

CHRISTINA AREIZAGA BARBIERI

University of Delaware
College of Education and Human Development
Willard Hall Education Building, 206F
Newark, DE 19716

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PROFESSIONAL POSITIONS

- 2018 – present Assistant Professor
School of Education, University of Delaware
Primary affiliation: Evaluation, Measurement, and Statistics
Secondary affiliation: Learning Sciences
- 2018 Research Scientist
Temple University
PI: Julie L. Booth; Co-PIs: Kristie J. Newton & Christina Barbieri
IES Grant: *Opening the door to Algebra: Does improving facets of fraction knowledge impact algebra learning?*
- 2015 – 2018 Institute of Education Sciences (IES) Postdoctoral Research Fellow
University of Delaware
PI: Nancy C. Jordan; Co-PIs: Roberta M. Golinkoff, & Henry May

EDUCATION AND TRAINING

- 2015 Ph.D., Educational Psychology
Temple University
Advisor: Julie L. Booth
- 2014 M.Ed., Educational Psychology
Temple University
Advisor: Julie L. Booth
- 2010 B.A., Psychology, *summa cum laude*
City University of New York (CUNY): Lehman College
Advisor: Keith R. Happaney

ADVANCED TRAINING IN QUANTITATIVE METHODS

Longitudinal Data Analysis Using R, Instructor: Stephen Vaisey
Latent Class Analysis, Instructor: Stephanie Lanza
Applied Bayesian Data Analysis, Instructor: Jeff Gill
Multilevel Structural Equation Modeling, Instructor: Kristopher Preacher
Latent Growth Curve Modeling, Instructor: Gregory Hancock
Randomized Trials in Education, Instructor: Henry May
Item Response Theory, Instructor: Tenko Raykov
P propensity Score Methods, Instructors: Wei Pan, Haiyan Bai, Chris Swoboda
Structural Equation Modeling, Instructor: Mark Schmitz
Hierarchical Linear Modeling, Instructor: Joshua Klugman

Programs: MPlus, HLM, SPSS

RESEARCH GRANTS

Opening the door to Algebra: Does improving fraction knowledge impact algebra learning? (\$1,301,369), Funded for 7/1/2017 – 6/30/2020. (IES, U.S. Dept. of Ed: R305A170226. PI: Julie L. Booth; Co-PIs: Kristie Newton, Laura Pendergast, & **Christina Barbieri**).

PUBLICATIONS

REFEREED JOURNAL ARTICLES

- Dyson, N., Jordan, N.C., Rodrigues, J., **Barbieri, C.A.**, Rinne, L., (in press). A fraction sense intervention for students with or at risk for mathematics difficulties. *Remedial and Special Education*.
- Resnick, I., Rinne, L., **Barbieri, C. A.**, & Jordan, N.C. (2018). Children's reasoning about decimals and its relation to fraction learning and mathematics achievement. *Journal of Educational Psychology*.
- Barbieri, C.** & Booth, J.L. (2016). Support for struggling students in algebra: Contributions of incorrect worked examples. *Learning and Individual Differences*, 48, 36-44.
- O'Shea, A.M., Booth, J.L., **Barbieri, C.**, McGinn, K.M., Young, L.K., & Oyer, M.H. (2016). Algebra performance and motivation differences for students with learning disabilities and varying achievement levels, *Contemporary Educational Psychology*, 50, 80-96.
- Booth, J.L., McGinn, K.M., Young, L.K., & **Barbieri, C.** (2015). Simple practice doesn't necessarily make perfect: Evidence from the worked example effect. *Policy Insights from Behavioral and Brain Sciences*, 2(1), 24-32.
- Booth, J.L., Oyer, M.H., Paré-Blagojev, E.J., Elliot, A., **Barbieri, C.**, Augustine, A.A., & Koedinger, K.R. (2015). Learning algebra by example in real-world classrooms. *Journal of Research on Educational Effectiveness*, 8(4), 79-100.
- Booth, J.L., **Barbieri, C.**, Eyer, F., & Paré-Blagojev, E.J. (2014). Persistent and pernicious errors in algebraic problem solving. *Journal of Problem Solving*, 7(1), 10-23.

