

Laura Batterink, Ph.D.

Department of Psychology
Brain and Mind Institute
Western University
Western Interdisciplinary Research Bldg, Rm. 6124
London, ON Canada N6A 5B7

Telephone: (519) 661-2111, ext. 85409
Email: lbatter@uwo.edu
Website: <https://www.batterinklab.com/>

Academic Positions

- | | |
|--------------|--|
| 2018-present | Assistant Professor, Department of Psychology, Brain and Mind Institute, Western University, Canada |
| 2013-2018 | Postdoctoral Fellow, Department of Psychology, Northwestern University
Advisors: Drs. Ken Paller & Paul Reber |

Education

- | | |
|-----------|---|
| 2007-2012 | Ph.D., Cognitive Neuroscience, University of Oregon
Dissertation: Implicit and explicit neural mechanisms supporting language processing
Advisor: Dr. Helen Neville |
| 2003-2007 | B.A., Neuroscience, Middlebury College
Advisor: Dr. Matthew Kimble |

Research Interests

I am interested in the neural basis of language acquisition, learning and memory, sleep-dependent memory consolidation, conscious awareness, and many other aspects of cognition.

Grant Support

- | | |
|-----------|--|
| 2020 | Natural Sciences and Engineering Research Council of Canada (NSERC)
Research Tools and Instruments (RTI)
<i>EEG Equipment for Studies of Sleep and Cognition</i>
Role: Principal Investigator (Co-Applicants: Stojanoski, Owen, Grahn, Joanisse, Muller)
Award Amount: \$149,920 |
| 2020-2021 | BrainsCAN Accelerator Stimulus Grant
<i>Multisensory stimuli and virtual navigation tasks during intracranial clinical recordings</i>
Role: Co-Investigator (PI: Dr. Lyle Muller)
Award Amount: \$98,500 |
| 2020 | Western Strategic Support for SSHRC Success
<i>Harnessing implicit statistical learning to boost second language acquisition in adult learners</i>
Role: Principal Investigator
Award Amount: \$25,000 CAD |

- 2019-2024 Natural Sciences and Engineering Research Council of Canada (NSERC)
Insights into statistical learning from neural entrainment
Role: Principal Investigator
Award Amount: \$165,000 CAD (\$33,000/year)
- 2019 Natural Sciences and Engineering Research Council of Canada (NSERC)
Discovery Launch Supplement
Insights into statistical learning from neural entrainment
Role: Principal Investigator
Award Amount: \$12,500 CAD

Previously Held:

- 2019 Western Strategic Support for NSERC Success
The role of neural entrainment in statistical learning
Role: Principal Investigator
Award Amount: \$25,000 CAD
- 2019 Western Social Sciences Faculty Research Development Fund Travel Grant
Award Amount: \$2500 CAD

Honours and Awards

- 2018 Association for Psychological Science Rising Star Award
- 2014-2016 F32 National Research Service Award (NRSA). *Statistical learning, memory systems, and sleep-based memory consolidation*. NIH F32 HD 078223.
- 2013-2014 T32 Training Program in the Neuroscience of Human Cognition, Postdoctoral Training Award, Northwestern University. NIH T32 NS 47987.
- 2011 Henry V. Howe Scholarship, University of Oregon
- 2007 B.A. awarded summa cum laude, Middlebury College
- 2007 Elected to Phi Beta Kappa, Middlebury College

Publications

21. Choi, D.,* **Batterink, L.***, Black, A.K., Paller, K.A. & Werker, J.F. (2020). Preverbal infants discover statistical word patterns at similar rates as adults: Evidence from neural entrainment. *Psychological Science*, 31, 1161-1183. *authors contributed equally
20. **Batterink, L.J.** (2020). Syllables in sync form a link: Neural phase-locking reflects word knowledge during language learning. *Journal of Cognitive Neuroscience*, 32, 1735-1748.
19. **Batterink, L.** & Paller, K. A. (2019). Statistical learning of speech regularities can occur outside of focused attention. *Cortex*, 115, 56-71.
18. **Batterink, L.**, Paller, K.A. & Reber, P.J. (2019). Understanding the neural bases of statistical and implicit learning. *Topics in Cognitive Science*, 11, 482-503. Part of forthcoming Special Issue "Two Approaches, One Phenomenon: Aligning Implicit Learning and Statistical Learning."

