

JENNIFER L. COOPER

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Department of Psychology • Wesleyan University
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EDUCATION

Rutgers University, Psychology (Cognitive), M.S., 2004; Ph.D. October, 2010

Advisor: Rochel Gelman; *Committee:* Gretchen Chapman, Lance Rips, Manish Singh

Dissertation Thesis: Adults' Understanding of Graphs of Interacting Variables

Master's Thesis: Young Children's Graph Interpretation: A Context for Arithmetic

Cognitive Science Certificate

Carleton College, Psychology, B.A., 1998 – 2002, *magna cum laude*

Advisor: Kathleen Galotti

Senior Thesis: Counterfactual Deductive Reasoning: Enhanced Instruction Sets (*Distinction*)

ACADEMIC APPOINTMENTS

Wesleyan University

Visting Scholar	7/2016 - present
Postdoctoral Fellow, Psychology Department	8/2014 – 6/2016
Primary Mentor: Lisa Dierker	
Instructor, Psychology Department & Quantitative Analysis Center	8/2014 – 6/2016

University of Wisconsin - Madison

Research Associate, Wisconsin Center for Education Research, National Center for Cognition and Mathematics Instruction (IES)	2012 – 8/2014
Center for Education and Work	2014 – 8/2014
Lecturer, Department of Educational Psychology	S, F 2013
Lecturer, Department of Psychology	F 2012, F 2013
Postdoctoral Fellow in Mathematics Thinking, Teaching, and Learning IES Postdoctoral Training Grant	2010 – 2012
Primary Mentor: Martha Alibali	

RESEARCH EXPERIENCE

Passion-Driven Statistics Curriculum and Research (NSF)	8/2014 - present
Center for Education and Work – data analysis (in R) and documentation	2014
National Center for Cognition and Mathematics Instruction (IES)	2010 – present

Inductive Reasoning In and Out of Mathematics (NSF-REESE)	2010 – present
Adults' understanding of graphs with two independent variables	2007 – present
Number and graphing studies with preschoolers	2002 – 2007
Preschool scientific concepts and skills (Preschool Pathways to Science, PrePS)	2002 – 2005

TEACHING EXPERIENCE

Introductory and Core Content Courses

<u>Human Abilities and Learning</u> , Educational Psychology, UW-Madison	S 2013, F 2013
160 students in introductory level course (lecture, small group activities)	
<u>Infant and Child Development</u> , Psychology, Rutgers	Summer 2004, 2006
20 – 45 students in mid-level course (lecture, small group activities).	
<u>Introduction to Cognitive Science</u> , Cognitive Science, Rutgers	S 2010
<i>Recitation Leader / Teaching Assistant.</i> 25 students. Instructor of record for recitation sections with discussion, small group activities, and additional course content that accompanied a seminar-style series of guest lectures. Engaged in development and grading of coursework.	

Statistics and Research Methods

<u>Applied Data Analysis</u> , Psychology & Quantitative Analysis Center, Wesleyan	F 2014
16 students in introductory level flipped, project-based course combining programming instruction (in R), statistics, and data analysis. Supervision and support of undergraduate teaching apprentices.	
<u>Basic Statistics in Psychology</u> , Psychology, UW-Madison	F 2012
55 students, lecture-based course, mentored TA who led recitation sections	
<u>Quantitative Methods in Psychology</u> , Psychology Department, Rutgers	Summer 2005, 2007, 2008
10 – 30 students. Used various active learning techniques along with lecture.	

Laboratory Courses

<u>Infant and Child Development Lab Course</u> , Psychology, Rutgers	2007 – 2009 (4 terms)
<i>Head Teaching Assistant.</i> Coordinated 4 sections led by experienced and new TAs. Developed new course materials and increased active learning experiences.	
<i>Instructor.</i> 20 students. Writing intensive course with extensive feedback to students on drafts. Topics included research methods and statistics. Supervised and coordinated student research at childcare center.	

Upper Level Seminars

<u>Cognition, Learning, and Instruction in the Classroom</u> , Psychology, Wesleyan	S 2015, 2016
12 – 15 students in an upper-level seminar (discussion, small group activities)	

Cognition, Instruction, and Development, Psychology, UW-Madison F 2013

20 students in an upper-level seminar (discussion, small group activities)

Advanced Topics in Cognitive Science, Cognitive Science, Rutgers F 2009

Recitation Leader / Teaching Assistant. 25 students. Instructor of record for recitation sections with discussion, small group activities, and additional course content that accompanied a seminar-style series of guest lectures. Engaged in development and grading of coursework.

Additional Teaching Experience

Carleton College: Mathematics and Computer Science Department 1999 – 2002

Prefector. Teaching assistant / tutor for Intro & Intermediate Computer Science

Lab Assistant. Computer Science Lab

Grader. Computer Science and Calculus courses

Teaching of Primary and Secondary Students

Science Lessons to Preschoolers, New Brunswick, NJ 2002 – 2005

Developed and co-taught whole group and small group lessons on a bi-weekly basis as part of a research program related to a preschool science curriculum.