BOOK CHAPTERS

- Newton, K.J., **Barbieri, C.A.**, & Booth, J.L. (in prep). *Mathematics learning*. To appear in Oxford Research Encyclopedia of Education.
- Jordan, N.C., **Barbieri, C.A.**, Dyson, N., Devlin, B. (under review). Improving learning in children with mathematics difficulties: Contributions from the cognitive and

learning sciences. To appear in A.J. Martin, R.A. Sperling, & K.J. Newton (Eds.) *Handbook of Educational Psychology and Students with Special Needs*.

Jansen, A., Star, J.R., & **Barbieri, C.A.** (in press). Mathematics computation: Helping handout for teachers. To appear in G. Bear & K. Minke (Eds.). *Helping Children Handouts: Prevention and Intervention Strategies for Common Concerns at School and Home*. National Association for School Psychologists (NASP).

Booth, J.L., McGinn, K.M., **Barbieri, C.**, & Young, L.K. (2017). Misconceptions and learning algebra. In S. Stewart (Ed.) *And the Rest is Just Algebra*.

Booth, J.L., McGinn, K.M., **Barbieri, C.**, Begolli, K., Chang, B, Miller-Cotto, D., Young, L.K., & Davenport, J.L. (2017). Evidence for cognitive science principles that impact learning in mathematics. In D.C. Geary & D. Berch, (Eds.) *Mathematical Cognition and Learning Volume 3*.

MANUSCRIPTS UNDER REVIEW/IN REVISION

Barbieri, C.A., & Booth, J.L. (revised, resubmitted). Let's be rational: Worked examples improve conceptual and magnitude knowledge for students learning fractions, decimals, and percents.

Barbieri, C.A., Miller-Cotto, D., & Booth, J.L. (revised, resubmitted). Lessening the load of misconceptions: Design-based principles for algebra learning.

Barbieri, C.A., Rodrigues, J., Dyson, N., & Jordan, N.C. (in revision). Improving fraction understanding in sixth graders with mathematics difficulties: Effects of a number line approach enhanced by cognitive learning strategies.

Barbieri, C.A. & Booth, J.L. (under review). Mistakes on display: Explaining displayed errors refines algebraic equation solving.

MANUSCRIPTS IN PREPARATION

Booth, J.L., **Barbieri, C.A.**, Begolli, K.N., & McCann, N.F. (in prep). The effect of worked examples on student learning and error anticipation in algebra.

CONFERENCE PROCEEDINGS

Corbett, N., Booth, J.L., **Barbieri, C.**, & Young, L.K. (2016, August 11). Exploring the relationship between adolescents' interest in algebra and procedural declines. In A. Papafragou, D. Grodner, D. Mirman, & J. Trueswell, J. (Eds.), *Proceedings of the 38th Annual Conference of the Cognitive Science Society* (pp. 592-595). Philadelphia, PA: Cognitive Science Society.

CONFERENCE PRESENTATIONS

- Barbieri, C.A.** (under review). *The relationship between middle school students' sense of belonging to the mathematics community and algebra performance*. Submitted for presentation at the American Educational Research Association (AERA) 2019 Annual Meeting, Toronto, ON.
- Barbieri, C.A.**, Miller-Cotto, D.A., & Booth, J.L. (under review). *Error prevalence and visual signaling cues: Design based principles for algebra learning*. Submitted for presentation at the American Educational Research Association (AERA) 2019 Annual Meeting, Toronto, ON.
- Barbieri, C.A.**, Jansen, A., Morris, A.K., & Martin, C.P. (under review). *Improving student explanations on fraction comparison tasks*. Submitted for presentation at the American Educational Research Association (AERA) 2019 Annual Meeting, Toronto, ON.
- Gibbs, T.L., Booth, J.L., Newton, K.J., **Barbieri, C.A.**, & Pendergast, L. (under review). *Working memory and flexibility in middle school mathematics*. Submitted for presentation at the 2019 National Association of School Psychologists (NASP) Annual Convention, Atlanta, GA.
- Lange, K. E., **Barbieri, C. A.**, Booth, J. L., & Fukawa-Connelly, T. (April 2019). *Developing a positive error-climate: Action steps from research and practice*. To be presented at 2019 National Council of Supervisors of Mathematics (NCSM) Annual Conference, San Diego, CA.
- Booth, J.L., Newton, K.J., Pendergast, L.L., & **Barbieri, C.** (June 2018). *Opening the door to algebra: The role of fraction knowledge in algebra learning*. Presented at the 2018 International Society of the Learning Sciences (ICLS), London, UK.
- Barbieri, C.**, Jansen, A., & Morris, A.K. (April 2018). *Supports for pre-service teachers' revisions of mathematical explanations*. 2018 National Council of Teachers of Mathematics (NCTM) Research Conference, Washington, D.C.
- Barbieri, C.**, Jordan, N.C., & Booth, J.L. (April 2018). *Using learning principles to address fraction misconceptions*. 2018 American Educational Research Association (AERA) Annual Meeting, New York, NY.
- Miller-Cotto, D., **Barbieri, C.**, & Booth, J.L. (April 2018). *Examining the impact of signaling cues and self-explanations on algebraic knowledge and learning*. 2018 American Educational Research Association (AERA) Annual Meeting, New York, NY.
- Jordan, N.C., Dyson, N., **Barbieri, C.**, Rodrigues, J. (March 2018). *Effects of a number*

