

Curriculum Vitae
Colin Reimer Dawson
April 14, 2015

School of Information
The University of Arizona
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EDUCATION

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| Expected 2015 | Ph.D., Statistics
The University of Arizona, Tucson, AZ
Thesis: Simultaneous learning of spatial relations and relational language through Bayesian inference
Advisor: Kobus Barnard |
| 2011 | Ph.D., Psychology (Cognition and Neural Systems)
The University of Arizona, Tucson, AZ
Thesis: “Explaining Away” Effects in Rule-Learning: Evidence for generative probabilistic inference in infants and adults
Advisor: LouAnn Gerken |
| 2011 | M.S., Statistics
University of Arizona, Tucson, AZ |
| 2005 | B.A., Cognitive Science
Yale University, New Haven, CT
Honors: Magna Cum Laude, Distinction in the Major, Phi Beta Kappa |

ACADEMIC APPOINTMENTS

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| 2012-present | Research Scientist
School of Information
The University of Arizona |
| 2011-2014 | Lecturer
School of Information
The University of Arizona |

RESEARCH INTERESTS

Nonparametric Bayesian modeling
 Probabilistic models of cognition
 Statistical Natural Language Processing
 Computer Vision
 Markov Chain Monte Carlo

TEACHING

- Spring 2012, 2013, 2014 **Foundations of Information and Inference**
 Instructor and Designer, The University of Arizona
- Intermediate undergraduate course in probability. Emphasis on Bayesian statistics and decision theory, with an introduction to writing proofs. (15-30 students)
- Fall 2011, 2012, 2013 **Statistical Foundations for the Information Age**
 Instructor and Co-Designer, The University of Arizona
- Computationally oriented introduction to statistics for students with little to no prior exposure. Emphasis on creating and interpreting graphs, understanding variability, simple hypothesis tests and confidence intervals via randomization and bootstrapping in R. (60-90 students)
- Spring 2011 **Statistical Foundations for the Information Age**
 Lab Instructor and Co-Designer, The University of Arizona
- Led two lab sections (10-15 students each), reviewing and supplementing lecture material and presenting complementary material on computing.
- Summer 2010, 2011 **Summer Workshop on the R Language for Statistics**
 Instructor and Co-Designer, The University of Arizona
- Aimed at graduate students, advanced undergraduates and faculty wanting to learn to use R to carry out their statistical analyses. (50-60 participants)
- Fall 2009 **Psychological Measurement and Statistics**
 Instructor, Pima Community College
- Introductory statistics for social science majors. Basic hypothesis testing through correlation and one-way ANOVA. (35 students)
- Summer 2008 **Language Science**
 Instructor, The University of Arizona
- The scientific method, fundamentals of linguistic theory. For undergraduate speech and hearing majors. (35 students)

AWARDS & HONORS

2013	Best Paper Award The Third Joint IEEE Conference on Development and Learning
2012	Galileo Circle Scholarship
2010	Glushko-Samuelson Foundation Student Travel Grant To attend the Thirty-second Annual Meeting of the Cognitive Science Society

GRANTS & FELLOWSHIPS

2014-2017	Bayesian Learning and Moral Cognition, ONR (\$298,954 total costs) Co-PI with PI Shaun Nichols
2007-2010	NSF Graduate Research Fellowship (\$123,000 total costs)

MENTORING

Undergraduate Thesis Advisees

2012-2013	Cody Martin
	Thesis: The Martin Index Rating: A Predictive Model of Player Impact in Basketball

Undergraduate Internship Supervisees

2014	Jenna Murphy
	Jen had an internship at a credit union doing data analytics.
2013-2014	Samuel Forman
	Sam had an internship doing statistical analysis at a mobile app startup.

Research Assistants

2014-present	Zuoming Shi
2009-2011	Nicole Szivek, Kaliey Tucker
2009-2010	Julie Shah, Brianna McMillan
2007-2008	Karin Gerberding, Diana Moreno

PUBLICATIONS

Peer-Reviewed Journal Articles

1. Ussishkin, A., **Dawson, C. R.**, Wedel, A., & Schluter, K. (in press). Auditory masked priming in Maltese spoken word recognition. *Language, Cognition and Neuroscience*.
2. Gerken, L., **Dawson, C.R.**, Chatila, R. and Tenenbaum, J. (2014). Surprise! Infants consider possible bases of generalization for a single input example. *Developmental Science*. doi: 10.1111/desc.12183 [Five-year impact factor: 4.6]
3. **Dawson, C. R.**, & Gerken, L. A. (2011). When global structure “explains away” local grammar: A Bayesian account of rule-induction in tone sequences. *Cognition*, 120 (3), 350-359. [Five-year impact factor: 4.6]
4. **Dawson, C. R.**, & Gerken, L. A. (2009). From domain-general to domain-specific: 4-month-olds learn an abstract repetition rule in music that 7.5-month-olds do not. *Cognition*, 111(3), 378-382. [Five-year impact factor: 4.6]