17. **Batterink, L.**, Westerberg, C. E. & Paller, K. A. (2017). Vocabulary learning benefits from REM after slow-wave sleep. *Neurobiology of Learning and Memory*, 144, 102-113.
16. **Batterink, L.** (2017). Rapid statistical learning supporting word extraction from continuous speech. *Psychological Science*, 28, 921-928.
15. **Batterink, L.**, & Paller, K. A. (2017). Online neural monitoring of statistical learning. *Cortex*, 90, 31-45.
14. **Batterink, L.** & Paller, K. A. (2017). Sleep-based memory processing facilitates grammatical generalization: Evidence from targeted memory reactivation. *Brain and Language*, 167, 83-93. Special Issue on Sleep and Language Learning.
13. **Batterink, L.**, Cheng, L., & Paller, K. A. (2016). Neural measures reveal implicit learning during language processing. *Journal of Cognitive Neuroscience*, 28, 1636-1649.
12. **Batterink, L.**, Creery, J. D., & Paller, K. A. (2016). Phase of spontaneous slow oscillations during sleep influences memory-related processing of auditory cues. *Journal of Neuroscience*, 36, 1401-1409.
11. **Batterink, L.**, Reber, P. J., & Paller, K. A. (2015). Functional differences between statistical learning with and without explicit training. *Learning and Memory*, 22, 544-556.
10. **Batterink, L.**, Reber, P. J., Neville, H., & Paller, K.A. (2015). Implicit and explicit contributions to statistical learning. *Journal of Memory and Language*, 83, 62-78.
9. **Batterink, L.**, Oudiette, D., Reber, P. J., & Paller, K. A. (2014). Sleep facilitates learning a new linguistic rule. *Neuropsychologia*, 65, 169-179.
8. **Batterink, L.** & Neville, H. (2014). ERPs recorded during early second language exposure predict syntactic learning. *Journal of Cognitive Neuroscience*, 26, 2005-2020.
7. **Batterink, L.** & Neville, H. (2013). The human brain processes syntax in the absence of conscious awareness. *Journal of Neuroscience*, 33, 8528-8533.
6. **Batterink, L.** & Neville, H. (2013). Implicit and explicit second language training recruit common neural mechanisms for syntactic processing. *Journal of Cognitive Neuroscience*, 25, 936-951.
5. **Batterink, L.**, Karns, C.M., & Neville, H. (2012). Dissociable mechanisms supporting awareness: The P300 and gamma in a linguistic attentional blink task. *Cerebral Cortex*, 22, 2733-2744.
4. Kimble, O.M, **Batterink, L.**, Marks, E., Ross, C., & Fleming, K. (2012). Negative expectancies in posttraumatic stress disorder: Neurophysiological (N400) and behavioral evidence. *Journal of Psychiatric Research*, 46, 849-855.
3. **Batterink, L.**, & Neville, H. (2011). Implicit and explicit mechanisms of word learning in a narrative context: An event-related potential study. *Journal of Cognitive Neuroscience*, 23, 3181-3196.
2. **Batterink, L.**, Spoor, S., & Stice, E. (2010). Body mass correlates inversely with inhibitory control in response to food in adolescent girls: An fMRI study. *NeuroImage*, 52, 1696-1703.

1. **Batterink, L.**, Karns, C. M., Yamada, Y., & Neville, H. (2010). The role of awareness in semantic and syntactic processing: An ERP attentional blink study. *Journal of Cognitive Neuroscience*, 22, 2514-2529.

Manuscripts Under Review

1. Van Hedger, S.C., Johnsrude, I.S., & **Batterink, L.J.** (under review). Prior real-world experience influences non-linguistic statistical learning.
2. Moreau, C.N., **Batterink, L.J.**, & Joanisse, M. F. (invited to resubmit). An advantage for linguistic statistical learning in children over adults: Evidence from neural entrainment.
3. Moser, J., **Batterink, L.J.**, Henger, Y.L., Schleger, F., Braun, C., Paller, K. A., & Priessl, H. (invited to resubmit). Dynamics of non-linguistic statistical learning: From neural entrainment to the emergence of explicit knowledge.