line approach for improving fraction understanding in students with math disabilities. The 1st Mathematical Cognition and Learning Society (MCLS) Conference, Oxford, UK.

Barbieri, C., Golinkoff, R.M., Devlin, B. (March 2018). *Guided play: The effect of learning from mistakes on preschoolers' shape knowledge.* 2018 Eastern Psychological Association (EPA) Annual Meeting, Philadelphia, PA.

Devlin, B., Beliakoff, A., **Barbieri, C.,** Klein, A., Jordan, N.C. (October 2017). *Demographic differences in early number competencies: Effects of gender and income status.* 2017 Cognitive Development Society (CDS) Biennial Meeting; Portland, OR.

Barbieri, C., Jordan, N.C., Dyson, N., & Rodrigues, J. (October 2017). *Using principles from cognition and learning to develop fraction knowledge in struggling middle schoolers.* 2017 Cognitive Development Society (CDS) Biennial Meeting, Portland, OR.

Barbieri, C., Zimmermann, L., Shirilla, M. & Golinkoff, R.M. (August 2017). *The right kind of wrong: Learning from errors through guided play.* 2017 American Psychological Association (APA) Annual Convention, Washington, D.C.

Barbieri, C., Shirilla, M., Zimmermann, L. & Golinkoff, R.M. (June 2017). *Exploring the effective features of guided play: Explanations and embodiment.* Mini-conference on Playful Learning, Philadelphia, PA.

Rodrigues, J., Dyson, N., **Barbieri, C.,** Jordan, N. C., & Rinne, L. (May 2017). *Supporting fraction sense: An intervention for sixth-grade students with or at risk for mathematics difficulties.* Mathematical Cognition and Learning Society (MCLS): Formal and Informal Instructional Influences and Interventions, Nashville, TN.

Barbieri, C., Booth, J.L., & Jordan, N.J. (April 2017). *The effects of incorrect worked examples on students' misconceptions and learning of mathematical content.* 2017 Society for Research in Child Development (SRCD) Biennial Meeting, Austin, TX.

Barbieri, C., & Booth, J.L. (April 2017). *Compensating for students' low conceptual and fraction magnitude knowledge with worked examples.* 2017 Society for Research in Child Development (SRCD) Biennial Meeting, Austin, TX.

Resnick, I., **Barbieri, C.,** Rinne, L., Hurwitz, A., & Jordan, N.J. (April 2017). *Relation between decimal and fractions understanding, and the role of magnitude understanding in overall mathematics achievement.* 2017 Society for Research in Child Development (SRCD) Biennial Meeting, Austin, TX.

