Joseph L. Austerweil
Curriculum Vitae
February 15, 2017

University of Wisconsin-Madison
Department of Psychology, Brogden Hall
1202 West Johnson Street
Madison, WI 53703
Phone: +1 (516) 318-3979
Email: austerweil@wisc.edu
Web: http://alab.psych.wisc.edu/

Positions

07/2016 –	**University of Wisconsin-Madison** Assistant Professor of Psychology and Computer Science (affiliate)
07/2013 – 06/2016	**Brown University** Assistant Professor of Cognitive, Linguistic, and Psychological Sciences

Education

01/2013 – 06/2013	**Stanford University** Department of Psychology, Postdoctoral Research Fellow Advisor: Noah Goodman
2007 – 2012	**University of California, Berkeley** Department of Psychology (Cognition, Brain, and Behavior area), PhD. Advisor: Thomas L. Griffiths Title: Constructing flexible representations using nonparametric Bayesian inference
2007 – 2011	**University of California, Berkeley** Department of Statistics, MA (concurrent with Ph. D. studies in Psychology) Advisor: Jim Pitman Title: Combinatorial Stochastic Processes in Machine Learning and Cognitive Science
2003 - 2007	**Brown University** Sc.B. Applied Mathematics-Computer Science with Honors Advisor: Eugene Charniak Title: A Unified, Global and Local, Hierarchical Generative Document Ordering Model

Publications

Journal Articles.

Austerweil, J. L., Palmer, S. E., & Griffiths, T. L. (in press). Learning to be (in)variant using prior knowledge: The case of orientation in shape recognition. *Cognitive Science.* Published online 12/21/2016. doi: 10.1111/cogs.12466

Sobel, D. M., & Austerweil, J. L. (2016). Coding choices affect the analyses of a false belief measure. *Cognitive Development, 40*, 9-23.

Cibelli, E., Xu, Y., **Austerweil, J. L.,** Griffiths, T. L., & Regier, T. (2016). The Sapir-Whorf hypothesis and probabilistic inference: Evidence from the domain of color. *PLOS: ONE, 11*(8), e0161521.

Prinzmetal, W., Whiteford, K., **Austerweil, J. L.**, & Landau, A. (2015). Spatial attention and environmental information. *Journal of Experimental Psychology: Human, Perception, & Performance, 41*(5), 1396-1408.

Cohen-Priva, U.**, & **Austerweil, J. L.**** (2015). Analyzing the history of Cognition using topic models. *Cognition, 135,* 4-9. **Both authors contributed equally

Abbott, J. T., **Austerweil, J. L.,** & Griffiths, T. L. (2015). Random walks on semantic networks can resemble optimal foraging. *Psychological Review, 122*(3), 558-569.

Austerweil, J. L. (2015). Contradictory "Heuristic" Theories of Autism Spectrum Disorders: The Case for Theoretical Precision using Computational Models. *Autism, 19*(3), 367-368.

Austerweil, J. L. & Griffiths, T. L. (2013). Constructing flexible feature representations using nonparametric Bayesian inference. *Psychological Review, 120* (4), 817-851.

Griffiths, T. L., & **Austerweil, J. L.** (2012). Bayesian generalization with circular consequential regions. *Journal of Mathematical Psychology, 56* (4), 281-285.

Austerweil, J. L. & Griffiths, T. L. (2011). A rational model of the effects of distributional information on feature learning. *Cognitive Psychology, 63*, 173-209.

Austerweil, J. L. & Griffiths, T. L. (2011). Seeking confirmation is rational for deterministic hypotheses. *Cognitive Science, 35*, 499-526.

Gardner, J. S., **Austerweil, J. L.**, & Palmer, S. E. (2010). Vertical position as a cue to pictorial depth: Height in the picture plane versus distance to the horizon. *Attention, Perception, & Psychophysics*, *72*, 445-453.

Book Chapters.

Austerweil, J. L., Gershman, S. J., Tenenbaum, J. B., & Griffiths, T. L. (2015). Structure and flexibility in Bayesian models of cognition. In J. R. Busemeyer, Z. Wang, J. T. Townsend, & A. Eidels (Eds.), *Oxford Handbook of Computational and Mathematical Psychology* (pp. 187-208). Oxford University Press.