Book Chapters and Reviews

2. Reber, P. J., **Batterink, L. J.**, Thompson, K. R. & Reuveni, B. (2017). Implicit Learning: History and Applications. In *Implicit Learning* (Ed. A. Cleeremans), Psychology Press.
1. **Batterink, L.** & Paller, K.A. (2016). Picking up patterns in language. *Psychological Science Agenda: APA Science Brief*.

Invited Talks and Oral Presentations

1. **Batterink, L.** (2020; delivered virtually, in-person conference cancelled due to COVID-19). Interactive effects of slow-wave and REM sleep on grammar and vocabulary learning. Part of Symposium, *Sleep and consolidation during language learning. Meeting of the Society for the Neurobiology of Language*.
2. **Batterink, L.** (2020; delivered virtually, in-person conference cancelled due to COVID-19). Invited speaker, Symposium, *Statistical learning and development. 42nd Annual Meeting of the Cognitive Science Society*.
3. **Batterink, L.** (2020; delivered virtually, in-person conference cancelled due to COVID-19). Keynote Talk, *Interdisciplinary Approaches in the Language Sciences*. Max Planck Institute for Psycholinguistics, Nijmegen, the Netherlands.
4. **Batterink, L.** (2019). Insights into statistical learning from EEG-based neural entrainment. Invited talk, *Language Science: The Next Generation*. Montreal, QC.
5. **Batterink, L.** (2019). Can statistical learning occur during sleep? Oral presentation, *International Sleep Replay Workshop (ISRW)*, Evanston, IL.
6. **Batterink, L.** (2019). Novel insights into statistical learning from EEG-based neural entrainment. Oral presentation, *Interdisciplinary Advances in Statistical Learning*, San Sebastian, Spain.
7. **Batterink, L.** (2019). Insights into statistical learning from EEG-based neural entrainment. Invited talk, Department of Psychology & Neuroscience Colloquium Series, Dalhousie University, Halifax.

8. **Batterink, L.** (2018). Insights into statistical learning from EEG-based neural entrainment. Invited talk, *Cognitive Neuroscience of Second and Artificial Language Learning*, Bangor, UK.
9. **Batterink, L.** (2018). Contributions of memory processing during sleep to rule generalization in language. Oral Presentation. In G. Gaskell & J. Mirkovic (Chairs), *Generalization in language and memory*. Symposium, *Psychonomics*, New Orleans.
10. **Batterink, L.** (2018). Implicit learning, language acquisition, and their meeting point. Invited talk, *Ebbinghaus Empire Series*, Department of Psychology, University of Toronto.
11. **Batterink, L.**, Choi, D., Black, A., Paller, K.A., & Werker, J.F. (2018). Tracking the time course of statistical learning in pre-lingual infants: Online evidence from neural entrainment. Oral presentation, *The Bilingual Brain: A Lifelong Perspective* (Satellite Conference of Society for the Neurobiology of Language), Quebec City.
12. **Batterink, L.** & Paller, K. A. (2017). Rhythmic EEG entrainment indexes statistical learning. Oral Presentation. In E. Vogel & E. Awh (Chairs), *Tracking attention and learning through time and space*. Symposium, *Midwestern Psychological Association*, Chicago.
13. **Batterink, L.** (2016). Implicit and explicit memory contributions to language. Invited Talk, *Talks in Linguistics Series*, University of Illinois, Chicago.
14. **Batterink, L.** & Paller, K. A. (2016). Tracking sensitivity to stimulus sequence structure with a neural measure during learning. Oral presentation, *Fifth Implicit Learning Seminar*, Lancaster, UK.
15. **Batterink, L.**, Reber, P. & Paller, K.A. (2015). Functional differences between statistical learning with and without explicit training. Oral presentation, *International Conference on Interdisciplinary Advances in Statistical Learning*, San Sebastian, Spain.

Invited talks unable to deliver:

16. **Batterink, L.** (scheduled for March 2020; cancelled due to COVID-19). Invited Talk, Symposium session "Sleep and the Boundaries of Consciousness." *Japanese-Canadian Frontiers of Science Symposium*, Banff, Canada.
17. **Batterink, L.** (scheduled for April 2020; cancelled due to COVID-19). Invited Talk, Symposium co-organized by the Center for Language Science and Center for Language Acquisition, Pennsylvania State University, University Park, PA.

