

# Pablo León-Villagr 

pablo\_leon\_villagra@brown.edu

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214, Power St.  
02906 Providence, RI  
United States

## Research Interests

Empirical research and computational modeling of the development of higher-level cognition, with an emphasis on human representation-learning and generalization in function learning, categorization, and causal learning.

## Education

2015–2020	<b>Ph.D. University of Edinburgh</b> Thesis Title: Representational Principles of Function Generalization Supervisor: Prof. Dr. Christopher Lucas
2012–2015	<b>M.Sc. Cognitive Science, University of Osnabr�ck</b> Thesis Title: Causal Reasoning and the Markov Assumption in a Physical Microworld Thesis Grade: 1.0 (A), Overall Grade: 1.0 (Distinction) Supervisors: Prof. Dr. Frank J�kel, Prof. Dr. David Lagnado
2010–2011	<b>New Bulgarian University</b> Semester abroad
2008–2013	<b>B.Sc. Cognitive Science, University of Osnabr�ck</b> Thesis Title: Categorization in Chess Thesis Grade: 1.0 (A), Overall Grade: 1.2 (Distinction) Supervisor: Prof. Dr. Frank J�kel

## Academic & Research Experience

2021–today	<b>Postdoctoral Research Associate, Brown University, USA</b> Work at Daphna Buchsbaum’s Computational Cognitive Development Lab
2020–2021	<b>Research Fellow, University of Warwick, UK</b> Project: Searching for the approximation method used to perform rational inference by individuals and groups.
2019–2020	<b>Visiting Ph.D. student in Daphna Buchsbaum’s Computational Cognitive Development Lab, University of Toronto, Canada</b> Six-month visit during which I ran developmental studies in categorization.
2019	<b>Participant at the Diverse Intelligences Summer Institute, University of St. Andrews, UK.</b> A month-long summer institute hosting lectures and projects regarding issues of computational, social and comparative cognition.
2018–2019	<b>Tutor for Informatics Research Review, University of Edinburgh, UK</b> Tutoring informatics master students in writing a research review and structuring their research projects.
2016–2019	<b>TA, Tutor, Demonstrator &amp; Marker for Introduction to Cognitive Science, University of Edinburgh, UK</b>
2018–2019	<b>TA, Tutor &amp; Marker for Computational Cognitive Science, University of Edinburgh, UK</b> Developing materials for the tutorials in R. Tutoring and marking an undergraduate-level class in computational modeling.
2016–2019	<b>TA, Tutor, Demonstrator &amp; Marker for Introduction to Cognitive Science, University of Edinburgh, UK</b> Developing materials for course exercises, labs and assignments in Python. Tutoring and demonstrating an introductory course in Cognitive Science.
2017	<b>Internship at the Alan Turing Institute, London, UK</b> During the three-month internship I developed and implemented a prototype app to allow citizen engagement through interactive explanations.
2014	<b>Research Assistant in Frank Jäkel’s Cognitive Modeling Group, University of Osnabrück, Germany</b> Developing, programming, running and analyzing human categorization experiments.
2014	<b>Research Internship at Dave Lagnado’s Causal Cognition Lab, University College London, UK</b> Three-month visit during which I developed experimental designs and researched causal cognition.
2013–2014	<b>Tutor for Multivariate Statistics, University of Osnabrück, Germany</b> Tutoring psychology master students in multivariate statistics. Supervision of theoretical and SPSS exercises.