Austerweil, J. L. & Griffiths, T. L. (2012). Human feature learning. *Encyclopedia of the Sciences of Learning*. Springer.

Peer-reviewed Conference Proceedings.

Ho, M. K.*, Littman, M. L., MacGlashan, J., Cushman, F. & **Austerweil, J. L.** (accepted). Showing versus doing: Teaching by demonstration. In *30th Advances in Neural Information Processing System*.
*Advisee **Accepted for Oral Presentation** (< %2 of Submissions)

Zemla, J. C.,* Kenett, Y. N.,* Jun, K.-S., & **Austerweil, J. L.** (2016). U-INVITE: Estimating Individual Semantic Networks from Fluency Data. In *Proceedings of the 38th Annual Meeting of the Cognitive Science Society.* *Advisee

Ho, M. K.,* MacGlashan, J., Hilliard, E., Trimbach, C., Brawner, S., Gopalan, N., Greenwald, A., Littman, M. L., & **Austerweil, J. L.** (2016). Feature-based Joint Planning and Norm Learning in Collaborative Games. In *Proceedings of the 38th Annual Meeting of the Cognitive Science Society.* *Advisee

Kleiman-Weiner, A., Ho, M. K.,* **Austerweil, J. L.**, Littman, M. L., & Tenenbaum, J. B. (2016). Coordinate to cooperate or compete: Abstract goals and joint intentions in social interaction. In *Proceedings of the 38th Annual Meeting of the Cognitive Science Society.* *Advisee

Kenett, Y. N.,* & **Austerweil, J. L.** (2016). Examining Search Processes in Low and High Creative Individuals with Random Walks. In *Proceedings of the 38th Annual Meeting of the Cognitive Science Society.* *Advisee

Austerweil, J. L., Brawner, S., Greenwald, A., Hilliard, E., Ho, M.,* Littman, M. L., MacGlashan, J., & Trimbach, C. (2016). The Impact of Outcome Preferences in a Collection of Non-Zero-Sum Grid Games. *AAAI Spring Symposium 2016 on Challenges and Opportunities in Multiagent Learning for the Real World*. *Advisee

Malle, B. F., Scheutz, M., & **Austerweil, J. L**. (2015). Networks of social and moral norms in human and artificial agents. *International Conference on Robot Ethics*: Lisbon, Portugal.

Ho, M. K.,* Littman, M. L., Cushman, F., & **Austerweil, J. L.** (2015). Teaching with rewards and punishments: Reinforcement or communication?. In *Proceedings of the 37th Annual Meeting of the Cognitive Science Society*. Pasadena, CA. *Advisee

Ting, Q.,* & **Austerweil, J. L.** (2015). Learning additive and substitutive features. In *Proceedings of the 37th Annual Meeting of the Cognitive Science Society*. Pasadena, CA. *Advisee

Austerweil, J. L. (2014). Testing the psychological validity of cluster construction biases. In *Proceedings of the 36th Annual Meeting of the Cognitive Science Society* (pp. 122-127). Quebec City, Canada.

Jia, Y., Abbott, J. T., **Austerweil, J. L.,** Griffiths, T. L., & Darrell, T. (2013). Visual Concept Learning: Combining Machine Vision and Bayesian Generalization on Concept Hierarchies. *Advances in Neural Information Processing Systems* (Vol. 26).

Abbott, J. T., **Austerweil, J. L.,** & Griffiths, T. L. (2012). Human memory search as a random walk in a semantic network. In F. Pereira, C. J. C. Burges, L. Bottou, and K. Q. Weinberger (Eds.), *Advances in Neural Information Processing Systems* (Vol. 25), 3041-3049.

Abbott, J. T., **Austerweil, J. L.,** Griffiths, T. L. (2012). Constructing a hypothesis space from the Web for large-scale Bayesian word learning. In *Proceedings of the 34rd Annual Meeting of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.

Griffiths, T.L., **Austerweil, J. L.,** Berthiaume, V. G. (2012). Comparing the inductive biases of simple neural networks and Bayesian models. In *Proceedings of the 34rd Annual Meeting of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.