Co-Authored Oral Presentations

1. Choi, D., **Batterink, L.**, Black, A. & Werker, J. (2018). Neural entrainment to transitional probabilities in pre-lingual infants. In *Neural correlates of pre- and post-natal learning*. Symposium, *Society for Psychophysiological Research (SPR)*, Quebec City.
2. Abugaber, D., **Batterink, L.**, & Morgan-Short, K. (2019). Implicit Learning in an Artificial Language: A Replication and Extension of Batterink et al. (2014). *Second Language Research Forum (SLRF) 2019*, Michigan State University, Lansing, Michigan.

Conference Poster Presentations (2015-present)

* indicates trainee under my supervision

1. Reyes, S.* , Van Hedger, S.* , & Batterink, L.J. (2020) The influence of top-down attention on statistical learning of speech using an EEG measure of neural entrainment. *Society for the Neurobiology of Language*.
2. Hopper, J.W.* , **Batterink, L.J.**, & Grahn, J.A. (accepted; conference postponed due to COVID-19). Does musical stimulation during slow-wave sleep enhance slow oscillations and associated memory performance? *The Neuroscience and Music (NeuroMusic)*, Aarhus, Denmark.
3. Abugaber, D., Morgan-Short, K., & **Batterink, L. J.** (2020). Bias-Corrected Reaction Time Analyses Corroborate Findings of Implicit Grammar Learning in an Artificial Language. *Association for Psychological Science Annual Convention*, Chicago, IL.
4. Hopper, J.W.* , **Batterink, L.J.**, Grahn, J.A. (2019). Does musical stimulation during slow-wave sleep potentiate slow oscillations and associated declarative memory performance? *Rhythm Production and Perception Workshop*, Traverse City, MI.
5. Moreau, C., Joanisse, M., **Batterink, L.**, Liesemer, K* . & Child, I* . (2019). Statistical learning and how it relates to language and reading abilities: An EEG study. Poster presentation, *Canadian Society for Brain, Behaviour and Cognitive Science*, Waterloo, ON.
6. Moreau, C., Joanisse, M., **Batterink, L.**, Liesemer, K* . & Child, I* . (2019). Statistical learning and how it relates to language and reading abilities: An EEG study. Poster presentation, *Developmental Research Day*, London, ON.
7. Moreau, C., Liesemer, K* . & Child, I* , **Batterink, L.**, & Joanisse, M. (2019). A look at statistical language learning and how it relates to the emergence of language and reading disorders. Poster presentation, *Research Special Interest Group Research Day*, Niagara Falls, ON.
8. Moreau, C., Joanisse, M., & **Batterink, L.** (2019). Statistical learning across visual and auditory modalities. Poster presented at Lake Ontario Visionary Establishment (LOVE) conference, Niagara Falls, ON.
9. **Batterink, L.**, Choi, D., Black, A., Paller, K.A., & Werker, J.F. (2018). Tracking the time course of statistical learning in pre-lingual infants: Online evidence from neural entrainment. Poster presentation, *Society for the Neurobiology of Language*, Quebec City.
10. **Batterink, L.**, Florczak, S., Santostasi, G., Zee, P.C., Sanchez, D., & Paller, K.A. (2018). Improving memory with real-time phase-locked reactivation during sleep. Poster presentation, *Cognitive Neuroscience Society*, Boston.
11. **Batterink, L.**, Westerberg, C.E. & Paller, K. A. (2017). Vocabulary learning benefits from REM after slow-wave sleep. Poster presentation, *Cognitive Neuroscience Society*, San Francisco.

