

Lucía Z-Rivera

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WORK EXPERIENCE

Graduate Research Assistant - University of Maryland, College Park

Maryland, USA

Ph.D. in Neuroscience and Cognitive Science (in progress)

August 2024 - Present

- Conducting research on bilingual language processing and lexical access. Advisor: Dr. DJ Bolger

Research Assistant - FONDECYT 1230532 Project

Valparaíso, CL

Universidad de Valparaíso - Speech Therapy School, Faculty of Medicine.

May 2023 - July 2024

Fund of the National Research and Development Agency (ANID), Chile

- Project: 'Effect of lexical selection on inefficient discourse: A psychoneurolinguistic view of the first episode of schizophrenia.' Directed by María Francisca Alonso-Sánchez

Research Assistant - ANILLOS ACT210053 Project

Valparaíso - Santiago, CL

A collaborative research involving U. de Valparaíso, U. Concepción and Pontificia Universidad Católica de Chile

July 2022 - July 2024

Fund of the National Research and Development Agency (ANID), Chile

- Project: 'Sensory And Electric Brain Stimulation For Neurorehabilitation: From Mechanisms To Clinical' Practice Directed by Wael El-Deredy

Advanced Center for Electrical and Electronic Engineering, AC3E

Valparaíso, CL

Research Assistant - Universidad Técnica Federico Santa María

2017-July 2024

Associative Research Program Basal Project FB0008

- Direct Supervisors Matías Zañartu - Pavel Prado Gutiérrez

Research Assistant - FONIS SA19I0118 Project

Valparaíso - Santiago, CL

Universidad de Valparaíso, Universidad del Desarrollo

August 2022 - Dec 2023

Fund of the National Research and Development Agency (ANID), Chile

- Project: 'Evaluation of a cognitive training therapy based on brain oscillations stimulation in patients with Mild Cognitive Impairment using a randomized clinical trial' Directed by Pablo Billeke and Begoña Gongora

Research Assistant - FONDECYT 11170654 Project

Valparaíso, CL

Universidad de Valparaíso - Speech Therapy School, Faculty of Medicine.

December 2021- March 2022

Fund of the National Research and Development Agency (ANID), Chile

- Project: 'Effect of Age on Speech Comprehension: Electrophysiological Evidence' Directed by Begoña Gongora

Research Assistant - FONDECYT 1191369 Project

Valparaíso, CL

Universidad Técnica Federico Santa María

2021-2022

Fund of the National Research and Development Agency (ANID), Chile

- Project: 'Neurophysiological control for a computational lumped mass model of the vocal folds' Directed by Matías Zañartu

MS Student - P50 DC015446 Project

Valparaíso, CL

Universidad Técnica Federico Santa María

2019-2020

Grant from The National Institute on Deafness and Other Communication Disorders (NIDCD) USA-Chile

- Project: 'Clinical research for improved prevention, diagnosis and treatment of vocal hyperfunction' Directed by Matías Zañartu

Research Assistant - FONDEF 16I10322 Project

Valparaíso, CL

Universidad de Valparaíso - Biomedical Engineering School, Faculty of Engineering.
Fund of the National Research and Development Agency (ANID), Chile

2018-2019

- Project: 'Neuroengineering device to improve the control of workers' attention in high altitude mines' Directed by Alejandro Weinstein and Wael El-Deredy

Research Assistant - FONDECYT 11160212 Project

Valparaíso, CL

Universidad de Valparaíso - Speech Therapy School, Faculty of Medicine
Fund of the National Research and Development Agency (ANID), Chile

March 2017- March 2018

- Project: 'Syntactic alterations in subjects with schizophrenia' Directed by María Francisca Alonso Sánchez

EDUCATION

University of Maryland, College Park

Maryland, USA

Ph.D. in Neuroscience and Cognitive Science

2024 - In progress

Universidad de Valparaíso, Faculty of Engineering

Valparaíso, CL

Master's Degree in Engineering Sciences, Mention Biomedical Engineering

2018 - 2020

Thesis: Anticipatory activity predicts corollary discharge: Alteration in participants with schizophrenia. Directed by Professor: Dr. Wael El Deredy and Professor: Dr. Pavel Prado

