Adriana Felisa Chávez De la Peña

Cognitive Science Ph.D. candidate

Curriculum Vitae

Contact Information
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I am a cognitive scientist interested in the study of individual differences through the lens of **cognitive psychometrics**. During my Ph.D. training, my research work focused on facilitating the Bayesian implementation of cognitive process models (i.e., sequential sampling models for choice and response time data) to be used as measurement models through the development of software (e.g., custom models in JAGS), statistical methods (e.g., "EZ" sampling distributions) and tutorials (i.e., sample applications).

RESEARCH INTERESTS

- Cognitive Psychometrics
- Latent variable models
- Structural equation modeling
- Bayesian cognitive modeling
- Sequential sampling models
- Measurement models
- Individual differences
- Response time modeling

SKILLS

Statistics: Bayesian and frequentist statistics. Broad experience in the specification and implementation of Bayesian cognitive models for data analysis and hypothesis testing.

Computational Skills: Advanced R programming. Python and MATLAB programming. Linux. Version control with git. Virtual machines for code reproducibility.

Psychometrics: Broad experience in test development and validation. Field experience in the implementation of psychometric models to inform decision-making.

Teaching: Extensive experience as a teaching assistant and main instructor on courses and workshops covering technical materials at various levels.

EDUCATION

Ph.D. in Cognitive Sciences Expected 2025
University of California, Irvine: Department of Cognitive Sciences

M.S. in Statistics 2024
University of California, Irvine: Department of Statistics

B.A. in Psychology 2018
National Autonomous University of Mexico: School of Psychology

RESEARCH EXPERIENCE

Graduate Research Assistant 2022 - Present
Cognition and Individual Differences Lab Irvine, California
University of California, Irvine
Department of Cognitive Sciences
P.I.: Joachim Vandekerckhove

Graduate Research Assistant 2020 - 2022
Structure in Perception and Cognition Lab Irvine, California
University of California, Irvine
Department of Cognitive Sciences
P.I.: Jeffrey N. Rouder

Undergraduate Research Assistant 2015 - 2018
Learning and Adaptive Behavior Lab Mexico City, Mexico
National Autonomous University of Mexico
School of Psychology
P.I.: Arturo Bouzas Riaño

ACADEMIC SERVICE

Colloquium Committee 2023 - 2024
University of California, Irvine
Department of Cognitive Sciences

Virtual Conference Moderator 2021, 2022
Society for Mathematical Psychology
2021 and 2022 Virtual Meetings

Elected student representative 2014 - 2016
National Autonomous University of Mexico
School of Psychology
Psychology School Technical Council

MENTORING EXPERIENCE

Senior graduate student mentor 2024 - present
Cognition and Individual Differences lab Irvine, California
Mentoring undergraduate students on their honors theses

Undergraduate software developer 2016 - 2018
Learning and Adaptive Behavior Lab Mexico City, Mexico
Senior undergraduate research assistant in charge of PAPIME project (PE310016) "Development of Virtual tools for teaching mathematical models in Psychology"

Senior undergraduate mentoring program 2015 - 2018
Learning and Adaptive Behavior Lab Mexico City, Mexico
Undergraduate mentor on coding and experimental design for the students enrolled in the "Research workshop" taught by Arturo Bouzas Riaño

TEACHING EXPERIENCE

Teaching Assistant positions

University of California, Irvine — 2020 - Present
School of Social Sciences — Irvine, California
Probability and inference: 10A, 10B and 10C
Psychology fundamentals: 9A, 9B and 9C

National Autonomous University of Mexico — 2016 - 2018
School of Psychology — Mexico City, Mexico
Learning and Adaptive Behavior: ACA-I, II and III

Main instructor positions

University of California, Irvine — Summer, 2023
Probability and Inference: PSYCH/COGS 10B — Online course

Jean Piaget Educational Center (Private Highschool) — 2018 - 2020
Research methods I, II and III — Mexico city, Mexico

Mexican Institute of Culture (Private Language School) — 2015 - 2017
English teacher for students aged 7-18 — Mexico city, Mexico

Summer Workshops at the National Autonomous University of Mexico

- *Teoría de la Probabilidad para Psicólogos* — June 2018
  Probability Theory for Psychologists
- *Fundamentos de la Estadística Inferencial para las Ciencias Sociales* — June 2018
  Inferential Statistics fundamentals for Social Sciences
- *Introducción al Pensamiento Estadístico* — June 2017
  Introduction to Statistical Thinking
- *Introducción al Modelamiento Bayesiano en Ciencias Cognitivas* — June 2017
  Introduction to Bayesian Modeling in Cognitive Sciences
- *Un Laboratorio Virtual en Python para Modelos del Comportamiento* — June 2017
  A virtual lab for cognitive modeling in Python

