

## DANA MILLER-COTTO, Ph.D.

### Curriculum Vitae

3939 O'Hara Street, 816 LRDC  
Pittsburgh, PA 15260  
University of Pittsburgh  
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(412) 624 – 2679  
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### EDUCATION

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- 2017 Ph.D., Educational Psychology, Temple University  
Advisor: Dr. James P. Byrnes
- 2014 M.Ed., Educational Psychology, Temple University  
Advisor: Dr. James P. Byrnes
- 2011 B.A., Psychology, CUNY Lehman College  
Advisor: Dr. Vincent Prohaska

### RESEARCH INTERESTS

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I examine the associations among students' demographics (e.g. socioeconomic status, race/ethnicity), characteristics (e.g., cognitive ability) and learning opportunities (e.g., exposure to content), factors that shape students' readiness when examining math and science achievement.

### PROFESSIONAL APPOINTMENTS

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- 2017- **Postdoctoral Research Associate**, University of Pittsburgh  
Learning Research & Development Center (LRDC)  
Center for Teaching & Learning  
Mentor: Dr. Christian D. Schunn

### RESEARCH SUPPORT

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- Aligning Teaching Methods and Students' Learning Needs: Active Learning vs. Traditional Classrooms, A. J. Schikorra (PI), R. Alvarado (Co-PI), **D. Miller-Cotto (Co – PI)**, funded via the University of Pittsburgh's Provost's Personalized Education Grant Program, \$26, 306 total, funded February 1, 2018 to June 30, 2019.
- Memory Illusions: Fonts and Serial Position Assignments, **D. Miller-Cotto (PI)**, V. Prohaska (Co-PI), funded via Psi Chi/Association for Psychological Science, \$5,000 total, funded for Summer 2010.

### REFEREED JOURNAL ARTICLES

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- Byrnes, J. P., **Miller-Cotto, D.**, & Wang, A. H. (2018). Children as mediators of their own development: The case of learning science in kindergarten and first grade. *Journal of Cognition and Development, 19*, 248 – 277.
- Miller-Cotto, D.**, & Byrnes, J. P. (2016). Ethnic/racial identity and academic achievement: A meta-analytic review. *Developmental Review, 41*, 51-70.
- Byrnes, J. P., & **Miller-Cotto, D.** (2016). The growth of mathematics and reading skills in segregated and diverse schools: An opportunity-propensity analysis of a national database. *Contemporary Educational Psychology, 46*, 34-51.

## BOOK CHAPTERS

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Booth, J. L., McGinn, K. M., Barbieri, C., Begolli, K. N., 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. B. Berch, R. J. Ochsendorf & K. M. Koepke (Eds.), *Acquisition of complex arithmetic skills and higher-order mathematics concepts Vol 3* (pp. 297–325). Oxford, UK: Elsevier.

## MANUSCRIPTS UNDER REVIEW/IN REVISION

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Barbieri, C. A., **Miller-Cotto, D.**, & Booth, J. L. (revised, resubmitted). Lessening the load of misconceptions: Design-based principles for algebra learning. Revision submitted to *Journal of the Learning Sciences* on September 21<sup>st</sup>, 2018.

Byrnes, J.P., Wang, A. H., & **Miller-Cotto, D.** (in revision). Children as mediators of their own cognitive development in kindergarten. Revision invited to *Cognitive Development* on September 8<sup>th</sup>, 2018.

**Miller-Cotto, D.**, & Auxter, A. E. (in revision). Testing the ecological validity of faded worked examples in algebra. Revision invited to *Educational Psychology* on October 18<sup>th</sup>, 2018.

**Miller-Cotto, D.**, Booth, J. L., Chang, B. L., Cromley, J. G., Newcombe, N. S., & Williams, T.A. (in revision). Sketching and verbal self-explanation: Do they help middle school children solve math and science problems? Revision invited to *Contemporary Educational Psychology* on September 28<sup>th</sup>, 2018.

**Miller-Cotto, D.**, & Byrnes, J. P. (under review). What's the best way to characterize the relationship between working memory and achievement?: An exploration of competing theories. Submitted for peer review on October 3<sup>rd</sup>, 2018.