Austerweil, J. L., Friesen, A. L., & Griffiths, T. L. (2011). An ideal observer model for identifying the reference frame of objects. In *Advances in Neural Information Processing Systems* (Vol. 24).

Austerweil, J. L. & Griffiths, T. L. (2010). Learning invariant features using the transformed Indian buffet process. In Lafferty, J., Williams, C. K. I., Shawe-Taylor, J., Zemel, R., & Culotta A. (Eds.). *Advances in Neural Information Processing Systems* (Vol. 23), 82-90.

Austerweil, J. L. & Griffiths, T. L. (2010). Learning hypothesis spaces and dimensions through concept learning. In S. Ohlsson & R. Catrambone (Eds.). *Proceedings of the 32nd Annual Meeting of the Cognitive Science Society* (pp. 73-78). Austin, TX: Cognitive Science Society.

Austerweil, J. L. & Griffiths, T. L. (2009). The effect of distributional information on feature learning. In N. Taatgen & H. van Rijn (Eds.). *Proceedings of the 31st Annual Meeting of the Cognitive Science Society*, 2765-2770. Austin, TX: Cognitive Science Society.

Austerweil, J. L. & Griffiths, T. L. (2009). Analyzing human feature learning as nonparametric Bayesian inference. In Koller, D., Bengio, Y., Schuurmans, D., & Bottou, L. (Eds.). *Advances in Neural Information Processing Systems* (Vol. 21), 97-104.

Austerweil, J. L. & Griffiths, T. L. (2008). A rational analysis of confirmation with deterministic hypotheses. In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.). *Proceedings of the 30th Annual Meeting of the Cognitive Science Society* (1041-1046). Austin, TX: Cognitive Science Society.

Elsner M., **Austerweil, J. L.,** & Charniak, E. (2007). A unified local and global model for discourse coherence. *Proceedings of the Human Language Technologies-North American Association of Computational Linguistics 2007.*

Charniak, E., Johnson, M., Elsner, M., **Austerweil, J. L.,** Ellis, D., Haxton, I., Hill, C., Iyengar, S., Moore, J., Pozar, M., and Vu, T. (2006). Multilevel Coarse-to-fine PCFG Parsing. *Proceedings of Human Language Technologies-North American Assocation of Computational Linguistics 2006*.

Work under review.
Griffiths, T. L., Daniels, D. D.*, **Austerweil, J. L.,** & Tenenbaum, J. B. (in revision. revise and resubmit). Subjective randomness and probabilistic machines. *Psychological Review.* *Advisee

Work in preparation.
Austerweil, J. L. & Griffiths, T. L. (in prep.). Learning how to generalize.

Austerweil, J. L., & Griffiths, T. L. (in prep.). Probabilistic interpretations of simple neural networks.

Austerweil, J. L. (in prep.). Testing the psychological validity of unsupervised categorization models.

Austerweil, J. L., Stanworth, K., & Franklin, A. (in prep). Learning Rare Causal Relations Is Difficult for Individuals With Autism Spectrum Disorders.

Gleason, E., & **Austerweil, J. L.** (in prep.). People treat categories as labels during feature construction.

Other publications.
Jia, Y., Abbott, J. T., **Austerweil, J. L.,** Griffiths, T. L., & Darrell, T. (2012). *Visually-Grounded Bayesian Word Learning* (Tech. Rep.). UC Berkeley EECS.

Workshops and Symposia.
Austerweil, J. L., Gershman, S. J., Kharratzadeh, M., & Lake, B. (2014). Representation construction in people and computers. *Eastern Psychological Association*. Organizer.

Goodman, N., Griffiths, T. L., **Austerweil, J. L.,** & Tenenbaum, J. B. (2012). The Uncertainty in Natural Intelligence Workshop at *Uncertainty in Artificial Intelligence*. Co-organizer.

Austerweil, J. L., Griffiths, T. L., Gureckis, T. M., Goldstone, R. L., Canini, K. R., & Jones, M. (2011). Grow your own representations: Computational constructivism. Symposium at *The 33rd Annual Conference of the Cognitive Science Society*, 2635-2636.