American Computer Experience: Amherst, MA Summer 2001

Teacher & Residential Advisor. Developed lessons and taught multiple levels of C++, JAVA, and HTML to 9- to 17-year-olds at a residential camp.

COURSES PREPARED TO TEACH

Core Content Courses: Developmental Psychology*, Human Abilities & Learning*, Cognitive Psychology, Introductory Psychology, Educational Psychology, Sensation and Perception, Introduction to Cognitive Science, Experimental Psychology

Research Methods, Statistics, and Labs: Research Methods, Statistics for Behavioral Sciences*, Applied Data Analysis (R* or SPSS), Introduction to R for Data Analysis, lab courses in Experimental, Developmental*, or Cognitive Psychology

Upper Level Seminars: Cognition, Development, and Learning*, Development of Numerical and Mathematical Knowledge, Cognitive Development

Online Learning Platforms Experience: Schoology, Coursera, Moodle, Sakai, Desire2Learn

* I have developed and taught these courses.

PROFESSIONAL DEVELOPMENT

Research Related

Workshops and courses include:

Data Science; Flipped Data Science (Horton, Posner) May, 2015

Bayesian Data Analysis (Kruschke) July, 2012

Grant Writing Course (Puntambekar) Fall, 2011

Mixed Methods Designs; Large Scale Databases; Cognitive Task Analysis	April, 2011
Establishing Research Agendas	May, 2011
Multilevel Modeling in R	January, 2011

Teaching Related

20th New England Isolated Statistician's Meeting	Oct, 2015
Various professional development workshops on college teaching	2004 – present
Topics: active learning in large classes, holding writing conferences with students, identifying student misconceptions, providing feedback, mentoring students, organizing class topics, embodied learning in the sciences, etc.	

HONORS AND AWARDS

Honored Instructor, University Housing, UW-Madison	Fall 2012
National Science Foundation Graduate Fellowship	2004 – 2007
Departmental and Graduate School Fellowship	2003 – 2004
National Science Foundation Graduate Fellowship, Honorable Mention	2003
Rutgers University Center for Cognitive Science NRSA Traineeship Fellowship	2002 – 2003
Phi Beta Kappa	2002
Sigma Xi	2002
Distinction in Psychology Major, Carleton College	2002
Distinction on Empirical Research Senior Thesis, Carleton College	2002
Dean's List, Carleton College	1998 – 2002

MENTORING OF UNDERGRADUATE STUDENTS

Wesleyan University

Independent Research Tutorials (n = 5)	2015 - 2016
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University of Wisconsin – Madison

Year-long Research Assistants (n = 3)	2011- 2014
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Matthew Jiang	2012 - 2014
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continued mentoring and collaboration after his graduation,
co-authored publication from his senior thesis, now at UW-Madison

Work-study research assistant students (n = 5)	2010 - 2013
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Rutgers University – New Brunswick

Rony Patel (currently at Carnegie Mellon)	2009 - 2010
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Work-study research assistants (n = 4)	
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PROFESSIONAL SERVICE

WCER [WI Center for Ed. Research] Community-Building Committee	2012 – 2014
Judge for regional high school science fair (Madison, WI)	2011, 2013, 2014
Judge for high school psychology research at regional science fair (NJ)	2007, 2009, 2010
Reviewer (ad hoc) for	2010 – present
Cognition and Instruction	
International Journal of Education in Mathematics, Science and Technology	
Drug and Alcohol Dependence	
Psychology of Mathematics Education –North American Chapter (PME–NA)	
Society for Research on Educational Effectiveness (SREE)	
Society for Research in Child Development (SRCD)	
American Educational Research Association (AERA)	

PUBLICATIONS AND PRESENTATIONS

Peer-Reviewed Journal Articles and Chapters

- Clinton, V., **Cooper, J. L.**, Michaelis, J., Alibali, M. W., & Nathan, M. J. (in press). Revising visuals based on instructional design principles: Effects on cognitive load and learning. In C. Was, F.J. Sansosti, B.J. Morris (Eds.) *Eye-tracking technology applications in educational research*. IGI Global.
- Dierker, L., Alexander, J., **Cooper, J. L.**, Selya, A., Rose, J., & Dasgupta, N. (2016). Engaging Diverse Students in Statistical Inquiry: A Comparison of Learning Experiences and Outcomes of Under-Represented and Non-Underrepresented Students Enrolled in a Multidisciplinary Project-Based Statistics Course. *International Journal for the Scholarship of Teaching and Learning*, 10(1), 1-9.
- Dierker, L., & **Cooper, J. L.**, Alexander, J., Selya, A., & Rose, J. (2015). Evaluating access: A comparison of demographic and disciplinary characteristics of students enrolled in a traditional introductory statistics course vs. a multidisciplinary, project-based course. *Journal of Interdisciplinary Studies*, 4(1), 22 – 37.
- Jiang, M. J., **Cooper, J. L.**, & Alibali, M. W. (2014). Perceptual factors influence arithmetic performance: The case of the minus sign. *Quarterly Journal of Experimental Psychology*, 67, 1626 – 1642. DOI: 10.1080/17470218.2014.898669