PUBLICATIONS

Published papers

- Etz, A., **Chávez De la Peña, A.F.**, Baroja, L., Medriano, K., & Vandekerckhove, J. (2024). The HDI + ROPE decision rule is logically incoherent but we can fix it. *Psychological Methods*.
- Villarreal, J., **Chávez De la Peña, A.F.**, Mistry, P., Menon, V. E., Vandekerckhove, J., & Lee, M. D. (2024). Bayesian graphical modeling with the circular drift diffusion model. Computational Brain & Behavior, 7, 181-194.

Pre-print

- **Chávez De la Peña, A.F.**, & Vandekerckhove, J. (preprint). An EZ Bayesian hierarchical drift diffusion model for response time and accuracy. *PsyArxiv*.
- Rouder, J., **Chávez De la Peña, A.F.**, Mehrvarz, M., & Vandekerckhove, J. (preprint). On Cronbach's merger: Why experiments may not be suitable for measuring individual differences. *PsyArxiv*.

In-progress

- **Chávez De la Peña, A.F.**, & Vandekerckhove, J. (in-progress). A comparison across different simulation methods for the circular drift-diffusion model.
- **Chávez De la Peña, A.F.**, & Vandekerckhove, J. (in-progress). A categorical extension of the circular drift-diffusion model for ordered discrete responses.

Theses

- **Chávez De la Peña, A.F.** (expected 2025). *Modeling individual differences in choice and response time*. Ph.D. thesis.
- **Chávez De la Peña, A.F.** (2018). *Estudios con deteccion de señales (Studies on Signal Detection)*. Undergraduate thesis.

PRESENTATIONS

Conference presentations

- **Chávez De la Peña, A.F.** and Joachim Vandekerckhove *"An EZ Bayesian hierarchical drift diffusion model for response time and accuracy."* 2024 Meeting of the Society for Mathematical Psychology. Tilburg, Netherlands. July, 2024
- **Chávez De la Peña, A.F.** *"Modeling Individual Differences with an EZ Bayesian hierarchical drift diffusion model."* Bayesian Cognitive Modeling Talk series hosted by the Learning and Adaptive Behavior Lab at the School of Psychology, UNAM. Mexico City, Mexico. March, 2024
- **Chávez De la Peña, A.F.**, Villarreal Ulloa Manuel, Michael D. Lee and Joachim Vandekerckhove *"A Bayesian hierarchical implementation of the circular drift diffusion model."* 2023 Meeting of the Society for Mathematical Psychology. Amsterdam, Netherlands. July, 2023

- **Chávez De la Peña, A.F.** *"Drifting beyond the Bayesics."* 58th Annual Edwards Bayesian Research Conference. Fullerton, California. March, 2023.
- **Chávez De la Peña, A.F.**, Jeffrey N. Rouder and Joachim Vandekerckhove *"Principal-component exploration of individual differences in the general-speed component of response times."* 2022 Meeting of the Society for Mathematical Psychology. Toronto, Canada. July, 2022.
- **Chávez De la Peña, A.F.**, Jeffrey N. Rouder and Joachim Vandekerckhove *"Principal-component exploration of individual differences in the general-speed component of response times."* 2022 Virtual Meeting of the Society for Mathematical Psychology. July, 2022.

Keynote presentations

- **Chávez De la Peña, A.F.** *"Modelamiento Bayesiano con el Modelo de Difusion Circular."* Keynote presentation at the School of Psychology at the National Autonomous University of Mexico. Mexico City, Mexico. 2024