- Dyson, N., Rodrigues, J., **Barbieri, C.**, & Jordan, N.J. (April 2017). *A Fraction Sense Intervention for Middle School Students with Mathematics Difficulties*. 2017 Society for Research in Child Development (SRCD) Biennial Meeting, Austin, TX.
- Barbieri, C.** (December 2016). *The effects of incorrect worked examples on students' algebra learning*. Institute of Education Sciences (IES) 2016 Principal Investigators meeting, Washington, D.C.
- Corbett, N., Booth, J.L., **Barbieri, C.**, & Young, L.K. (August 2016). *Exploring the relationship between adolescents' interest in algebra and procedural declines*. 38th Annual Conference of the Cognitive Science Society, Philadelphia, PA.
- Miller-Cotto, D.A., **Barbieri, C.**, & Booth, J.L. (May 2016). *Increasing spatial contiguity to reduce students' misconceptions in algebra*. 2016 Math Cognition Conference, Fort Worth, TX.
- Barbieri, C.**, & Booth, J.L. (April 2016). *The effects of an error reflection intervention on algebra learning*. 2016 Bringing Cognitive Science Research to the Classroom conference, Arlington, VA.
- Resnick, I., **Barbieri, C.**, Rinne, L., Hurwitz, A., & Jordan, N.C. (April 2016). *The role of decimal understanding in fractions understanding and overall mathematics achievement*. 2016 Bringing Cognitive Science Research to the Classroom conference, Arlington, VA.
- Barbieri, C.**, & Booth, J.L. (April 2016). *The effects of promoting error reflection on algebra learning*. 2016 meeting of the American Educational Research Association (AERA), Washington, D.C.
- Barbieri, C.**, & Booth, J.L. (April 2016). *The relationship between fraction magnitude knowledge and pre-algebra learning*. 2016 meeting of the American Educational Research Association (AERA), Washington, D.C.
- Barbieri, C.**, McGinn, K., Booth, J.L. (April 2016). *Errors as predictors of algebra learning*. 2016 meeting of the American Educational Research Association (AERA), Washington, D.C.
- McGinn, K., **Barbieri, C.**, & Booth, J.L. (April 2016). *Strategically determining type of example presented to student based on target algebraic misconception*. 2016 meeting of the American Educational Research Association (AERA), Washington, D.C.
- Barbieri, C.** (March 2016). *Sense of belonging to mathematics predicts adolescent algebra learning*. 2016 Annual Eastern State Psychological Association (EPA) Conference, New York, NY.

Barbieri, C. & Booth, J.L. (October 2015). *The effects of error reflection on middle school students' algebra learning*. 2015 Cognitive Development Society (CDS) Biennial Meeting, Columbus, OH.

McGinn, K.M., Booth, J.L., & **Barbieri, C.** (March 2015). *Reducing algebraic misconceptions and errors through the use of correct and incorrect worked-examples*. 2015 Society for Research in Child Development (SRCD) Biennial Meeting, Philadelphia, PA.

Barbieri, C. (March 2015). *The relationship between inference instruction, math self-concept, and adolescent math achievement*. 2015 Annual Eastern State Psychological Association (EPA) Conference, Philadelphia, PA.

Barbieri, C. & Booth, J.L. (April 2014). *Compensating for perceived competence by learning from errors*. 2014 meeting of the American Educational Research Association (AERA), Philadelphia, PA.

Barbieri, C. & Booth, J.L. (April 2013). *Influence of fraction magnitude knowledge and worked examples on arithmetic with fractions, decimals, and percents*. 2013 Society for Research in Child Development (SRCD) Biennial Meeting, Seattle, WA.

Barbieri, C. & Booth, J.L. (March 2013). *Influence of fraction magnitude knowledge and worked examples on arithmetic with fractions, decimals, and percents*. 2013 Eastern Psychological Association (EPA) Conference, New York, NY.

Prohaska, V., **Barbieri, C.**, Miller, D., Monforte, P., & Orengo, D. (March 2010). *Group quizzes: Two heads are not always better than one*. 2010 Eastern Psychological Association (EPA) Conference, Cambridge, MA.

Barbieri, C. & Happaney, K. (March 2010). *Contribution of working memory and inhibition on comprehension of aural vs. printed reading material*. 2010 Eastern Psychological Association Conference, Brooklyn, NY.

DEPARTMENTAL AND INVITED TALKS

Barbieri, C. (December 2016). *The use of error reflection to reduce mathematical misconceptions*. Cognitive Brown Bag series, University of Delaware.

Barbieri, C. (December 2016). *Learning from errors: Using mistakes to promote math learning*. Learning Sciences Brown Bag series, University of Delaware.

Barbieri, C. & Happaney, K. (November 2010). *Contributions of working memory and inhibition on comprehension of aural vs. printed reading material*. Invited Talk at Sigma Xi Lehman Chapter High Tea Seminar, Lehman College, New York, NY.