Universidad Santo Tomás, School of Speech-Language Pathology

Viña del Mar, CL

Professional Title of Speech-Language Pathology (Maximum Distinction)

2012 - 2017

Thesis: Attribution of mental and emotional states and intentions in subjects with schizophrenia. Directed by Professor: Dr. María Francisca Alonso/

Universidad Santo Tomás, School of Speech-Language Pathology

Viña del Mar, CL

BSc of Speech-Language Pathology (Maximum Distinction)

2012 - 2016

SCHOLARSHIPS AND AWARDS

2021 - Starts 2024 Fulbright Equal Opportunities Doctoral Scholarship ANID

For doctoral studies in the United States

2019 - 2020 National Master Scholarship

From National Research and Development Agency (ANID), Chile

2016 Academic Excellence Scholarship

Universidad Santo Tomás, Chile

2016 Award first place in the undergraduate ranking

Universidad Santo Tomás, Chile

TEACHING EXPERIENCE AND MENTORING EXPERIENCE

Thesis Direction

2021

Universidad Santo Tomás- For the professional title of Speech-Language Pathology - Four students Viña del Mar, CL

- Thesis: Validation of experimental paradigm in recognition tasks between semantic and prosodic content

Bioengineering - Teaching Assistant

2022

Universidad Técnica Federico Santa María

Valparaíso, CL

- Professor: Pavel Prado

PUBLICATIONS

Published

Castro, C., Cortés, JP., **Z-Rivera, L.**, Prado, P., Weinstein, A., Zañartu, M. Modeling voice production and self-perception in noise: Understanding the Lombard effect in non-phonotraumatic vocal hyperfunction. *J. Acoust. Soc. Am.* 156, 3772–3779 (2024). <https://doi.org/10.1121/10.0034544>

Gomez-Lombardi, A., Gongora, B., Prado-Gutierrez, P., Muñoz-Carvajal, P., **Z-Rivera, L.**, El-Derey, W. The cognitive triad network - oscillation - behaviour links individual differences in EEG theta frequency with task performance and effective connectivity. *Sci Rep* 14, 21482 (2024). <https://doi.org/10.1038/s41598-024-72229-x>

Alonso-Sánchez, M., **Z-Rivera, L.**, Otero, M., Portal, J., Cavieres, A., Alfaro-Faccio, P. Aberrant brain language network in schizophrenia: A Systematic Review of its relation to language signs beyond symptoms. *Front. Psychiatry - Schizophrenia*. Volume 15 - (2024). <https://doi.org/10.3389/fpsyt.2024.1244694>

Coronel-Oliveros, C., Medel, V., Whitaker, G., Astudillo, A., **Z-Rivera, L.**, Prado, P., El-Derey, W., Orio, P., Weinstein, A. Elevating Understanding: Linking High-Altitude Hypoxia to Brain Aging Through EEG Functional Connectivity and Spectral Analyses. *Network Neuroscience* (2024) 8 (1): 275–292. <https://doi.org/10.1162/netn.a.00352>.

Figueroa-Vargas, A., Gongora, B., Alonso-Sánchez, F., Ortega, A., Soto-Fernández, P., **Z-Rivera, L.**, Ramirez, S., González, F., Muñoz-Venturelli, P., Billeke, P. The effect of a cognitive training therapy based on stimulation of brain oscillations in patients with mild cognitive impairment in a Chilean sample: study protocol for a phase IIb, 2×3 mixed factorial, double-blind randomised controlled trial. *Trials* 25, 144 (2024). <https://doi.org/10.1186/s13063-024-07972-7>

Cuadros, J., **Z-Rivera, L.**, Castro, C., Whitaker, G., Otero, M., Weinstein, A., Martínez-Montes, E., Prado, P., Zañartu, M. DIVA Meets EEG: Model Validation Using Formant-Shift Reflex. *Applied Sciences*. 2023; 13(13):7512. <https://doi.org/10.3390/app13137512>

Prado, P., Mejía, JA., Sainz-Ballesteros, A., Birba, A., Moguilner, S., Herzog, R., Otero, M., Cuadros, J., **Z-Rivera, L.**, O'Byrne, DF., Parra, M., Ibáñez, A. Harmonized multi-metric and multi-centric assessment of EEG source space connectivity for dementia characterization. *Alzheimer's Dement.* 2023; 15:e12455. <https://doi.org/10.1002/dad2.12455>

Castro C*, **Z-Rivera, L.**, Prado, P., Cuadros, J., Cortés, J.P., Weinstein, A., Espinoza, V., Zañartu, M. Acoustic and Neurophysiological Aspects of Lombard Effect. 2022; bioRxiv 2022.09.30.510383; doi: <https://doi.org/10.1101/2022.09.30.510383>.