Under Review

- Cooper, J. L.**, & Dierker, L. (under review). Increasing exposure to programming: A comparison of demographic characteristics of students enrolled in introductory computer science programming courses vs. a multidisciplinary data analysis course. [draft available]
- Cooper, J. L.**, & Sidney, P., & Alibali, M. W. Visual representations in trigonometry: Effects depend upon student attitudes. [draft available]

Walkington, C. A., **Cooper, J. L.**, Akinsiku, O., & Kalish, C. W. Middle school students' and mathematicians' representations of mathematical objects. [draft available]

In Preparation

Cooper, J. L., & Gelman, R. Scaffolding graph construction: Translating verbal summaries into interpretable graphs. [draft available]

Cooper, J. L., Dogan, M., Young, A. G., Kalish, C. W. Examples in mathematical inductive inference: Similarities and differences to inductive reasoning in science.

Peer-Reviewed Published Proceedings with Talks

Cooper, J. L.*, & Walkington, C. A.*, & Howell, E. (2013). The effects of visual representations and interest-based personalization on solving percent problems. In M. Martinez & A. Castro Superfine (Eds.), *Proceedings of the 35th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA)* (pp. 533 – 536). Chicago, IL: University of Illinois at Chicago. [*shared first authorship]

Jiang, M., **Cooper, J. L.**, Alibali, M. W. (2013). Visually grouping operands: Perceptual factors influence arithmetic performance. In M. Martinez & A. Castro Superfine (Eds.), *Proceedings of the 35th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA)* (pp. 253 – 259). Chicago, IL: University of Illinois at Chicago.

Cooper, J. L., & Dogan, M. F., Young, A. G., & Kalish, C. W. (2012). Stronger arguments within inductive generalization in middle school mathematics. In L. R. Van Zoest, J.-J. Lo, & J. L. Kratky (Eds.), *Proceedings of the 34th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA)* (pp. 331 – 334). Kalamazoo, MI: Western Michigan University.

Cooper, J. L., & Alibali, M. W. (2012). Visual representations in mathematics problem-solving: Effects of diagrams and illustrations. In L. R. Van Zoest, J.-J. Lo, & J. L. Kratky (Eds.), *Proceedings of the 34th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA)* (pp. 281 – 288). Kalamazoo, MI: Western Michigan University.

Walkington, C. A., **Cooper, J. L.**, Kalish, C. W., & Akinsiku, O. (2012). How middle school students reason differently in everyday and mathematical contexts: Typicality and example choice in mathematical justification. In L. R. Van Zoest, J.-J. Lo, & J. L. Kratky (Eds.), *Proceedings of the 34th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA)* (pp. 174 - 181). Kalamazoo, MI: Western Michigan University.

Cooper, J. L., Walkington, C.A., Williams, C. C., Akinsiku, O. A., Kalish, C. W., Ellis, A. B., & Knuth, E. J. (2011). Adolescent reasoning in mathematics: Exploring middle school students' strategic approaches in empirical justifications. In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society (CSS)* (pp. 2188 – 2193). Boston, MA: Cognitive Science Society.

Williams, C., Akinsiku, O., Walkington, C. A., **Cooper, J. L.**, Ellis, A., Kalish, C. W., Knuth, E. (2011). Understanding students' similarity and typicality judgments in and out of mathematics. In L. R. Wiest, & T. Lamberg (Eds.), *Proceedings of the 32nd annual*

meeting of Psychology of Mathematics Education, North American Chapter (PME-NA) (pp. 1180 – 1189). Reno, NV.

Presentations

Cooper, J. L. (2016, May). Learning and motivation from basic versus enhanced statistics video lessons. Virtual recorded video poster presented at the Electronic Conference on Teaching Statistics, <https://www.causeweb.org/cause/ecots/ecots16>

Clinton, V., & **Cooper, J. L.** (2015, April). *Teacher viewpoints of instructional design principles for visuals in a middle school math curriculum*. Paper presented at the annual meeting of the American Educational Research Association (AERA), Chicago, IL.

Clinton, V., **Cooper, J. L.**, Alibali, M. W., & Nathan, M. J. (2013, May). *The role of contextual illustrations in problem-solving accuracy and lesson-text comprehension*. Paper presented at the annual meeting of the American Educational Research Association (AERA), San Francisco, CA.