Posters

- **Chávez De la Peña, A.F.** and Joachim Vandekerckhove *"An EZ Bayesian hierarchical drift diffusion model for response time and accuracy."* 2024 Meeting of the Psychonomic Society. New York, United States. November, 2024.
- **Chávez De la Peña, A.F.**, Rouder, J. and Joachim Vandekerckhove *"Individual differences in the general speed component of Response Times."* Symposium of Individual Differences in cognition. San Francisco, California. November, 2023.
- **Chávez De la Peña, A.F.**, Rouder, J., and Joachim Vandekerckhove *"Exploring the uni-factorial structure of the general-speed component of Response Times."* 7^{th} Summer School of Computational and Mathematical Modeling of Cognition. Szklarska Poreba, Poland. July, 2022.
- **Chávez De la Peña, A.F.**, Lee M. D. and Bouzas, A. *"Bayesian Cognitive and Statistical Modeling Applied to Signal Detection Theory and the Mirror Effect in a Perceptual Task."* 52nd Annual Meeting of the Society for Mathematical Psychology. Montreal, Canada. July, 2019.
- **Chávez De la Peña, A.F.** *"The Mirror Effect within Perception: Not another Recognition Memory study."* Object Perception Attention and Memory Meeting. Boston, Massachusetts. November, 2016.
- **Chávez De la Peña, A.F.** *"La Sensibilidad como fuente de Sesgo en una tarea de detección de señales usando la ilusión de Ebbinghaus" ("Sensibility as a source of Bias in a signal detection task using the Ebbinghaus illusion").* V International Seminar on Behavior and Applications. Mexico City, Mexico. November, 2015.

HONORS & AWARDS

Graduate Travel Award [2024]
Psychonomics Society

Travel Award [2024]
Society for Mathematical Psychology

People's Choice Award: Best talk [2022]
Virtual meeting for the Society for Mathematical Psychology
Title: Principal-component exploration of individual differences in the general-speed component of response times.

MEMBERSHIPS

Member of the Psychonomic Society 2023 - Present
Member of the Society for Mathematical Psychology 2019 - Present

SCHOLARSHIPS

UCMEXUS-CONACYT 2021 - 2025
Scholarship for Mexican Ph.D. students abroad
Granted by the National Commission of Science and Technology (Mexico) supported by the University of California (UCMEXUS)

Exchange Abroad Program Fall, 2014
From: National Autonomous University of Mexico
To: University of California Santa Barbara
Sponsored by Carlos Slim's foundation.

SUMMER SCHOOLS

6th European Summer School on Computational and Mathematical Modeling of Cognition July, 2022 Szklarska Poreba, Poland
Instructors: Stephan Lewandowsky, Jana Jarecki, Michael Nunez, Klaus Oberauer, Gordon Brown, Cas Ludwig, Chris Donkin, Joachim Vandekerckhove, Laura Fontanesi, Beatrice Kuhlman.

OTHER PROFESSIONAL EXPERIENCE

Test Development Coordinator January - September, 2020
National Autonomous University of Mexico Mexico City, Mexico
Supervisor: Ramses Vázquez Lira
I coordinated the work of 13 teams in charge of designing items and tasks to be used in different measurement instruments considered as part of the Assessment System used to inform hiring and promotion decisions within the public education system. Teams were comprised of specialists in test development, experienced teachers and/or principals, and substantive experts.

Psychometrician - Data Analyst 2019 - 2020
Applied Cognitive Diagnostics (start-up) Mexico City, Mexico
Supervisor: Ramses Vázquez Lira
I worked on various small projects where private companies would request us to collect and analyze data regarding the application of different measurement instruments (e.g., to keep track of their employees' stress levels and mental well-being in compliance with current government regulations).

Psychometrician - External consultant September - December, 2019
Secretariat of Public Education Mexico City, Mexico
Supervisor: Ramses Vázquez Lira
I was part of a small group of consultants who helped design the new Assessment System to inform hiring and promotion decisions in the public education system. We defined the sets and types of measurement instruments that should be considered for different stages and positions in order to capture traits of interest.

Psychometrician - Data Analyst January - September, 2019
International Network for Educational Assessment Mexico City, Mexico
Supervisor: Ramses Vázquez Lira
I analyzed data collected across different schools/states/districts in different applications of the National Protocol for Learning Assessment (i.e., an exam known as PLANEA), to deliver detailed reports on the academic performance to the interested parties (e.g., private schools, state government, etc.).

Psychometrician - Test Validation May - December, 2018
National Institute for Educational Evaluation Mexico City, Mexico
Department of Assessment of Teachers and Principals
Supervisor: Sandra Conzuelo Serrato
I was hired as the head psychometrician of the Basic Education Division of the Department of Assessment of Teachers and Principals in the public education system. My job was to verify the validity and reliability of the measurement instruments used to assess the performance of teachers, principals and supervisors in the national public education system.

Internship at Private Educational Center June - November, 2013
Association of Behavioral Science Specialists Mexico City, Mexico
Supervisor: Alma Hernandez Mendoza
I did a short internship at a private center for neurodivergent children and children with learning difficulties where I applied and interpreted standardized psychometric tests to identify the specific needs of every student, so that the education specialists could design a learning plan to be followed up by their personal tutors.