Invited Presentations.
Austerweil, J. L. (2017). TBD. Satellite Conference on Cognitive Network Science at the 2017 Annual Meeting of the Network Science Conference. 06/19/2017-06/20/2017

Austerweil, J. L. (2016). Randomly walking over human knowledge. HAMLET talk series at University of Wisconsin-Madison. 03/11/2016.

Austerweil, J. L. (2016). Constructing symbols from raw sensory input: A computational approach. Colloquium at University of Wisconsin-Madison, 03/10/2016.

Austerweil, J. L. (2016). Randomly walking over human knowledge. Cognitive and Brain Sciences Lunch Talk Series at SUNY Binghamton. 02/26/2016.

Austerweil, J. L. (2016). Constructing representations using Bayesian nonparametrics and connections between human knowledge, optimal foraging, and random walks on graphs. Brown University Division of Applied Mathematics' Pattern Theory Learning Lunch Seminar Series. 02/03/2016.

Austerweil, J. L. (2015). Constructing symbols from raw sensory input: A computational approach. Michigan State University Departmental Colloquium, 01/20/2016.

Austerweil, J. L. (2015). Constructing symbols from raw sensory input: A computational approach. University of Michigan Departmental Colloquium, 12/19/2015.

Austerweil, J. L. (2015). Constructing symbols from raw sensory input: A computational approach. NYU Cognition and Perception Seminar, 11/12/2015.

Austerweil, J. L. (2015). Constructing symbols from raw sensory input: A computational approach. Harvard University, Cognition, Brain, and Behavior's Brown Bag Series, 10/29/2015.

Austerweil, J. L. (2013). Constructing context-sensitive representations: A case study with features. Workshop for Implications of Bayesian Cognitive Models for the Intelligence Community. 12/12/2013-12/13/2013.

Austerweil, J. L. (2013). Understanding how people construct flexible representations: A computational approach. Brown Institute for Brain Science, 11/14/2013.

Austerweil, J. L. (2013). Understanding how people construct flexible representations: A computational approach. Brown University 01/22/2013.

Austerweil, J. L. (2012). Constructing flexible representations. University of Colorado, Boulder 12/14/2012.

Austerweil, J. L., Griffiths, T. L. (2012). Constructing flexible feature representations using nonparametric Bayesian inference. The Uncertainty in Natural Intelligence Workshop at *Uncertainty in Artificial Intelligence*.

Austerweil, J. L. (2012). Why your mom was wrong about playing with your food: Bayesian nonparametric methods. Invited talk in the Bayesian Methodology symposium at *The 45th Annual Meeting of the Society for Mathematical Psychology*.

Austerweil, J. L. (2012). Constructing flexible feature representations using nonparametric Bayesian inference. University of Edinburgh 03/23/2012.

Austerweil, J. L. (2012). Constructing flexible feature representations using nonparametric Bayesian inference. University of California, Berkeley 03/01/2012.

Austerweil, J. L., & Griffiths, T. L. (2011). Effects of context on object representation: a computational exploration. Stanford University 05/19/2011.

Austerweil, J. L., & Griffiths, T. L. (2010). Effects of context on object representation: a computational exploration. New York University 11/23/2010.

Austerweil, J. L., & Griffiths, T. L. (2010). Effects of context on object representation: a computational exploration. University of California, Berkeley 09/14/2010.

Austerweil, J. L., & Griffiths, T. L. (2009). The effect of distributional information on feature learning. Stanford University 04/17/2009.

Austerweil, J. L., & Griffiths, T. L. (2008). How the human perceptual system learns (some) variables. McDonnell Workshop on Problems of Variable Definition and Selection. Carnegie Mellon University, PA.

Conference Abstract Presentations.

Cibelli, E., Xu, Y., Austerweil, J. L., Griffiths, T. L., & Reiger, T. (2016). The Sapir-Whorf Hypothesis and Probabilistic Inference: Evidence from the Domain of Color. Publication-based abstract presentation at the *38th Annual Conference of the Cognitive Science Society*.