12. **Batterink, L.** & Paller, K. A. (2016). Online neural monitoring of statistical learning. Poster presentation, *Society for Neuroscience*, San Diego.
13. **Batterink, L.**, Creery, J. & Paller, K.A. (2016). Phase of spontaneous slow oscillations during sleep influences memory-related processing of auditory cues. Poster presentation, *Cognitive Neuroscience Society*, New York.
14. **Batterink, L.**, Creery, J. & Paller, K.A. (2015). An optimal slow-wave phase for learning-related auditory cues during sleep to improve subsequent memory performance. Poster presentation, *Society for Neuroscience*, Chicago.
15. **Batterink, L.**, Oudiette, D., Reber, P. J., & Paller, K. A. (2015). Sleep facilitates learning a new linguistic rule. Poster presentation, *Cognitive Neuroscience Society*, San Francisco.

Teaching Experience

Courses Taught

- | | |
|-----------|--|
| 2020 | Research in the Psychology of Language (PSYCH 3184F)
Western University |
| 2019-2020 | Neuropsychology and Cognitive Neuroscience (PSYCH 3224A/B)
Western University |
| 2013 | Cognition (PSY 435/535)
University of Oregon |

Guest Lectures

- | | |
|------|---|
| 2018 | <i>Cognitive, Developmental and Brain Sciences Proseminar</i>
Western University |
| 2015 | <i>Human Memory</i>
Northwestern University |
| 2014 | <i>Brain Damage and the Mind</i>
Northwestern University |
| 2013 | <i>Advanced Cognitive Neuroscience</i>
University of Oregon |
| 2012 | <i>Advanced Cognitive Neuroscience</i>
University of Oregon |

Teaching Assistantships

- | | |
|------|--|
| 2012 | Graduate Teaching Fellow, <i>Music and the Brain</i>
University of Oregon |
| 2012 | Graduate Teaching Fellow, <i>Neuroscience & Inequality</i>
University of Oregon |
| 2011 | Graduate Teaching Fellow, <i>Biopsychology</i>
University of Oregon |
| 2009 | Graduate Teaching Fellow, <i>Statistical Methods</i>
University of Oregon |

Student Supervision (All at Western University unless noted otherwise)

Postdoctoral Fellows:

Stephen Van Hedger (2018-2020), *co-supervised with Dr. Ingrid Johnsrude*

- *BrainsCAN Postdoctoral Award Tier I (2018-2021)*

Melissa Troyer (2020-), *co-supervised with Dr. Ken McRae & Marc Joanisse*

- *BrainsCAN Postdoctoral Award (2019-)*

Graduate Students:

Jerrica Mulgrew (2018-)

- *NSERC Canada Graduate Scholarship-Masters Award (2019-2020)*
- *Ontario Graduate Scholarship (2020-2021)*

Justin Hopper (2018-), *co-supervised with Dr. Jessica Grahm*

Ashwin Harimohan (2019-)

Stacey Reyes (2019-)

Helena Wang (2020-), *co-supervised with Dr. Stefan Kohler*

Sarah Berger (2020-)

- *Ontario Graduate Scholarship (2020-2021)*

Honours Thesis Students:

Kexin Tang (2020-2021)

Elise Alexander (2020-2021)

- *NSERC Undergraduate Summer Research Award (2020)*

Steven Zhang (2019-2020)

- *NSERC Undergraduate Summer Research Award (2019)*
- Thesis recognized as *Highly Commended entrant, Global Undergraduate Awards, 2020*

Amanat Ludhar (2019-2020)

- Thesis recognized as *Highly Commended entrant, Global Undergraduate Awards, 2020*

Mykayla Winspear (2019-2020)

Kailee Liesemer (2018-2019)

- Thesis recognized as *Highly Commended entrant, Global Undergraduate Awards, 2019*

Isabel Child (2018-2019)

Frances Planke (2018-2019)

Graduate Advisory Committee:

Marina De Oliveira (2020-), Master's Committee

Kaitlyn Parks (2020-), Doctoral Committee

Claudia Morales (2019-), Master's Committee

Kathryn Turnbull (2019-), Doctoral Committee

Monique Chatterton (2019-), Master's Committee

David Abugaber (2019-), Doctoral Committee (University of Illinois Chicago)
 Adam Newton (2019-), Doctoral Committee
 Tianshu Zhu (2019-), Doctoral Committee
 Monique Chatteronton (2019-), Master's Committee
 Kathryn Turnball (2019-), Doctoral Committee
 Claudia Morales (2019-), Master's Committee
 Kara Hannah (2018-2020), Master's Committee
 Sarah Hollywood (2018-2020), Master's Committee
 Aymee Alvarez (2018-2020), Master's Committee