## Publications

- Pablo Leon Villagra, Lucas Castillo, Nick Chater, and Adam Sanborn. “Eliciting Human Beliefs using Random Generation”. In: *Proceedings of the Annual Meeting of the Cognitive Science Society*. 2022.
- Pablo Leon Villagra, Isaac Ehrlich, Chris Lucas, and Daphna Buchsbaum. “Uncovering children’s concepts and conceptual change”. In: *Proceedings of the Annual Meeting of the Cognitive Science Society*. 2022.
- Lucas Castillo, Pablo León-Villagr , Nicholas Chater, and Adam Sanborn. “Local Sampling with Momentum Accounts for Human Random Sequence Generation”. In: *Proceedings of the Annual Meeting of the Cognitive Science Society*. Vol. 43. 43. 2021.
- Adam Sanborn, Jian-Qiao Zhu, Jake Spicer, Joakim Sundh, Pablo Le n-Villagr , and Nick Chater. “Sampling as the Human Approximation to Probabilistic Inference”. In: *Human-Like Machine Intelligence*. Ed. by Stephen Muggleton and Nicholas Chater. Oxford: Oxford University Press, 2021. Chap. 10, pp. 430–448.
- Jianqiao Zhu, Pablo Le n-Villagr , Nick Chater, and Adam Sanborn. “Understanding the Structure of Cognitive Noise”. In: *PsyArXiv e-prints* (2021).
- Nick Chater, Jian-Qiao Zhu, Jake Spicer, Joakim Sundh, Pablo Le n-Villagr , and Adam Sanborn. “Probabilistic biases meet the Bayesian brain”. In: *Current Directions in Psychological Science* 29.5 (2020), pp. 506–512.
- Pablo Le n-Villagr , Kay Otsubo, Christopher G Lucas, and Daphna Buchsbaum. “Uncovering Category Representations with Linked MCMC with people”. In: *Proceedings of the 42nd Annual Conference of the Cognitive Science Society* (2020).
- Pablo Le n-Villagr , Verena S. Klar, Adam N. Sanborn, and Christopher G Lucas. “Exploring the Representation of Linear Functions”. In: *Proceedings of the 41st Annual Conference of the Cognitive Science Society* (2019).
- Pablo Le n-Villagr  and Christopher G Lucas. “Generalizing Functions in Sparse Domains”. In: *Proceedings of the 41st Annual Conference of the Cognitive Science Society* (2019).
- Pablo Le n-Villagr , Sarwar Islam, Megan Lucero, Brooks Paige, and Tomas Petricek. “You Guessed it! Reflecting on Preconceptions and Exploring Data without Statistics”. In: *Proceedings of the 2nd European Data and Computational Journalism Conference*. University College Dublin. 2018, p. 11.
- Pablo Le n-Villagr , Irina Preda, and Christopher G Lucas. “Data Availability and Function Extrapolation”. In: *Proceedings of the 40th Annual Conference of the Cognitive Science Society* (2018).
- Alexander Matthews, Mark Van Der Wilk, Tom Nickson, Keisuke Fujii, Alexis Boukouvalas, Pablo Le n-Villagr , Zoubin Ghahramani, and James Hensman. “GPflow: A Gaussian Process Library using TensorFlow”. In: *The Journal of Machine Learning Research* 18.1 (2017), pp. 1299–1304.
- Pablo Le n-Villagr  and Frank J kel. “Categorization and Abstract Similarity in Chess”. In: *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (2013).

## Presentations

- 2022 **Poster:** Uncovering Children’s Category Representations  
43rd Annual Meeting of the Cognitive Science Society
- Talk:** Uncovering Children’s Developing Category Representations  
32nd Annual Meeting of the Canadian Society for Brain, Behaviour, and Cognitive Science
- 2021 **Poster:** Recovering human category structure across development using sparse judgments  
43rd Annual Meeting of the Cognitive Science Society (virtual)
- Poster:** Sampling Associations with (Un)related Suggestions  
43rd Annual Meeting of the Cognitive Science Society (virtual)
- Poster:** Recovering human category structure across development using sparse judgments  
Conference of the Society for Mathematical Psychology (virtual)
- Talk:** Recovering human category structure across development using sparse judgments  
Concepts in Action: Representation, Learning and Application workshop (virtual)
- Poster:** Uncovering Category Representations with Markov Chain Monte Carlo with children  
Budapest CEU Conference on Cognitive Development (virtual)
- 2020 **Talk:** Uncovering the development of categories with MCMC with children  
Developmental Brown Bag Seminar Series, Brown University (virtual)
- Poster:** Exploring category structure in children and adults  
42nd Annual Meeting of the Cognitive Science Society (virtual)
- 2019 **Talk:** Generalizing Functions in Sparse Domains  
XI. Dubrovnik Conference on Cognitive Science
- Talk:** Human Function Generalization  
MIT-IBM Research
- 2018 **Talk:** Data Availability and Function Extrapolation  
14th Biannual conference of the German Society for Cognitive Science  
Best Presentation Award
- 2017 **Poster:** Identifying Causal Direction in the Two-Variable Case  
39th Annual Meeting of the Cognitive Science Society
- Talk:** Human-like Function Learning and Transfer  
Colloquium of the Institute of Cognitive Science
- 2016 **Poster:** Human-Like Function Learning and Transfer  
Human-Like Computing Machine Intelligence Workshop
- 2015 **Talk:** Kausales Denken - Bayesianische Modelle im Dialog mit der Wiener’schen Denkpsychologie  
Symposium: Oswald Wiener: Selbstbeobachtung - Denkpsychologie, Austria
- Poster:** Categorization in Chess  
Interdisciplinary College, Mohnesee-Günne

## Scholarships

2015–2018	<b>Ph.D. Scholarship</b> School of Informatics, Institute for Language, Cognition and Computation
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## Technical Skills

Skills	Bayesian Methods, Machine Learning, Deep Learning, Full stack web development
Languages	Actionscript, JavaScript, MATLAB, Node, Python, R, Scala, SQL, SPSS, TEX
Tools	Git, GPy, GFlow, Inkscape, Markdown, React, Psychtoolbox, PsychoPy, PyMC3, PyTorch, Stan, scikit-learn

## Languages

German	Mother tongue
Spanish	Mother tongue
English	Fluent