Conaway, N.,* Austerweil, J. L., & Kurtz, K. (2016). Two Categories for the Price of One: Generating a Contrast Category after Single-Category Learning. At the *49th Annual Meeting of the Society for Mathematical Psychology.*

Montambault, B.,* Lucas, C., & Austerweil, J. L. (2016). The construction of function representations. Member-abstract at the 38th *Annual Conference of the Cognitive Science Society.* * Advisee

Ho, M. K.,* **Austerweil, J. L.**, Littman, M., & Cushman, F. (2016) Generous Teachers: Pedagogical Rewards as Reinforcement Versus Communication. *17th Annual Convention of SPSP*. * Advisee

Ho, M. K.,* Littman, M. L., Cushman, F., & Austerweil, J. L. (2016). Not Quite Intuitive Behaviorists: Teachers Use Rewards and Punishments Communicatively and Not as Reinforcement. At the *49th Annual Meeting of the Society for Mathematical Psychology.*

Kenett, Y. N.,* Allaham, M. M., Austerweil, J. L., & Malle, B. F. (2016). The Norm Fluency Task: Unveiling the Properties of Norm Representations. At the *57th Annual Meeting of the Psychonomic Society.*

Austerweil, J. L., & Qian, T.* (2015). Additive or substitutive? Constructing features, their types and values from observations. *The 56th Annual Meeting of the Psychonomic Society*. * Advisee

Xie, W.*, & **Austerweil, J. L.** (2015). The role of relations and attributes in inductive inference. *48th Meeting of the Society for Mathematical Psychology*. *Advisee

Ho, M. K.,* Littman, M. L., Cushman, F., & **Austerweil, J. L.** (2015). Teaching Behavior with Punishments and Rewards. *The 2nd Meeting of the Multi-disciplinary Conference on Reinforcement Learning and Decision Making.* *Advisee

Austerweil, J. L., Stanworth, K., & Franklin, A. (2014). Dissociating Top-down and Bottom-up Theories of Autism Spectrum Disorders Using Bayesian Models. *The 55h Annual Meeting of the Psychonomic Society.*

Austerweil, J. L., Stanworth, K., & Franklin, A. (2014). Dissociating Top-down and Bottom-up Theories of Autism Spectrum Disorders Using Bayesian Models. *47th Meeting of the Society for Mathematical Psychology*.

Austerweil, J. L., & Griffiths, T. L. (2012). Learning how to generalize. *The 53rd Annual Meeting of the Psychonomic Society.*

Prinzmetal, W., Whiteford, K., **Austerweil, J. L.,** & Landau, A. N. (2012). When information matters: The effects of cue predictability and distractors on the allocation of attention. *The 12th VSS Annual Meeting*.

Austerweil, J. L., Griffiths, T. L., Palmer, S. E. (2011). Learning the orientation dependence of ambiguous images through feedback. *Configural Processing Consortium.*

Austerweil, J. L., & Griffiths, T. L. (2011). A computational framework for inferring feature representations. *The 52nd Annual Meeting of the Psychonomic Society.*

Ying, J., **Austerweil, J. L.,** & Griffiths, T. L. (2011). Why every pop song sounds the same: Revealing melodic expectations through cultural transmission. *The 44th Annual Meeting of the Society for Mathematical Psychology.*

Austerweil, J. L. & Griffiths, T. L. (2010). Feature learning as nonparametric Bayesian inference. *The 43rd Annual Meeting of the Society for Mathematical Psychology*.

Austerweil, J. L. & Griffiths, T. L. (2010). Understanding how people learn the features of objects as Bayesian inference. *The 10th VSS Annual Meeting*.

Austerweil, J. L. & Griffiths, T. L. (2008). Analyzing human feature learning as non-parametric Bayesian inference. *14th Meeting of the Cognitive Science Association for Interdisciplinary Learning*. Hood River, OR.

Research Grants:

Pending Grants.
Agency: John Templeton Foundation (Full Proposal Number: 60655)
Title: "Being exceptional: Developing novel computational techniques to identify how an exceptional individual stores knowledge."
PI: Austerweil ($193,739 over two years) Dates: 08/01/17-07/31/19

Current Grants.
Agency: NIH NIA (R21AG053467)
Title: "Computational modeling of semantic decline in Alzheimer's disease"
PI: Austerweil/Zemla (R21: $406,249.99 over two years) Dates: 09/01/16-08/31/18

Completed Grants.
Agency: DARPA through AFOSR (FA9550-16-1-0045)
Title "Foundations of Human-Machine Collaboration: Networks of Social and Moral Norms in Human and Artificial Agents."
PI: Malle Co-PI: Austerweil (Base Award of $413,092 over 9 months). Dates: 04/15/16-01/14/17

Agency: RI Foundation
Title: "Examining How Autism Spectrum Disorders Affect Social Causal Learning"
PI: Austerweil ($25,000) Dates: 04/01/16-06/30/16

Agency: NVIDIA
Title: "Understanding human representation construction using Bayesian nonparametrics".
PI: Austerweil (1 Tesla K40, which is worth approximately $5,000-6,000). Awarded 06/27/2014

Advising.