Graduate Examination Committee

Leah Brainin (2020), Comprehensive Examination Committee
 Kara Hannah (2020), Masters Examination Committee
 Evan Houldin (2019), Doctoral Examination Committee,
 Aaron Gibbings (2019), Doctoral Examination Committee
 Kaitlyn Parks (2019), Masters Examination Committee
 Leah Brainin (2019), Masters Examination Committee
 Sabrina Ford (2019), Masters Examination Committee
 Dimitrios Palidis (2019), Comprehensive Exam
 Ana Cecilia Ruiz Pardo (2019), Comprehensive Exam
 Valerie Valderrama (2015-2016), Audiology Capstone Project (NU)
 Kelsey Thompson (2015), Qualification Exam (NU)

Undergraduate Research Assistants:

Elise Alexander (Western University), Steven Zhang (Western University), Kelsey Aaronson (NU), Shani Kaplan-Golan (NU), Madeline Deysine (NU), Dalit Hendel (NU), Denise Oleas (NU), Larry Cheng (NU), Christina Torres (NU), Eunice Wright (UO), Lily Tsou (UO), Daley Stevens (UO), Ryan Jayne (UO), Nick Price (UO), Thomas Pettus-Czar (UO)

Service and Scientific Organizations

2020-2021	Annual Performance and Evaluation Committee Department of Psychology, Western University
2020	Application Reviewer, Canada Graduate Scholarships – Doctoral (CGS-D) Department of Psychology, Western University
2020	Application Reviewer, Ontario Graduate Scholarships Department of Psychology, Western University
2019-2020	Member of BrainsCan Special Initiatives Review Panel Brain and Mind Institute, Western University
2019-2020	Space and Facilities Executive Committee Department of Psychology, Western University

2019 Cover	Chair, Hiring Committee, BrainsCAN EEG Lab Coordinator Parental Leave Western University
2019	Application Reviewer, Canada Graduate Scholarships – Doctoral (CGS-D) Department of Psychology, Western University
2018-current	Co-supervisor, BrainsCAN EEG Lab Coordinator Western University
2018-2019	Member of Scientific Program Committee Association for the Scientific Study of Consciousness, London, Canada
2018-2019	Member of Local Organizing Committee Association for the Scientific Study of Consciousness, London, Canada
2019	Application Reviewer, Canada Graduate Scholarships – Master's (CGS-M) Department of Psychology, Western University
2018	Member of BrainsCan Accelerator Program Review Panel Brain and Mind Institute, Western University
2018	Judge, SciNapse Undergraduate Science Case Competition Western University
2018	Member of Review Committee American Association of Applied Linguistics, Atlanta, USA
2018	Member of Review Committee Cognitive Neuroscience of Second and Artificial Language Learning (CoNSALL), Bangor, UK
2017	Member of Review Committee Architectures and Mechanisms of Language Processing (AMLaP), Lancaster, UK
2016	Member of Scientific Program Committee Fifth Implicit Learning Seminar, Lancaster, UK

Granting Agency Reviewing

2019	SSHRC Insight Grant Competition
2019	Austrian Academy of Sciences, Doctoral Fellowship Programme

Ad Hoc Reviewing

Annals of the New York Academy of Sciences; Applied Psycholinguistics; Brain Research; Brain Research; Cerebral Cortex; Child Development; Cognition; Cognitive Neuroscience; Cortex; Developmental Science; Experimental Brain Research; Journal of Cognitive Neuroscience; Journal of Experimental Child Psychology; Journal of Experimental Psychology: General; Journal of Experimental Psychology: Learning, Memory, and Cognition; Journal of Memory and Language; Journal of Neuroscience; Language and Linguistics Compass; Language Learning; Learning and Memory; Memory and Cognition; Neurobiology of Learning

and Memory; NeuroImage; Neuropsychologia; Philosophical Transactions B; PLOS ONE; Psychological Science; Psychophysiology; Scientific Reports; Sleep; Topics in Cognitive Science

Professional Affiliations

Cognitive Neuroscience Society
Society for Neuroscience

Society for the Neurobiology of Language