

Richard W Prather

Department of Human Development and Quantitative Methodology
3304 Benjamin Building
College Park, MD 20742
(301) 405-2806
Office: 3304S

Positions

- Fall 2014 Assistant Professor
Department of Human Development and Quantitative Methods
University of Maryland, College Park
- 2009 – 2014 Postdoctoral Researcher, Indiana University, Department of Psychological and
Brain Sciences (Advisor: Linda Smith)
- Training Program in Integrative Developmental Process*
National Institute of Child Health and Development (5T32HD007475)
- Making Sense of Mathematical Manipulatives*
Institute of Educational Sciences (R305A080287)
- 2006-2007 Project Assistant, *Supporting the Transition from Arithmetic to Algebraic*
Reasoning project, Wisconsin Center for Education Research (Supervisors:
Martha Alibali and Eric Knuth)

Education

- 2009 Ph.D., Psychology (Cognitive & Cognitive Neuroscience)
University of Wisconsin-Madison
Advisor: Martha Alibali
- 2002 S.B., Brain and Cognitive Sciences
Massachusetts Institute of Technology

Publications

Prather, R.W. (2014) Neural Coding Variation Mediates Precision in Numerical
Discrimination. *Cognition*, 133, 601 – 610.

Mix, K., **Prather, R.W.**, Smith, L.B., Stockton, J.D. (2014) Young Children's Interpretation of
Multi-Digit Number Names: From Emerging Competence to Mastery. *Child Development*.

Prather, R.W. (2012). Connecting neural coding to number cognition: A computational
account. *Developmental Science*, 15(4), 589-600. ***(Early Career Prize 2012)**

Prather, R.W. (2012) Implicit learning of arithmetic regularities is facilitated by proximal contrast. *PLoS ONE* 7(10): e48868.

Hattikudur, S., **Prather, R.W.**, Asquith, P., Knuth, E., Nathan, M. J., & Alibali, M. W. (2012). Constructing graphical representations: Middle schoolers' developing knowledge about slope and intercept. *School Science and Mathematics*, 112(4), 230-240.

Prather, R.W. & Alibali, M.W. (2011). Children's acquisition of arithmetic principles: The role of experience. *Journal of Cognition and Development*, 12(3), 332-354.

Prather, R. W. & Alibali, M. W. (2009). Development of arithmetic principle knowledge: How do we know what learners know? *Developmental Review*, 29(4), 221-248.

Prather, R. W. & Alibali, M. W. (2008). Understanding and using principles of arithmetic: Operations involving negative numbers. *Cognitive Science*, 32(2), 445-457.

Prather, R.W. (under review) Developmental changes in factors contributing to numerical comparison difficulty.

Motz, B., Goldstone, R., Bussey, T., **Prather, R.W.** (under review) Visual search asymmetry due to the relative magnitude represented by number symbols.

Honors and Awards

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| 2012 | Developmental Science Early Career Researcher Prize
Nelson, C. A., de Haan, M., Quinn, P. and Ansari, D. (2013), A Winner of 2012 Developmental Science Early Career Research Prize. <i>Developmental Science</i> , 16: 792. |
| 2007 - 2009 | Interdisciplinary Training Program Predoctoral Fellowship (#R305C050055)
University of Wisconsin, Institute of Education Sciences, Department of Education |
| 2005 | Roderick Menzies Memorial Research Award, University of Wisconsin
Department of Psychology |
| 2002 - 2005 | Minority Fellowship Program Predoctoral Fellowship, American Psychological Association |

Teaching Experience

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| Spring, 2013 | Course Instructor, Cognitive Psychology (Undergraduate, 100 students) |
| Fall, 2012 | Course Instructor, Cognitive Psychology (Undergraduate, 100 students) |
| Spring, 2006 | Teaching Assistant, Experimental Psychology |
| Fall, 2005 | Teaching Assistant, Introductory Statistics for Psychology |

Invited Talks

<i>Ready at Five</i> Research Symposium: Keynote Speaker	May 2014
University of Richmond, Department of Psychology	December 2013
University of Buffalo, Department of Psychology	December 2013
University of Maryland, Department of Human Development	November 2013
University of Tennessee, Department of Psychology	September 2013
University of Illinois, School of Education	December 2012
Tufts University, Department of Psychology	December 2012
University of Pittsburgh, Learning Research & Development Center	January 2012
Indiana University, Psychology Department	October 2008
University of Chicago, Psychology Department	April 2008
Northwestern University, Psychology Department	May 2008

Additional Training

2013	Developmental Cognitive Neuroscience Summer institute, University of Maryland, College Park, MD
2008	Dynamic Field Theory Summer School. University of Iowa, Iowa City, Iowa.
2002	Summer Program in Neuroscience, Ethics, and Survival Skills, Marine Biological Laboratory, Woods Hole, Massachusetts

Conference presentations

Prather, R.W. (2013) Neural coding variation mediates precision of number discrimination. Society for Neuroscience Conference. Development of Numerical Cognition Nanosymposium.

Prather, R.W. (2012) Learning numbers without numbers: Transfer of learning across magnitude domains. Society for Neuroscience Conference. Development of Numerical Cognition Nanosymposium.