AWARDS AND HONORS

2015	Cognitive Development Society Diversity Award
2013	Kappa Delta Pi International Honor Society
2010	Sigma Xi: The Scientific Research Society
2010	2010 Rolland S. Parker Award for Outstanding Research Paper, 22 nd Greater New York Conference on Behavioral Research
2009 – 2010	Louis Stokes Alliance for Minority Participation (LSAMP) NSF-Funded Honors Research Scholarship
2008	Psi Chi International Honor Society in Psychology
2008	Golden Key International Honour Society

RESEARCH EXPERIENCE

2018	Research Scientist, Temple University PI: Julie L. Booth; Co-PIs: Kristie J. Newton, Laura Prendergast, & Christina Barbieri IES Grant: <i>Opening the door to Algebra: Does improving facets of fraction knowledge impact algebra learning?</i>
2015 – 2018	IES Postdoctoral Research Fellow, University of Delaware PIs: Nancy C. Jordan, Roberta M. Golinkoff, and Henry May
2011 – 2015	Graduate Research Assistant, Temple University Advisor: Julie L. Booth
2010 – 2011	Research Assistant, CUNY: Lehman College Advisor: Vincent Prohaska
2009 – 2011	Lab Manager, CUNY: Lehman College Advisor: Keith R. Happaney

TEACHING EXPERIENCE

Fall 2018	Instructor of Record Human Development, K-8, University of Delaware
Fall 2014	Instructor of Record Cognition and Learning in the Classroom, <i>Online</i> , Temple University
Spring 2014	Teaching Apprentice

Intermediate Statistics, Temple University
Instructor: Jennifer G. Cromley

Summer 2013 Assistant Course Developer
Multivariate Statistical Analysis, Temple University
Instructor: Jennifer G. Cromley

2010 – 2011 Supplemental Instruction Leader
Statistical Methods in Psychology, CUNY Lehman College

2009 Tutor, Undergraduate Psychology courses, Science Learning Center,
CUNY: Lehman College

EVALUATION AND ASSESSMENT EXPERIENCE

2010 – 2014 Evaluation and Assessment Analyst, Safe Horizon New York State
Forensic Interviewing Best Practice Project

2011 Assessment Developer, Transfer Student Coaching Program, City
University of New York: Lehman College

SERVICE AND PROFESSIONAL AFFILIATIONS

EDITORIAL BOARD MEMBER

The Journal of Educational Psychology
The Journal of Experimental Education

AD HOC REVIEWER

Cognitive Science
The Journal of Cognition and Development
The Journal of Numerical Cognition
Developmental Psychology
Educational Psychology
The Journal of Learning and Individual Differences
The Journal of Research in Mathematics Education
The Journal of Problem Solving
Journal of Educational Research

ACADEMIC SERVICE

University Council on Teacher Education (UCTE) Graduate Representative,
University of Delaware, 2018-2019

Symposium organizer and Co-chair

2019 International Convention of Psychological Sciences, Symposium (under review): Cross-cultural Factors Relating to the Mathematical Cognition of Diverse Populations Across the Globe.

Conference reviewer

2018 National Association of Teachers of Mathematics Research Conference

Symposium organizer and Co-chair

2017 Cognitive Development Society Biennial Meeting, Symposium: Usable Knowledge for Improving Mathematics Learning: Bridging Research in Cognition and Development with Educational Practice in Diverse Contexts

Conference reviewer

2015 Society for Research in Child Development Biennial Meeting

Search Committee Member

Search for the Dean of the College of Education Temple University

Student Representative of the Psychology Department

Dean's Advisory Board City University of New York: Lehman College

OUTREACH

Barbieri, C.A., Devlin, B., Morano, C., Golinkoff, R.M., & Hirsh-Pasek, K. (July 16, 2018). *The value of numbers – math counts more than you think*. [Blog post on Blog of Learning and Development]. Retrieved from <https://bold.expert/the-value-of-numbers-math-counts-more-than-you-think/>.

Barbieri, C. & Devlin, B. (2017, December 11). *The value of math: Math counts even before 2+2!* Talk given to parents and teachers at Albert Einstein Academy, Wilmington, DE.

Barbieri, C., Golinkoff, R.M., & Hirsh-Pasek, K. (2016, April 25). *To Err is Human, To Reflect (on the Error) is Divine* [Web blog post in Roberta Golinkoff's Huffington Post Blog]. Retrieved from http://www.huffingtonpost.com/roberta-michnick-golinkoff/to-err-is-human-to-reflec_b_9764374.html

PROFESSIONAL AFFILIATIONS

Society for Research in Child Development (SRCD)
Cognitive Development Society (CDS)
American Educational Research Association (AERA)
Association for Psychological Science (APS)
Eastern Psychological Association (EPA)
National Council of Teachers of Mathematics (NCTM)