*Equal Author Contribution

Alonso Sánchez, M.F., **Zepeda Rivera, L.**, Prado Gutiérrez, P. Temporal and spatial differences in the processing of lexical incongruities: A study of event related potentials. *Revista de La Facultad de Medicina*. 2020; 68 (2). <https://doi.org/10.15446/revfacmed.v68n2.72762>.

In preparation (first author only, full text available upon request)

Z-Rivera, L., Castro C., Cortés, J.P., Cuadros, J., Weinstein, A., Espinoza, V., Prado, P., Zañartu, M. Neural Dynamics and Acoustic Adaptations During the Lombard Effect: Evidence from EEG and Dynamic Causal Modeling.

EVALUATOR OF ARTICLES IN INDEXED JOURNALS

Reviewer for the article "A Study of Semantic and Phonological Verbal Fluency in Alzheimer's Disease" in the *Revista Signos of Linguistic Studies* at Pontificia Universidad Católica de Valparaíso, Chile.

CONFERENCE PAPERS AND SEMINARS (SELECTION OF THE LAST 3 YEARS)

Z-Rivera, Lucía., Rodiño, Julio., Gómez-Lombardi, Andre., El-Derey, Wael. Brain-State dynamics in healthy aging. 11th International Brain Research Organization (IBRO) World Congress of Neuroscience in Granada, Spain on 9-13 September 2023. (Poster Presentation).

Z-Rivera, Lucía., Rodiño, Julio., Gómez-Lombardi, Andre., El-Derey, Wael. Brain-State dynamics in healthy

aging. Advanced Center for Electrical and Electronic Engineering (AC3E) Technical Conference, Valparaíso, Chile 2023. Award for the most outstanding poster presentation.

Z-Rivera, L., Astudillo, A., Rodiño, J., Gómez-Lombardi, A., Hernández, H., Araya, D., Guevara, P., El-Deredy, W. Dynamic Brain-States of spontaneous EEG in younger and older adults. Organization for Human Brain Mapping (OHBM) Annual Meeting in Glasgow, Scotland 2022. (Poster Presentation).

Castro, C., **Z-Rivera, L.**, Prado, P., Cuadros, J., Weinstein, A., Zañartu, M. Acoustic and Neurophysiological Aspects of Lombard Effect. IV Research Conference Clinical Hospital of the Universidad de Chile (HCUCH) - Health and Engineering innovative solutions at HCUCH, Santiago, Chile 2022. (Poster Presentation)

Z-Rivera, L., Castro, C., Prado, P., Cuadros, J., Weinstein, A., Zañartu, M. Acoustic and Neurophysiological Aspects of Lombard Effect. Advanced Center for Electrical and Electronic Engineering (AC3E) Technical Conference, Valparaíso, Chile 2022. (Poster Presentation)

Astudillo, A. **Zepeda-Rivera, L.**, Araya, D., Hernandez, H., Trujillo-Barreto, N. Electroencephalography (EEG) Data Preprocessing Pipeline for Online Workshop on Hidden Semi-Markov Model (HsMM) Modeling, 2021.(Oral Presentation)

Astudillo, A. **Zepeda-Rivera, L.**, Araya, D., Hernandez, H., Trujillo-Barreto. Brain States Dynamics Tutorial, Workshop online 2021. (Organizing Committee Participation).

Participation as a student in the IEEE SPS Summer School on Biomedical Signal and Image Processing in Chile, 2020.

SKILLS

Programming Languages: Matlab.

Tools: Psychtoolbox, EEGLAB, SPM, Brain Vision Analyzer, E-prime 3.0

Devices: EEG - Biosemi Active Two, tACS - Neuroelectris.

INTERESTS

Neuroscience, Neurolinguistics, Human Development, Aging, Voice Production, Cognitive Processing in Psychiatric Disorders, Natural Language Processing, Electroencephalography Studies.