Annual Meeting in New Orleans, Louisiana, November 2018.
- 2018 **Enes Avcu** and Ryan Rhodes. Neural Underpinnings of Phonotactic Rule Learning. Poster presentation at the Annual Meeting on Phonology (AMP 2018) at the University of California, San Diego, October 2018.

- 2018 **Enes Avcu**, Ryan Rhodes, Chao Han and Arild Hestvik. Neural Underpinnings of Phonotactic Rule Learning. Poster presentation at the 49th Annual Meeting of the North East Linguistic Society at Cornell University, October 2018.
- 2018 **Enes Avcu** and Ryan Rhodes. Phonotactic Rule-Learning Without Semantics: An EEG study. Poster presentation at the Tenth Annual Meeting of the Society for the Neurobiology of Language at Québec City, August 2018.
- 2018 Adassa Phillips, **Enes Avcu** and Arild Hestvik. Brain Activity Revealing Effect of Learning Artificial Language. Poster presentation at University of Delaware's Ninth Annual Undergraduate Research and Service Scholar Celebratory Symposium, Newark, DE, August 2018.
- 2018 **Enes Avcu**. ERP Signature of Phonological Learnability. Poster presentation at the 8th ANNUAL UNIVERSITY OF DELAWARE Graduate Students' Forum, at University of Delaware, April 2018.
- 2017 **Enes Avcu**, Chihiro Shibata and Jeffrey Heinz. Subregular Complexity and Deep Learning. Talk at the Workshop on Learning and Automata (LearnAUT) at Reykjavik University, Iceland, June 2017.
- 2017 **Enes Avcu**, Chihiro Shibata and Jeffrey Heinz. Subregular Complexity and Deep Learning. Talk at the Conference on Logic and Machine Learning in Natural Language (LaML) at University of Gothenburg, Sweden, June 2017.
- 2017 **Enes Avcu**. Experimental Investigation of Subregular Hypothesis. Talk at the 35th West Coast Conference on Formal Linguistics at Calgary, Alberta Canada, April 2017.
- 2017 **Enes Avcu**. Experimental Investigation of Subregular Hypothesis. Talk at the 41st Annual Penn Linguistics Conference at University of Pennsylvania, March 2017.
- 2014 Annette Hohenberger, Aslı Altan, Utku Kaya, Özgün Köksal Tuncer and **Enes Avcu**. Early sensitivity of 6- and 10-month-old monolingual Turkish infants to vowel harmony. Poster presentation the 13th International Congress for the Study of Child Language, (IASCL 2014), Amsterdam, NL, July 2014.
- 2014 Annette Hohenberger, Aslı Altan, Utku Kaya, Özgün Köksal Tuncer and **Enes Avcu**. Early sensitivity of Turkish infants to vowel harmony in stem-suffix sequences: impact of computational complexity. Poster presentation at 1st International Symposium on Brain and Cognitive Science, ISBCS'14, Boğaziçi University, İstanbul, April 2014.
- 2014 **Enes Avcu**, Cem Bozsahin and Deniz Zeyrek. Nouns-First, Verbs-First, and Computationally-Easier First a Preliminary Design to Test the Order of Acquisition. Poster presentation at 1st International Symposium on Brain and Cognitive Science, ISBCS'14, Boğaziçi University, İstanbul, April 2014.
- 2013 Aslı Altan, Utku Kaya, Özgün Köksal Tuncer, **Enes Avcu** and Annette Hohenberger. 6 ve 10 aylık bebeklerin kök ek dizilişlerinde Türkçedeki ünlü uyumuna duyarlılığı. Talk at the 27. National Linguistics Assembly at Hacettepe University, May 2013.
- 2013 Tolga Kayadelen and **Enes Avcu**. A Machine Learning Approach to Turkish Texts' Co-Referential Property. Talk at the 27. National Linguistics Assembly, at Hacettepe University, May 2013.
- 2011 **Enes Avcu**. Nouns-First, Verbs-First, and Computationally-Easier First: A Preliminary Design to Test the Order of Acquisition. Talk at Language Acquisition Days, at Middle East Technical University, November 2011.
- 2011 **Enes Avcu**. Acquisition of Complex Tenses in Turkish. Talk at the 5. Linguistics Assembly at Hacettepe University, May 2011.

RESEARCH POSITIONS

- Summer 2018-19 Part-time internship at Cognitive Neurophysiology and Neuropsychology Lab, at Moss Rehabilitation Research Institute (MRRRI), working in a joint project of Dr. Edward Wlotko and Dr. Erika Middleton.
- Jan 2015 – May 2019 Ph.D. Student, Lab Manager at Experimental Psycholinguistics Lab, University of Delaware.
- Sep 2013 – Aug 2014 Master's Student, Project Assistant at METU Baby Lab, Middle East Technical University, Department of Cognitive Science, Ankara, Turkey