Peer-Reviewed Papers in Conference Proceedings

5. **Dawson, C. R.**, Wright, J. B., Rebguns, A., Valenzuela Escárcega, M., Fried, D., & Cohen, P. R. (2013). A generative probabilistic framework for learning spatial language. *Proceedings of the Third Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics*. [**Best Paper Award**]
6. Brau, E., Guan, J., DelPero, L., Simek, K., **Dawson, C. R.**, & Barnard, K. (2013). Bayesian 3D tracking from monocular video. *Proceedings of the 2013 International Conference on Computer Vision*. [Acceptance rate ~ 20%]
7. **Dawson, C. R.**, & Gerken, L. A. (2010). The role of “explaining away” in human rule-induction. *Proceedings of the 32nd Annual Conference of the Cognitive Science Society*, 79-84. [Oral presentation, acceptance rate ~ 30%]
8. **Dawson, C. R.**, & Gerken, L. A. (2006). Differential processing of language and music learned during development. *Proceedings of the 31st Boston University Conference on Language Development*, 153-159.
9. **Dawson, C. R.**, & Gerken, L. A. (2006). 4-month-olds learn an algebraic pattern in music that 7.5-month-olds do not. *Proceedings of the 28th Annual Conference of the Cognitive Science Society*, 1198-1203.

Book Chapters

10. Gerken, L.A., & **Dawson, C. R.** (in press). Grammar learning as model building. In Mintz, T. (Ed.), *Current Trends in Statistical Approaches to Language*. Oxford, UK: Psychology Press.
11. **Dawson, C. R.**, & Gerken, L. A. (2012). Can rational models be good accounts of developmental change? The case of language development at two time scales. In Xu, F. (Ed.) *Rational Constructivism in Cognitive Development. Advances in Child Development and Behavior, Vol. 43* (pp. 95-124). Waltham, MA: Academic Press.

Manuscripts in Preparation

12. **Dawson, C. R.**, DelPero, L., Morrison, C., Surdeanu, M., & Barnard, J. (in preparation). Joint Bayesian inference of language and scene structure from captioned images.
13. **Dawson, C. R.**, Surdeanu, M., & Barnard, K. (in preparation). A hierarchical Dirichlet Process model for parsing natural language captions using scene structure.
14. Brau E., **Dawson, C. R.**, Carillo, A., Sidi, D., & Morrison, C. (in preparation). Bayesian inference of compositional activities from tracks.

RESEARCH PRESENTATIONS

Invited Talks

1. "Language learning as inference to the best explanation." Drexel University, Department of Psychology, Philadelphia, PA. January 27, 2014.
2. "Abductive inference and explaining away: The case of language learning." The University at Buffalo, Department of Psychology, Buffalo, NY. December 12, 2013.
3. "Abductive inference and explaining away: The case of language learning." College of Charleston, Department of Psychology, Charleston, SC. November 21, 2013.

Peer-Reviewed Presentations

4. **Dawson, C. R.** & Gerken, L.A. (submitted). Rules as hidden causes of surprising input features. Abstract submitted to the 2015 Biennial Meeting of the Society for Research in Child Development.
5. **Dawson, C. R.**, DelPero, L., Morrison, C., Surdeanu, M., Hahn-Powell, G., Chapman, Z., & Barnard, J. (2013). Bayesian modeling of scenes and captions. Paper presented at the Workshop on Vision and Language, The 2013 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Atlanta, GA.
6. Gerken, L.A., **Dawson, C. R.**, Chatilla, R., & Tenenbaum, J. (2012). Surprise: An experience-based source of hypotheses. Paper presented at the 2012 International Conference on Infant Studies, Minneapolis, MN.
7. **Dawson, C. R.**, & Gerken, L. (2010). When diversity of preferences reflects diversity of learners. Paper presented at the 2010 International Conference on Infant Studies, Baltimore, MD.
8. **Dawson, C. R.**, & Gerken, L. (2010). Before domain-specificity: When simple matters more. Paper presented at the 2010 International Conference on Infant Studies, Baltimore, MD.
9. **Dawson, C. R.**, & Gerken, L. (2008). Second-order learning as a source of structure stabilization in individual learning and cultural evolution. Paper presented at the First Annual Complex Systems and Language Workshop, Tucson, AZ.
10. **Dawson, C. R.**, & Gerken, L. (2008). Domain-dependent refinement of attention

to relations. Paper presented at the 2008 International Conference on Infant Studies, Vancouver, BC, Canada.

Posters

11. **Dawson, C. R.**, & Gerken, L. (2006). Differential processing of language and music learned during development. Poster presented at the 31st Annual Boston University Conference on Language Development.
12. **Dawson, C. R.**, & Gerken, L. (2006). 4-month-olds discover algebraic patterns in music that 7.5-month-olds do not. Poster presented at the 28th Annual Conference of the Cognitive Science Society.
13. McRoberts, G., & **Dawson, C. R.** (2006). Infants' attention to repeated speech and musical patterns. *The Journal of the Acoustical Society of America*, 120(5), 3134.

SERVICE

Ad Hoc Reviewing

2011-2014	The Annual Conference of the Cognitive Science Society
2013-2014	The IEEE International Conference on Development and Learning
2013	<i>Child Development</i>
2011-2012	<i>Language Learning and Development</i>

Service to Department

2013-2014	Curriculum Committee School of Information The University of Arizona
2012-2013	Hiring Committee School of Information The University of Arizona
2012-2013	Graduate Program Committee School of Information The University of Arizona

RELATED SKILLS

Programming: R, C++, Aquamacs Emacs, L^AT_EX, Python, MATLAB, Bash scripting