Postdoctoral scholars:
Jeffrey Zemla (October 2016-)
Nolan Conaway (August 2016-)

Yoed Kenett (October 2015- July 2016) Postdoctoral Researcher with Sharon Thompson-Schill, University of Pennsylvania
Ting Qian (July 2014-April 2015) Data Scientist, Department of Biomedical and Health Informatics, Children's Hospital of Philadelphia

Graduate students: Mark Ho (NSF awardee: expected PhD 2018)

Undergraduate students: Dylan Daniels (ScB, May 2014), Julie Helmers (ScB, May 2014), Emily Gleason (awarded $3,500 from Brown University in Summer 2014 for summer research in my laboratory), Wenting Xie, Christine Whalen, Philip Bold, Tariq Abu-Akeel, Carol Medina, and Emily Low

Undergraduate Honors Students. Emily Gleason (ScB May 2015 – Winner of the Dean of the College's Prize in Cognitive Science)
Masters Committees. Xi Yang (MA, December 2014)
FYP Committees. Alexander Fengler, Babak Hemmatian, Junykung Kim, Matthew Ricci, and Ceyda Sayali
Prelim Committees. Mark Ho, Elena Luchkina, and Boyoung Kim
Dissertation Committees. Gideon Goldin (PhD, May 2014)

Independent studies.
Spring 2014: Dylan Daniels. Fall 2014: Emily Gleason, Wenting Xie, and Giovanna Moraes

Service

Department/University.
Fall 2016-Spring 2017:
Graduate Committee
Fall 2014-Spring 2015:
Social Psychology Job Search Committee
Graduate Program Restructuring Committee

Spring 2014:
Cognitive Science Undergraduate Self-Study Committee
Psychology Undergraduate Honors Awards Committee

Professional.

Grant Reviewing:	*NSF, Panelist 2016*
Journal Reviewing:	*Cognition, Cognitive Processing, Cognitive Psychology, Cognitive Science, IEEE: Bioinformatics, International Journal for Approximate Reasoning, Journal of the Royal Society: Interface, Journal of Memory & Language, JEP: General, JEP:LMC, JEP:HPP, Nature: Scientific Reports, PLOS One: Computational Biology, Psychological Science, Psychonomic Bulletin and Review, Topics in Cognitive Science*
Conference Reviewing:	*Neural Information Processing Systems* *Artificial Intelligence and Statistics* *Annual Meeting of the Cognitive Science Society*

Teaching:

Awards.
Aug 2016 – May 2017 UW Madison Teaching and Learning Excellence Faculty Fellow

Regular courses.

Spring 2017	**PSYC0501: Cognition in Health and Society**
Spring 2016	**CLPS0200: Human Cognition** Avg. course & instructor effectiveness (lower is better): 1.85/5 & 1.51/5
	CLPS2200: Core Topics in Cognition Avg. course & instructor effectiveness (lower is better): 2/5 & 1.71/5

Fall 2015	**CLPS1211: Human and Machine Learning** Avg. course & instructor effectiveness (lower is better): 1.78/5 & 1.40/5
Spring 2015	**CLPS0200: Human Cognition** Avg. course & instructor effectiveness (lower is better): 1.81/5 & 1.46/5
Fall 2014	**CLPS1200: Thinking** Avg. course & instructor effectiveness (lower is better): 1.5/5 & 1.54/5
Spring 2014	**CLPS1211: Human and Machine Learning** Avg. course & instructor effectiveness (lower is better): 1.55/5 & 1.27/5
Fall 2013	**CLPS1200: Thinking** Avg. course & instructor effectiveness (lower is better): 1.43/5 & 1.43/5