Cooper, J. L., Williams, C. C., Young, A., & Kalish, C. W. (2013, April). *Middle school students and strategic inductive generalization based on example typicality*. In E. Knuth (Chair), *Choosing and using examples: A promising road to proof?* Paper presented at the meeting of the American Educational Research Association (AERA), San Francisco, CA.

Clinton, V., **Cooper, J. L.**, Alibali, M. W., & Nathan, M. J. (2012, September). *Integrating visual and verbal information in mathematics*. Paper presented at the Society for Research in Educational Effectiveness meeting (SREE), Washington, D.C.

Cooper, J. L., Nathan, M. J., Clinton, V., Sidney, P. G., & Alibali, M. W. (2012, April). *Design principles for the integration of visual and verbal information in a math curriculum*. In M.J. Nathan (Chair), *Bridging research and practice: From cognitive principles to design principles of curriculum, instruction, and assessment*. Paper presented in symposium conducted at the meeting of the American Educational Research Association (AERA), Vancouver, Canada.

Cooper, J. L. (2011, November). *Visuals in mathematics problem solving: When are there benefits?* Talk given at Cognitive and Developmental Psychology Colloquium, University of Wisconsin-Madison.

Posters

Cooper, J. L., Sidney, P. G., & Alibali, M. W. (2016, April). Diagrams and illustrations in trigonometry problem solving: Effects depend on student characteristics. Poster presented at a post-AERA conference on Bringing Cognitive Science Research to the Classroom, Arlington, VA.

Michaelis, J. E., Clinton, V. E., **Cooper, J. L.**, Nathan, M. J., & Alibali, M. W. Learning and eye gaze patterns when mathematics lessons are revised using cognitive principles. Poster presented at the 2016 annual conference of the American Educational Research Association (AERA), Washington, DC.

Walkington, C., **Cooper, J. L.**, Alibali, M. W., & Nathan, M. J. (2015, November). *The effects of visual representations and interest-based personalization on solving mathematics story*

- problems*. Poster presented at the 37th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA), East Lansing, MI.
- Cooper, J. L.**, Clinton, V., Riggs, A., Brey, E., Alibali, M. W., & Nathan, M. J. (2013). *Contextual visual information in middle school problem-solving: A puzzling situation*. Poster presented at the 35th annual meeting of Psychology of Mathematics Education, North American Chapter (PME-NA), p. 555, Chicago, IL.
- Cooper, J.**, & Walkington, C. (2013, July). *Solving percent word problems: Effects of interest-based personalization and visualization*. Poster presented at 1st Annual Midwest Meeting on Mathematical Thinking (M3T). Minneapolis, MN.
- Jiang, M. J., **Cooper, J. L.**, & Alibali, M. W. (2013, April). *Visually grouping operands: Perceptual factors influence arithmetic performance*. Poster presented at biennial meeting of Society for Research in Child Development (SRCD), Seattle, WA.
- Cooper, J. L.**, & Gelman, R. (2012, May). *Effect of statistics education on undergraduates' graph interpretation*. Poster presented at the Teaching Institute at the annual meeting of American Psychology Society (APS), Chicago, IL.
- Cooper, J. L.**, Clinton, V., Sidney, P. G., Alibali, M. W., Nathan, M. J. (2011, October). *Using visuals in middle school mathematics*. Poster presented at biennial meeting of Cognitive Development Society (CDS), Philadelphia, PA.
- Knuth, E., Ellis, A., Kalish, C. W., Williams, C. C., Akinsiku, O., **Cooper, J. L.**, & Walkington, C. A. (2011, April). *The role of similarity and typicality in students' inferential reasoning*. Poster presented at National Council of Teachers of Mathematics Annual Conference (NCTM), Indianapolis, IN.
- Cooper, J. L.**, & Gelman, R. (September, 2008). *A graph's title: Informed communication about relationships*. Poster presented at departmental poster symposium.
- Cooper, J. L.**, & Gelman, R. (2007). *Predicting answers: Combining arithmetic strategies and number knowledge*. Poster presented at the biennial meeting of Society for Research in Child Development (SRCD), Boston, MA.
- Cooper, J. L.**, Brenneman, K. B., & Gelman, R. (May, 2006). *A graphing game: Context aids graph interpretation and arithmetic*. Poster presented at the annual meeting of American Psychological Society (APS), New York City, NY.
- Cooper, J. L.**, Brenneman, K. B., & Gelman, R. (2005, April). *Young children's use of graphs for arithmetic*. Poster presented at the biennial meeting of the Society for Research in Child Development (SRCD), Atlanta, GA.
- Cooper, J. L.** (2002, April). *Counterfactual deductive reasoning: Enhanced instruction sets*. Poster session presented at Minnesota Undergraduate Psychology Conference, River Falls, WI.

REFERENCES

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