Prather, R. W. (2011) Further connecting neural coding to number cognition. Society for Neuroscience Conference. Neural Bases of Human Cognition and Attention Nanosymposium. [[Featured in Scientific American](#)]

Conference Posters

Prather, R.W. (2012) The influence of neural coding on numerical cognition. Poster presented at the Society for Cognitive Neuroscience

Prather, R. W., Stitzel, C., Byrge, L., Street, S., Boyer, T., Smith, L.B. (2011) Counting and estimating: Developmental relations between magnitude estimation and counting skill. Cognitive Development Society Conference 2011.

Mix, K., Prather, R.W., Stitzel, C., Smith, L. (2010). Place-Value Concepts and Multidigit Calculation: Effects of Concrete Models. Poster presented at the Institute of Education Sciences Research Conference.

Prather, R.W. & Alibali, M.W. (2009) Children's Acquisition of Arithmetic Principles. Presented at the Biennial Meeting of the Society for Research in Child Development, Denver, Colorado.

Alibali, M.W., Prather, R.W., McNeil, N.M. (2009) Are Abstract or Concrete Materials Most Beneficial for Learning? It Depends on Problem Difficulty and Learners Skills. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Denver, Colorado.

Prather, R.W. & Alibali, M.W. (2008). Knowledge and acquisition of arithmetic principles. Poster presented at the Institute of Education Sciences Research Conference, Washington, DC.

Prather, R.W. & Alibali, M.W. (2007). *Children's arithmetic principle knowledge: How do we know what they know?* Poster presented at the Biennial Meeting of the Cognitive Development Society, Santa Fe, NM.

Prather, R. W. & Alibali, M. W. (2007). *Knowledge of an arithmetic principle in symbolic and verbal contexts: Do children know what adults know?* Poster presented at the Biennial Meeting of the Society for Research in Child Development, Boston, Massachusetts.

Alibali, M. W. & Prather, R. W. (2007). *Improvements in problem encoding lead to changes in strategy evaluations.* Poster presented at the Biennial Meeting of the Society for Research in Child Development, Boston, Massachusetts.

Hattikudur, S., Prather, R. W., Asquith, P., Knuth, E., Nathan, M. J., & Alibali, M. W. (2007). *Graphing slope and intercept in middle school.* Poster presented at the Biennial Meeting of the Society for Research in Child Development, Boston, Massachusetts.

Hattikudur, S., Prather, R. W., Asquith, P., Knuth, E., Nathan, M. J., & Alibali, M. W. (2007). *Constructing graphical representations: Exploring middle schoolers' intuitions and developing knowledge about slope and intercept.* Poster presented at the Annual Meeting of the American Educational Research Association, Chicago, Illinois.

Conference Proceedings

Prather, R.W. (2010) Change in Stimuli Encoding Facilitates Principle Acquisition. *Proceedings of the Annual Conference of the Cognitive Science Society*. Mahwah, NJ: Erlbaum.

Street, S., Prather, R.W., Stitzel, C., Smith, L.B., Mix, K. (2010) Preschoolers' Writing of Multidigit Numbers: From an Additive to a Multiplicative Representational System? *Proceedings of the Annual Conference of the Cognitive Science Society*. Mahwah, NJ: Erlbaum.

Prather, R. W. & Alibali, M. W. (2008). Implicit learning of arithmetic principles. In J. McClelland & J. Weng (Eds.), *Proceedings of the 7th IEEE International Conference on Development and Learning*.

Prather, R. W. (2007). Implicit learning of arithmetic principles. In D. Macnamara & G. Trafton (Eds.), *Proceedings of the Twenty-Ninth Annual Conference of the Cognitive Science Society* (p. 1839). Mahwah, NJ: Erlbaum.

Prather, R. W. & Alibali, M. W. (2004). Principles of arithmetic with positive and negative numbers. In K. Forbus, D. Gentner & T. Regier (Eds.), *Proceedings of the Twenty-Sixth Annual Conference of the Cognitive Science Society* (p. 1620). Mahwah, NJ: Erlbaum.

Prather, R. W. & Boroditsky, L. (2003). *Left of zero: Representations of negative numbers on the mental number line*. In R. Alterman & D. Kirsch (Eds.), *Proceedings of the Twenty-Fifth Annual Conference of the Cognitive Science Society* (p. 1394). Mahwah, NJ: Erlbaum.

Davachi, L., Prather, R., & Wagner, A. D. (2002). Integration cost: Fractionating configural representations in working memory. *Abstracts of the Cognitive Neuroscience Society Meeting*, 9, 62.

Advising Experience

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| 2014-present | Graduate Assistant Sara Heverly-Fitt |
| 2011-2014 | Mentor, <i>Independent study</i> , Brittane Foy, Issabelle Oh, Shae Fournier |
| 2009-2011 | Supervised Research Assistant Cody Stitzel |
| 2009 | Mentor, <i>Independent Study</i> , Michael Koszewski |
| 2008-2009 | Mentor, <i>Independent Study</i> Bailey Thompson |
| 2007-2008 | Mentor, <i>Independent Study</i> , Steven Blette |

Academic & Professional Service

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| 2008 | <i>Diversity Day 2008</i> Moderated panel on departmental diversity issues |
| 2006 - 2009 | Climate and Diversity Committee, University of Wisconsin, Department of Psychology |

Ad hoc reviewer: Developmental Psychology, Cognition, Journal of Cognition and Development, Journal of Experimental Child Psychology, Frontiers in Developmental Psychology, School Science and Mathematics, Cognitive Science Society Conference