Wang, M.T., Smith, L.V., **Miller-Cotto, D.**, & Huguley, J.P. (revised, resubmitted). Parental ethnic-racial socialization practices and children of color's academic outcomes: A meta-analytic review. Second revision submitted to *Child Development* on October 1<sup>st</sup>, 2018.

## MANUSCRIPTS IN PREPARATION

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**Miller-Cotto, D.** (in prep). How can a diversity and inclusion faculty development program affect instruction?: A case study of two STEM faculty.

**Miller-Cotto, D.** (in prep). Assessing executive functions to explain the guidance fading effect.

Smith, L.V., **Miller-Cotto, D.**, & Wang, M.T. (in prep). Stereotypes and STEM: The buffering role of teacher feedback in the relationship between stereotype awareness and engagement in STEM.

## PROFESSIONAL PRESENTATIONS

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**Miller-Cotto, D.**, & Byrnes, J. P. (submitted). In and outside the classroom: How is working memory related to math ability? Submitted for presentation to the 2019 Society for Research in Child Development, Baltimore, MD.

**Miller-Cotto, D.**, & Rowland, C.B. (submitted). How can a diversity and inclusion faculty development program alter instruction: A case study of two STEM faculty. Submitted for presentation to the 2019 Annual Meeting of the American Educational Research Association, Toronto, ON.

Rowland, C. B., & **Miller-Cotto, D.** (submitted). Diversity and inclusion transformation in a faculty development program: Reflections from a learning community. Submitted for presentation

- to the 2019 Annual Meeting of the American Educational Research Association, Toronto, ON.
- Byrnes, J. P., & **Miller-Cotto, D.** (2018, July). Testing theories of working memory and mathematics achievement. Presented to the Cognitive Science Society 2018 Meeting, Madison, WI.
- Miller-Cotto, D.**, & Schunn, C.D. (2018, June). Examining flipping in a calculus class: Does it work, and for whom? Presented to the International Workshop on Advanced Learning Sciences 2018, Pittsburgh, PA.
- Miller-Cotto, D.**, Barbieri, C., & Booth, J. L. (2018, April). Examining the impact of signaling cues and self-explanations on algebraic knowledge and learning. Presented at the 2018 Annual Meeting of the American Educational Research Association, New York, NY.
- Miller-Cotto, D.**, & Byrnes, J. P. (2018, April). Examining additional constructs to test the guidance fading effect. Presented at the 2018 Annual Meeting of the American Educational Research Association, New York, NY.
- Miller-Cotto, D.** (2017, October). Testing the faded worked example effect with cognitive load theory: It works, but for whom? Presented at the Cognitive Development Society Conference, Portland, OR.
- Miller-Cotto, D.**, Auxter, A. E., Byrnes, J. P., & Newton, K. J. (2017, April). Too much of a good thing: When faded worked examples decrease performance in algebra. Presented at the Society for Research in Child Development Biennial Meeting, Austin, TX.
- Miller-Cotto, D.**, Barbieri, C., & Booth, J. L. (2016, May). Increasing spatial contiguity to reduce students' misconceptions about algebra. Presented at the Fourth Annual Mathematical Cognition Conference, Fort Worth, TX.
- Miller-Cotto, D.**, Chang, B. L., Booth, J. L., Cromley, J. G., & Newcombe, N. S. (2016, April). The effects of sketching and self-explanation on students' monitoring use in problem solving. Presentation at the Bringing Cognitive Science Research to the Classroom Conference, Arlington, VA.
- Miller-Cotto, D.**, David, S., Booth, J. L., Cromley, J. G., & Newcombe, N. S. (2016, April). Self-explaining encourages student monitoring in math and science problem solving. Presentation at the National Consortium for Instruction and Cognition Annual Meeting, Washington, D.C.
- Miller-Cotto, D.**, Auxter, A. E., Byrnes, J. P., & Newton, K. J. (2016, March). Examining the use of faded worked examples in real world classrooms. Presentation at the Eastern Psychological Association Conference, New York, NY.
- Miller-Cotto, D.**, Auxter, A. E., Byrnes, J. P., & Newton, K. J. (2016, February). Instruction, fading, and self-explanation: Increasing far transfers with schema-based instruction in college algebra. Presentation at the Eastern Educational Research Association Annual Conference, Hilton Head Island, SC.
- Miller-Cotto, D.**, & Menzies, C. M. (2015, April). Student-teacher racial incongruence and teacher perceptions' of student achievement: Testing ethnic identity as a buffer. Presentation at the American Educational Research Association annual meeting, Chicago, IL.
- Miller-Cotto, D.**, & Booth, J. L. (2015, March). Contiguity and self-explanations: Reducing student misconceptions about algebra. Presentation for the Society for Research on Child Development Biennial Meeting, Philadelphia, PA.
- Miller-Cotto, D.**, & Byrnes, J. P. (2015, March). Ethnic/racial identity and academic achievement: A meta-analysis. Presentation at the Society for Research on Child Development Biennial Meeting, Philadelphia, PA.
- Miller-Cotto, D.**, & Byrnes, J. P. (2014, October). Cognitive and socio-emotional development