TEACHING EXPERIENCES

- Spring 2018 Teaching Assistant, PSYC209 Measurement and Statistics, Department of Psychological and Brain Sciences, University of Delaware, Newark, DE, USA
- Winter 2018 Instructor, LING/CGSC 102 Language, Mind, and Society, Department of Linguistics and Cognitive Sciences, University of Delaware, Newark, DE, USA
- Fall 2017 Teaching Assistant, PSYC370 Research in Personality, Department of Psychological and Brain Sciences, University of Delaware, Newark, DE, USA
- Spring 2017 Co-instructor, LING/CGSC 102 Language, Mind, and Society, Department of Linguistics and Cognitive Sciences, University of Delaware, Newark, DE, USA
- 2013 Spring – 2014 Spring Instructor, ING 101, Department of Foreign Languages, Turkish Military Academy, Ankara, TURKEY

STUDENT MENTORING

- 2022 - Present Will Flintoft (freshman, Harvard College)
Independent Research, Cognitive Computational Modelling
- 2021- Present Michael Hwang (senior, Harvard College)
Independent Research, Cognitive Computational Modelling
Resulted in a co-authored manuscript submission
- 2022 John Ro (sophomore, Harvard College)
Independent Research, Cognitive Computational Modelling
- 2021 Alison Xin (senior, Harvard College)
Independent Research, Cognitive Computational Modelling
Resulted in two poster presentations: Psynom 2020, SNL 2020
- 2020 Tim Giannatsis (senior, Salem State University, co-mentored with Dr. David Gow)
Independent Research, Cognitive Neuroscience of Language
Resulted in a poster presentation: SNL 2020
- 2020 Lindsay Nagle (senior, Salem State University, co-mentored with Dr. David Gow)
Independent Research, Cognitive Neuroscience of Language
Resulted in a poster presentation: SSU Undergrad Posters.
- 2018 Adassa Phillips (senior, University of Delaware)
Independent Research, Cognitive Neuroscience of Language
Resulted in a poster presentation: UDEL Undergrad Posters.

TRAININGS

Spring 2022	Harvard University, Science Mentoring Workshop Intensives, 2021-2022
Summer 2020	Neurohackademy summer school in neuroimaging and data science, held online, July 27th – July 31st, 2020.
Fall 2019	SPR Time-Frequency Workshop, Sep 24, SPR 2019 Meeting, Washington DC, USA
Winter 2019	LSA Workshop: Tools for Reproducible Research, Jan 03, LSA 2019 Meeting, New York, USA
Summer 2017	EGI Summer School 2017: Core dEEG Skills, July 24–28, EGI Headquarters, Eugene, Oregon, USA
Summer 2017	Foundations of Advanced dEEG Analysis Techniques: July 31–August 2, Valley River Inn, Eugene, OR USA
Summer 2016	Statistical Teaching and Analytic Research Training (START) Workshop at the University of Warsaw

FELLOWSHIPS & AWARDS

Fall 2020	SNL Postdoctoral Abstract Merit Award
Summer 2019	Society for Psychophysiological Research Training Award
July 2018 – July 2019	University of Delaware Dissertation Fellowship
Dec 2016 – Aug 2019	University of Delaware 100% Tuition Fellowship
Aug 2014 – Dec 2016	Turkish Land Forces 100% Tuition Fellowship
Fall 2018	Professional Development Award, awarded from the Office of Graduate and Professional Education, University of Delaware
Fall 2018	Graduate Travel Grant, awarded from the Department of Linguistics and Cognitive Science, University of Delaware
Summer 2017	Summer Research Grant, awarded from the Department of Linguistics and Cognitive Science, University of Delaware
Summer 2017	Summer Doctoral Fellowship Award, awarded from the Office of Graduate and Professional Education, University of Delaware

SERVICES

2021 - Present		Secretary of World Veterans Nonprofit Organization, Washington DC.
2020 - Present	Journal Review	Canadian Journal of Linguistics, Frontiers in Psychology: Language Sciences, Language Cognition and Neuroscience, Scientific Reports – Nature, PLOS One
	Conference Review	SCiL 2021
2020 – Present		SPR's Committee to Promote Student Interests/ Chair of Post-doctoral/Early Career Subcommittee, Public Relations Committee/ Chair of Website Subcommittee
2019		Volunteer, 93rd Annual Meeting of the Linguistic Society of America

2018, 2020	Twittername, 59 th and 61 th Psychonomic Society Annual Meetings
2017	Webmaster, Department of Linguistics and Cognitive Science University of Delaware: Newark, DE, USA
2016 –2019	Organizer, Experimental Group Meeting, Department of Linguistics and Cognitive Sciences, University of Delaware, Newark, DE, USA

SCIENTIFIC MEMBERSHIPS

Cognitive Neuroscience Society (2020)
Cognitive Science Society (2020)
Society for the Neurobiology of Language (2016-Present)
Linguistic Society of America (2017-2020)
Psychonomic Society (2018-Present)
Society for Psychophysiological Research (2019-Present)

LANGUAGES & SOFTWARE

Languages	English (fluent), Turkish (native)
Imaging	EEG/ERP, MEG, fMRI, fNIRS
Computer Skills	Proficient Python, R, GPS, SPSS, Statistica, JASP, EEGLab, E-Prime, Weka, bash, foma, xfst, jupyter notebook
	Other chainer, FSL, SPM, Psychopy, Matlab, git, Psiturk