

Wei Li

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EDUCATION

- 2025 Expected Ph.D. in PSYCHOLOGY & NEUROSCIENCE
Boston College, Morrissey College of Arts and Sciences
Advised by Dr. Joshua Hartsborne
- 2019 M.A. in PSYCHOLOGY
Cornell University, College of Human Ecology
Advised by Dr. Marianella Casasola and Dr. Tamar Kushnir
- 2018 B.S. in PSYCHOLOGY
Zhejiang University, College of Science
Advised by Zhi Li

GRANTS, AWARDS, SCHOLARSHIPS

- 2018 OUTSTANDING GRADUATES OF ZHEJIANG PROVINCE
Zhejiang Province
- 2015-2016, 2016-2017 EXCELLENT STUDENT AWARD
Zhejiang University
- 2015-2016, 2016-2017 FIRST-CLASS SCHOLARSHIP FOR OUTSTANDING STUDENT
Zhejiang University
- 2015-2016, 2016-2017 STUDENT RESEARCH TRAINING PROGRAM GRANT
Zhejiang University

RELEVANT COURSES

- Psychology & Neuroscience Cognitive Neuroscience, Neurophysiology, General Biology and Experiment, Physiological Psychology, European Summer School in Logic, Language and Information
- Stats & Computer Science Machine Learning, Natural Language Processing, Deep Learning Workshop, Probability and Mathematical Statistics, Quantitative Methods I & II, Methods of Handling Missing Data, Multilevel Modeling

SELECTED PROJECTS

Oct 2022-Present **BILINGUAL BRAIN**

Investigate the neuroanatomical variation within bilingualism by applying computer vision and training the Contrastive Variational Autoencoder to disentangle bilingual-specific variation from common variation and map these variations to linguistic measures by representational similarity analysis and cluster analysis on latent vectors

Build a training dataset which includes 2,000+ brain 3D images by reviewing neuroscience projects and identifying usable brain image datasets

Oct 2022-Present **COMPUTATIONAL PLAUSIBILITY**

Review papers about second language acquisition and large language models of bilingualism to compare different models as learning theories to investigate the computational plausibility of children's advantage in language acquisition

Tested and simulated critical period effect by training a series of bilingual LSTM models on CHILDES and manipulating the timing of adding the second training corpus; found no transfer learning nor critical period effect in language models

Nov. 2020-March 2022 **TWO MONOLINGUAL IN ONE BRAIN**

Provided evidence against "two monolinguals in one brain" hypothesis by examining bilingual decrement in syntactic proficiency compared to monolinguals to display inconsistency with the prediction of the initial hypothesis

Reanalyzed a large dataset from an online experiment and found significant differences between two monolinguals and simultaneous bilinguals

Used meta-analysis and Monte Carlo Simulations to illustrate that the previous non-effect was attributed to the statistical power

Oct. 2020-Present **LANGUAGE LEARNING AND SIMILARITIES**

Investigate the effect of native language on second language acquisition by assisting in collecting English test data from 7,900+ students from international schools

Quantify syntactic similarities among languages by training dependency parsers to examine if the similarities affect the second language learning rate

Jan. 2020-Present **BIG DATA FOR CRITICAL PERIOD**

Published a review paper to provide a solution to the failures of replication and generalization in psychological studies by illustrating how citizen scientists could diversify the demographics and test randomly-sampled stimulus set

Build a citizen science platform to collect data from millions of Mandarin learners all over the world through an online grammar quiz

Design and fit a computational model on the big dataset to disentangle confounding factors, estimate the critical period of learning Mandarin syntactic knowledge and resolve the long-lasting debate in second language acquisition

April 2017-Jan. 2018 ATTENTION MECHANISM

Extended the perceptual load theory by considering perceptual load as a rate problem and examining if the time and items in information-processing together determine the attention allocation to the task-irrelevant information

Designed a new cueing paradigm and programmed one experiment in Matlab to measure distractor interference in different exposure durations

PUBLICATIONS

Li, W. & Hartshorne, J. (in review). Don't let Perfect be the enemy of Better: In defense of unparameterized mega-studies.

Yun, H., **Li, W.**, Li, Z., & Hartshorne, J. (accepted). Will children learn English faster if their native language is similar to English? *In Proceedings of the Annual Meeting of the Cognitive Science Society*.

Li, W., Hartshorne, J. Even Simultaneous Bilinguals Do Not Reach Monolingual Levels of Proficiency in Syntax. *Languages*. 2022; 7(4):293. <https://doi.org/10.3390/languages7040293>

Li, W., Germine, L. T., Mehr, S. A., Srinivasan, M., & Hartshorne, J. (2022). Developmental psychologists should adopt citizen science to improve generalization and reproducibility. *Infant and Child Development*, e2348. <https://doi.org/10.1002/icd.2348>

Li, Z., Xin, K., **Li, W.**, & Li, Y. (2018). Reconceptualizing perceptual load as a rate problem: The role of time in the allocation of selective attention. *Journal of Experimental Psychology: Human Perception and Performance*, 44(9), 1458. <https://doi.org/10.1037/xhp0000547>

Zhi's Lab & Tencent Research Institute S-Tech. VR Tide - Social Implication of VR: Body, Brain, and Soul. *Shanghai Educational Publishing House*, 2018. <https://www.amazon.cn/dp/B0789DXJ9Q>

POSTERS

Li, W., Aglinskas, A., & Hartshorne, J. (accepted). Contrastive neural network reveals the structure of neuroanatomical variation within bilingualism. Poster presented at the *Annual Meeting of the Cognitive Science Society Conference*.

Li, W., Wang, M., **Li, W.**, Cai, B., & Shi, Y. (2020, July). An Improvement on the progress bar: make it a story, make it a game. In *International Conference on Applied Human Factors and Ergonomics* (pp. 394-401). Springer, Cham.

Li, W., Ji, J., & Casasola, M. (2019). Do parents differ in their scaffolding of preschool sons and daughters during a spatial activity? Poster presented at the *biennial Cognitive Development Society Conference*.

Ji, J., **Li, W.**, & Casasola, M. (2019). Parental scaffolding during guided play and children's spatial ability. Poster presented at the *biennial Cognitive Development Society Conference*.

MENTORING AND TEACHING ASSISTANTS EXPERIENCE

2020F, 2021F, 2022F INTRODUCTION TO BEHAVIOR STATISTICS & RESEARCH

2021S, 2022S BABY TALK

2020, 2022 HONOR THESIS: Jocyn Chen, Heesu Yun