in schools that vary in diversity: An opportunity-propensity analysis of a national database. Presentation at the Sixth Annual Temple University Graduate Fellows Research Symposium, Philadelphia, PA.

**Miller-Cotto, D.**, & Byrnes, J. P. (2013, April). Diversity and academic achievement in American schools. Presentation at the Society for Research in Child Development Biennial Meeting, Seattle, WA.

**Miller, D.**, & Prohaska, V. (2011, March). Memory illusions: Fonts and serial position assignments. Presentation at the Eastern Psychological Association Conference, Cambridge, MA.

Prohaska, V., Barbieri, C., **Miller, D.**, Monforte, P., & Orengo, D. (2011, March). Two heads are not always better than one. Presentation at the Eastern Psychological Association Conference, Cambridge, MA.

### INVITED TALKS AND LECTURES

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**Miller-Cotto, D.** (October 2018). *In and outside the classroom: How is working memory related to math ability?* Educational Psychology Colloquium, Department of Human Development and Quantitative Methods, University of Maryland.

### DEPARTMENTAL TALKS AND LECTURES

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**Miller-Cotto, D.** (November 2018). *An exploration of competing theories: What's the deal with math ability and working memory?* Developmental Psychology Brown Bag, Department of Psychology, University of Pittsburgh.

**Miller-Cotto, D.** (January 2018). *Sketching and self-explanation: A comparison of two cognitive based strategies used to improve sixth graders' problem solving in math and science.* Pitt Cognitive Brown Bag Series, Learning Research & Development Center, University of Pittsburgh.

**Miller-Cotto, D.** (October 2017). *Sketching and verbal self-explanation: Do they help middle school children solve math and science problems?* School of Education Graduate Colloquium Series, University of Pittsburgh.

**Miller-Cotto, D.** (March 2017). *Characteristics of students who benefit from faded worked examples in geometry.* Educational Research Seminar series, Temple University.

**Miller-Cotto, D.** (February 2017). *Testing the ecological validity of faded worked examples in a developmental mathematics classroom.* Temple Institute for Learning and Education Sciences (TILES) series, Temple University.

### HONORS & AWARDS

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2017	Cognitive Development Society (CDS) Diversity Travel Award [\$600]
2014 - 15	Future Faculty Fellowship, Temple University [Tuition & Stipend]
2011 - 14	College of Education Research Assistantship, Temple University [Tuition & Stipend]
2011	Co-Recipient of the Psi Chi Kay Wilson Officer Team Leadership Award [\$100]
2011	The CUNY Lehman College Foundation Scholarship [\$500]
2010 - 11	Louis Stokes Alliance for Minority Participation (LS-AMP) in STEM via the National Science Foundation Scholar [\$5,000]

### RESEARCH EXPERIENCE

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2017 – **Postdoctoral Research Associate**, Schunn Lab  
 Learning Research & Development Center, University of Pittsburgh  
 Principal Investigator: Dr. Christian D. Schunn

