

# Richard W. Prather

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## Education

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

## Research Positions Held

- 2009-current Postdoctoral Researcher, Indiana University, Department of Psychological and Brain Sciences. (Advisor: Linda Smith)
- 2006-2007 Project Assistant, *Supporting the Transition from Arithmetic to Algebraic Reasoning* project, Wisconsin Center for Education Research (Supervisors: Martha Alibali and Eric Knuth)
- 2001-2002 Research Assistant, Cognition Research Laboratory (Principal Investigator: Lera Boroditsky)
- 2000-2001 Research Assistant, Learning & Memory Laboratory (Principal Investigator: Anthony Wagner)

## Research Interests

I am broadly interested in the development of human cognition. I focus specifically on the development of arithmetic and numerical cognition. I utilize a combination methods such as lab based behavioral experiments, in-school experiments and computational models of cognition.

## Honors, Awards and Funding

- 2007 - 2009 Institute of Education Sciences Interdisciplinary Training Program  
Predoctoral Fellowship, University of Wisconsin
- 2007 Cognitive Development Society Travel Award
- 2007 National Science Foundation – Alliance for Graduate Education Summer  
Stipend
- 2005 Roderick Menzies Memorial Research Award, Department of Psychology
- 2004, 2005, 2007 Graduate student travel awards, Department of Psychology

2002-2005 American Psychological Association, Minority Fellowship Program  
Predoctoral Fellowship

## **Publications**

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. (2008a). Understanding and using principles of arithmetic: Operations involving negative numbers. *Cognitive Science*, 32(2), 445-457.

Prather, R. W. & Alibali, M. W. (2008b). 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.

## **Conference presentations**

Prather, R.W. & Alibali, M.W. (2009, April) 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, April) 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, June). *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, October). *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, March). *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, March). *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, April). *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, April). *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.

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.

### **Manuscripts under review**

Hattikudur, S., Prather, R.W., Asquith, P., Knuth, E., Nathan, M. J., & Alibali, M. W. (under review). *Constructing graphical representations: Middle schoolers' developing knowledge about slope and intercept*.

Prather, R. W. & Alibali, M. W. (under review). *Children's knowledge and acquisition of arithmetic principles*.

### **Invited Talks**

Indiana University, Psychology Department	October 2008
University of Chicago, Psychology Department	April 2008
Northwestern University, Psychology Department	May 2008

### **Teaching Experience**

2009	Mentor, <i>Independent Study</i> , supervised student Michael Koszewski
2008-2009	Mentor, <i>Independent Study</i> , supervised student Bailey Thompson
2007-2008	Mentor, <i>Independent Study</i> , supervised student Steven Blette
Fall, 2005	Teaching Assistant, Basic Statistics for Psychology
Spring, 2006	Teaching Assistant, Experimental Psychology

### **Additional Training**

Summer, 2002	Summer Program in Neuroscience, Ethics, and Survival Skills, Marine Biological Laboratory, Woods Hole, Massachusetts
May, 2008	Dynamic Field Theory Summer School. University of Iowa, Iowa City, Iowa.

## **Academic Service**

2008 (September) Moderated department-wide discussion of diversity issues, for *Diversity Day 2008*

2006 - 2009 Climate and Diversity Committee, University of Wisconsin, Department of Psychology