- 2015 - 2017 **Research Assistant**, Sketching and Self-Explanation in Math and Science  
Department of Psychological Studies in Education, Temple University  
Principal Investigators: Drs. Julie L. Booth, Jennifer Cromley, and Nora Newcombe
- 2011- 2014 **Research Assistant**, Cognitive and Social Predictors of Achievement, Mathematical  
Performance and Problem Solving  
Department of Psychological Studies in Education, Temple University  
Advisor: Dr. James P. Byrnes
- 2010 - 2011 **Research Assistant**, Parenting and Executive Function Study  
Department of Psychology, CUNY Lehman College  
Principal Investigator: Dr. Keith R. Happaney
- 2009 - 2011 **Research Assistant**, Learning and Memory Lab  
Department of Psychology, CUNY Lehman College  
Principal Investigator: Dr. Vincent Prohaska

## TEACHING EXPERIENCE

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### *Courses Taught*

- Spring 2017 **Adjunct Instructor**, Child Development: Birth to Nine Years, Temple University  
Spring 2014 **Instructor of Record** Cognitive Development, Temple University  
Fall 2013 **Teaching Assistant & Guest Lecturer**, Cognitive Development, Temple  
University

### *Courses Developed*

- Summer 2013 **Assistant Course Developer**, Multivariate Statistics, Temple University,  
Dr. Jennifer G. Cromley, Lead Professor

## SERVICE

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### *Conference Services*

- Reviewer, American Psychological Association: Division 15 (Ed Psych), 2013 – 2016  
Reviewer, American Educational Research Association (Division C: Learning and Instruction/1c  
Mathematics 2015 – 2018; SIG Early Education and Child Development, 2018  
Reviewer, European Association for Learning and Instruction, 2018  
Reviewer, Society for Research in Child Development, 2018  
Symposium organizer and co-chair, *2019 International Convention of Psychological Science*, Symposium  
(under review): Cross-cultural Factors Relating to the Mathematical Cognition of Diverse  
Populations Across the Globe.

### *Journal Reviewing*

- Ad-hoc Reviewer, *Child Development*, 2018  
Ad-hoc Reviewer, *Cognitive Research: Principles and Implications*, 2017  
Ad-hoc Reviewer, *Journal of Experimental Education*, 2015, 2018  
Ad-hoc Reviewer, *Journal of Research in Education*, 2016  
Ad-hoc Reviewer, *Learning and Instruction*, 2013

***Service to the Institution***

Chair, Proposal Review Board, CUNY Lehman College Scholarship Day, 2011  
Panelist, Tactics 101: Surviving and Thriving in Your PhD Program, Temple University, Spring 2015  
Diversity and Inclusion Committee, Learning Research and Development Center (LRDC),  
University of Pittsburgh, 2018 - present

**SPECIAL TRAINING**

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- 2018      **The Meta-Analysis Training Institute**, Institute for Education Sciences  
Instructors: Drs. Terri Pigott, Natasha Beretvas, Elizabeth Tipton, Josh Polanin, and  
Ryan Williams
- 2018      **Introduction to Systematic Review and Meta-Analysis**, Coursera  
Instructors: Drs. Tianjing Li and Kay Dickersin
- 2016      **Item Response Theory Modeling**, Statistical Horizons  
Instructor: Dr. Tenko Raykov
- 2016      **A Didactic Introduction to Latent Variable Modeling in R**, AERA  
Instructor: Dr. Holmes Finish
- 2014      **Hierarchical Linear Modeling**, The Carnegie Foundation  
Instructors: Drs. Stephen Raudenbush and Anthony Bryk
- 2014      **Structural Equation Modeling**, Department of Psychology, Temple University  
Instructor: Dr. Mark Schmitz
- 2012      **Multivariate Statistics**, Department of Psychological Studies in Education,  
Temple University  
Instructor: Dr. Joseph P. Ducette

**PROFESSIONAL AFFILIATIONS**

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American Educational Research Association (Division C: Learning & Instruction; Early Education  
and Child Development SIG)  
Cognitive Development Society  
Cognitive Science Society  
Society for Research on Child Development (SRCD)